QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater
Irrigation Price Review: 2012-2017

Volume 2

Callide Valley Water Supply Scheme

November 2011

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SUBMISSIONS

This report is a draft only and is subject to revision. Public involvement is an important element of the decision-making processes of the Queensland Competition Authority (the Authority). Therefore submissions are invited from interested parties. The Authority will take account of all submissions received.

Written submissions should be sent to the address below. While the Authority does not necessarily require submissions in any particular format, it would be appreciated if two printed copies are provided together with an electronic version on disk (Microsoft Word format) or by e-mail. Submissions, comments or inquiries regarding this paper should be directed to:

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The **closing date** for submissions is **23 December 2011**.

Confidentiality

In the interests of transparency and to promote informed discussion, the Authority would prefer submissions to be made publicly available wherever this is reasonable. However, if a person making a submission does not want that submission to be public, that person should claim confidentiality in respect of the document (or any part of the document). Claims for confidentiality should be clearly noted on the front page of the submission and the relevant sections of the submission should be marked as confidential, so that the remainder of the document can be made publicly available. It would also be appreciated if two copies of each version of these submissions (i.e. the complete version and another excising confidential information) could be provided. Again, it would be appreciated if each version could be provided on disk. Where it is unclear why a submission has been marked "confidential", the status of the submission will be discussed with the person making the submission.

While the Authority will endeavour to identify and protect material claimed as confidential as well as exempt information and information disclosure of which would be contrary to the public interest (within the meaning of the *Right to Information Act 2009 (RTI)*), it cannot guarantee that submissions will not be made publicly available. As stated in s187 of the *Queensland Competition Authority Act 1997* (the QCA Act), the Authority must take all reasonable steps to ensure the information is not disclosed without the person's consent, provided the Authority is satisfied that the person's belief is justified and that the disclosure of the information would not be in the public interest. Notwithstanding this, there is a possibility that the Authority may be required to reveal confidential information as a result of a RTI request.

Public access to submissions

Subject to any confidentiality constraints, submissions will be available for public inspection at the Brisbane office of the Authority, or on its website at www.qca.org.au. If you experience any difficulty gaining access to documents please contact the office (07) 3222 0555.

Information about the role and current activities of the Authority, including copies of reports, papers and submissions can also be found on the Authority's website.

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GLOSSARY

Refer to Volume 1 for a comprehensive list of acronyms, terms and definitions.

EXECUTIVE SUMMARY

Ministerial Direction

The Authority has been directed by the Minister for Finance and The Arts and the Treasurer for Queensland to recommend irrigation prices to apply to particular SunWater water supply schemes (WSS) from 1 July 2012 to 30 June 2017 (the 2012-17 regulatory period). A copy of the Ministerial Direction forms **Appendix A** to Volume 1.

Summary of Price Recommendations

The Authority's recommended irrigation prices to apply to the Callide Valley WSS for the 2012-17 regulatory period are outlined in Table 1 together with actual prices since 1 July 2006.

Draft Report

Volume 1 of this Draft Report addresses key issues relevant to the regulatory and pricing frameworks, renewals and operating expenditure and cost allocation, which apply to all schemes.

Volume 2, which comprises scheme specific reports, should be read in conjunction with Volume 1.

Consultation

The Authority has consulted extensively with SunWater and other stakeholders throughout this review. Consultation has included: inviting submissions from, and meeting with, interested parties; the commissioning of independent reports on key issues; and, publication of Issues Papers.

Comments on the Draft Report are due by **23 December 2011**. All submissions will be taken into account by the Authority in preparing its Final Report due by 30 April 2012.

Table 1: Prices for the Callide WSS ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Surface Water (Callide and Kroombit Creek)											
Fixed (Part A)	1.12	2.24	3.44	4.68	5.88	8.12	11.93	14.28	16.24	16.65	17.06
Volumetric (Part B)	15.64	17.68	20.20	22.55	24.83	25.72	8.00	8.20	8.40	8.61	8.83
Callide Benefited Groundwater Area											
Fixed (Part A)	1.12	2.24	3.44	4.68	5.88	8.12	11.93	14.28	16.24	16.65	17.06
Volumetric (Part B)	15.64	17.68	20.20	22.55	24.83	25.72	8.00	8.20	8.40	8.61	8.83

Note: 2011-12 prices include the interim increase of $2/ML in addition to CPI. Source: Actual Prices (SunWater, 2011al) and Recommended Prices (QCA, 2011).

1. CALLIDE VALLEY WATER SUPPLY SCHEME

1.1 Scheme Description

The Callide Valley water supply scheme (WSS) supplies bulk water for groundwater recharge purposes in the benefited area located around the town of Biloela. The scheme operates by the controlled release of flows into the Callide Creek, Kroombit Creek and Kariboe Creek. An overview of the key characteristics of this WSS is provided in Table 1.1.

Table 1.1: Key Scheme Information for the Callide Valley WSS

	Callide Valley WSS
Business Centre	Biloela
Irrigation Uses of Water	Irrigation crops include winter and summer cereals and lucerne
Urban Water Supplies	Township of Biloela
Industrial Water Supplies	A number of large industries are supplied including the Callide Power Station and a meatworks

Source: Synergies Economic Consulting (2010).

The Callide Valley WSS has a total of 138 customers. Medium and high priority water access entitlements (WAE) are outlined in Table 1.2.

Table 1.2: Water Access Entitlements

Customer Group	***Irrigation WAE (ML)***	***Total WAE (ML)***
Medium Priority	18,295	19,970
High Priority	0	4,313
Total	**18,295**	**24,283**

Source: SunWater (2011ao).

The majority of water used by customers is extracted via groundwater bores. However, there are a small number of customers that draw water directly from the creek systems (Halcrow, 2011). The groundwater table lies between 10 to 20 metres below surface and the cost of pumping is borne by the irrigators.

The irrigation system operates by releasing water into the natural streams at rates such that water does not flow beyond the limits of the benefited area. Water then seeps through the ground into the groundwater aquifer. The status of the aquifer is monitored via some 300 observation bores which are monitored each quarter. Water allocations are based on the observations made.

As noted above, water is also supplied from Callide Dam to the Biloela township and to the Callide Power Stations A, B and C. However, these do not form part of, and are isolated from, the irrigation supply system.

1.2 Bulk Water Infrastructure

Bulk water services involve the management of storages and WAEs in accordance with regulatory requirements, and the delivery of water to customers in accordance with their WAE.

The full supply storage capacity and the age of the key infrastructure are detailed in Table 1.3.

Table 1.3: Bulk Water Infrastructure in the Callide Valley WSS

Storage Infrastructure	*Capacity (ML)*	*Age (years)*
Callide Dam	136,000	46
Callide Creek Weir	506	19
Kroombit Dam	14,600	19

Source: Synergies Economic Consultancies (2010).

The characteristics of the bulk water assets are:

(a) Callide Dam is of rock and earthfill type, with a maximum height of approximately 37 meters and a crest length of some 2,000 meters. The river outlet comprises of a tower with dual inlets, one of which is adjustable, with provision for trashracks (screens) and maintenance bulkheads. The dam was designed to store water for the Callide Power Station and the Biloela Town Supply, with any surplus made available for recharging the groundwater levels along Callide and Kariboe Creeks. The dam is also used as temporary storage for water pumped from the Awoonga Dam near Gladstone for the Callide Power Station;

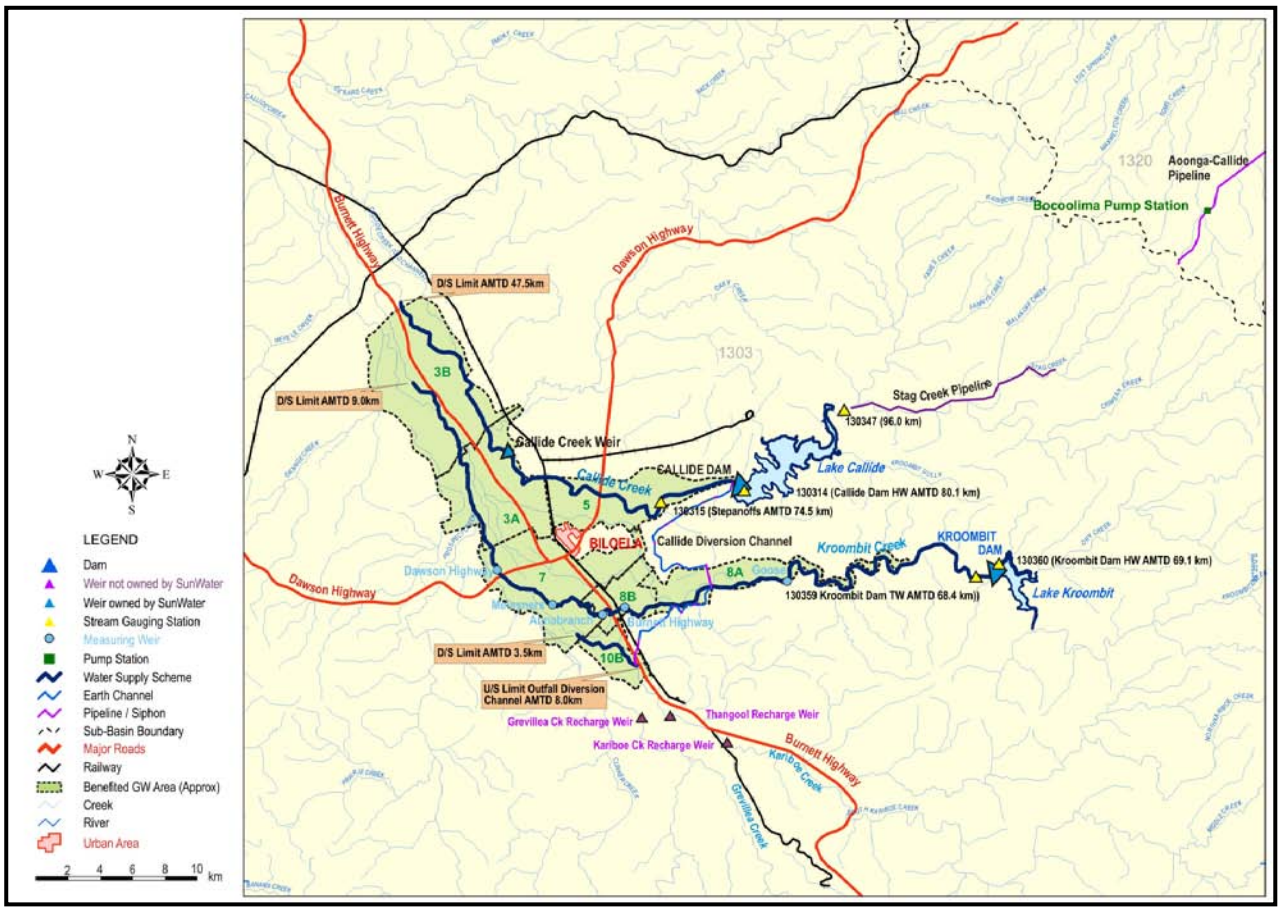
(b) Callide Creek Weir is used to recharge the area's aquifer and downstream releases; and

(c) Kroombit Dam consists of a spillway of roller – compacted concrete covered with facing concrete, which is flanked by earth and rockfill embankments. Kroombit Dam is designed to recharge the alluvial aquifers along Kroombit Creek.

The Callide Diversion Channel is used to transfer water from Callide Dam to Kariboe Creek, and has no offtakes. Due to a lack of water, the channel has only been operated three times in 30 years (Halcrow, 2011).

The location of the Callide Valley WSS and key infrastructure is shown in Figure 1.1.

Figure 1.1: Callide Valley WSS Locality Map



Source: SunWater (2011).

1.3 Network Service Plans

The Callide Valley WSS network service plan (NSP) presents SunWater's:

(a) existing service standards;

(b) forecast operating and renewals costs, including the proposed renewals annuity; and

(c) risks relevant to the NSP and possible reset triggers.

SunWater has also prepared additional papers on key aspects of the NSPs and this price review, which are available on the Authority's website.

1.4 Consultation

The Authority has consulted extensively with SunWater and other stakeholders throughout this review on the basis of the NSPs and supporting information. To facilitate the review, the Authority has:

(a) invited submissions from interested parties;

(b) met with stakeholders to identify and discuss relevant issues (two rounds of consultation);

(c) published notes on issues arising from each round of consultation;

(d) commissioned independent consultants to prepare Issues Papers and review aspects of SunWater's submissions;

(e) published all issues papers and submissions on its website; and

(f) considered all submissions and reports in preparing this Draft Report for comment.

The Authority has also received a number of submissions from stakeholders on matters such as capacity to pay, rate of return on existing assets, contributed assets, dam safety upgrades, nodal pricing, national metering standards and whether or not to recover recreation management costs from SunWater customers.

Following the amendment to the original Ministerial Direction of 19 March 2010 and further advice from the Minister of 23 September 2010 and 9 June 2011, these issues are outside the scope of the current investigation and have therefore not been addressed.

2. REGULATORY FRAMEWORK

2.1 Introduction

Under the Ministerial Direction, the Authority must recommend the appropriate regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with identified allowable costs.

During the negotiations that preceded the 2006-11 price path, the Callide Valley WSS Tier 2 group indicated that they were in favour of retaining the existing price cap regulatory arrangement. In the 2011-12 interim price period, the price cap arrangement was continued.

2.2 Stakeholder Submissions

SunWater

SunWater identified a range of generic risks considered relevant to allowable costs across all schemes (see Volume 1). SunWater also considered that it should not bear the risk of water availability (volume risk). The following are scheme specific risks identified by SunWater in the NSP associated with the Callide Valley WSS:

(a) the possible removal of regulated electricity tariffs which could have a significant impact on the cost of electricity;

(b) the introduction of schemes relating to the reduction of greenhouse gases that may have implications for electricity prices;

(c) damage to SunWater's assets, to the extent that such damage is not recoverable under insurances;

(d) metering costs related to changes in regulatory standards;

(e) levies or charges made in relation to the regulation of irrigation prices by the Authority;

(f) outbreak of noxious weeds; and

(g) Resource Operations Plan (ROP) amendments – amendments to the Fitzroy ROP aimed at addressing allocation of the ground water in the scheme may come into force and reduce the volume of WAE over which costs outlined in the NSP are recovered.

Other Stakeholders

During Round 1 consultation in May 2010, stakeholders sought clarification regarding the implication and impact on the scheme in relation to a price cap versus a revenue cap.

2.3 Authority's Analysis

The Authority has, in Volume 1, analysed the general nature of the risks confronting SunWater and recommended that an adjusted price cap apply for all WSSs. The proposed allocation of risks and the means for addressing them are outlined in Table 2.1.

Table 2.1: Summary of Risks, Allocation and Authority's Recommended Response

Risk	*Nature of the Risk*	*Allocation of Risk*	*Authority's Recommended Response*
Short Term Volume Risk	Risk of uncertain usage resulting from fluctuating customer demand and/or water supply.	SunWater does not have the ability to manage these risks and, under current legislative arrangements, these are the responsibility of customers. Allocate risk to customers.	Cost-reflective tariffs.
Long Term Volume Risk (Planning and Infrastructure)	Risk of matching storage capacity (or new entitlements from improving distribution loss efficiency) to future demand.	SunWater has no substantive capacity to augment bulk infrastructure (for which responsibility rests with Government). SunWater does have some capacity to manage distribution system infrastructure and losses provided it can deliver its WAEs.	SunWater should bear the risks, and benefit from the revenues, associated with reducing distribution system losses.
Market Cost Risks	Risk of changing input costs.	SunWater should bear the risk of its controllable costs. Customers should bear the risks of uncontrollable costs.	End of regulatory period adjustment for over- or under-recovery. Price trigger or cost pass through on application from SunWater (or customers), in limited circumstances.
Risk of Government Imposts	Risk of governments modifying the water planning framework imposing costs on service provider.	Customers should bear the risk of changes in water legislation though there may be some compensation associated with National Water Initiative (NWI) related government decisions.	Cost variations may be immediately transferred to customers using a cost pass-through mechanism, depending on materiality.

Source: QCA (2011).

Consistent with the Authority's allocation of risks (Table 2.1), it is proposed that risks identified by SunWater in items (a), (b), (c), (f) and (g) above will be dealt with via an end-of-period adjustment, or price trigger or cost pass through upon application by SunWater or customers.

It should be noted that anticipated prudent and efficient electricity costs are reviewed as part of the Authority's analysis of efficient operating costs, and it is only if they are materially different to those forecast would there be a case to consider price triggers or cost pass throughs.

Metering upgrades (d) are outside the scope of this investigation. No levies or charges (e) are to be applied by the Authority as a result of this irrigation price review.

In response to comments raised during Round 2 consultation, the implications of a price cap, or a revenue cap are addressed in more detail in Volume 1. In brief:

(a) under a standard revenue cap:

  (i) the service provider receives the maximum allowable revenue (MAR) irrespective of market conditions or sales;

  (ii) the service provider has an incentive to manage (and reduce) costs, at least until revenues are reset in the future, as the service provider typically keeps any cost savings; and

(iii) customers' prices vary during the regulatory period according to changes in volume;

(b) under a standard price cap:

(i) the service provider does not receive the MAR irrespective of market conditions as sales can vary from those initially envisaged;

(ii) the service provider has an incentive to reduce costs, and increase sales, at least until prices are reset in the future; and

(iii) customers' prices are certain and stable.

Under both a revenue cap and a price cap, cost risk (as distinct from volume risk) can be addressed by some form of cost pass through, with or without thresholds, for cost variations outside of an entity's control.

To assist in reviewing these options, the Authority commissioned NERA (2010a) to prepare an Issues Paper. The Paper can be found on the Authority's website.

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

In the 2006-11 price path, a case was identified to establish tariffs for the Callide Valley WSS that were more consistent with the tariff structures in place for most schemes. In 2005-06, the Part B tariff generated over 90% of the scheme revenues. Over the price path, the Part A charge was increased from the existing $1.00 to $5.00 (in real terms) by 2010-11. Thus, the Part A charge in the Callide Valley WSS was set to recover 32% of revenues in year five of the price path, with the Part B charge to recover the remaining 68% of total revenues for this scheme.

Stakeholder Submissions

SunWater

SunWater (2011d) submitted that the fixed charge should recover fixed costs and the variable charge should recover variable costs.

Other Stakeholders

During Round 2 consultation in April 2011, stakeholders submitted that:

(a) the tariff structure, with a relatively high Part B tariff, cannot be changed because water usage is only about 50% of WAE; and

(b) paying fixed costs sends wrong signals for water use efficiency.

Authority's Analysis

The Authority has, in Volume 1, analysed the tariff structure, and the efficiency implications of the tariff structure, to apply to SunWater's schemes.

In response to comments made during consultation, the Authority notes that under current legislative and contractual arrangements (and the Ministerial Direction), customers must bear all the costs of water supply incurred by SunWater, irrespective of whether it is made available or not (provided the costs of supply are efficient and prudent).

In response to stakeholders concerns regarding efficiency, it is noted that efficiency is promoted as:

(a) the volumetric charge is set to equal the anticipated costs of using an additional unit of water (the marginal cost), as this informs decisions by users. That is, the cost of supplying the additional unit of water is clear and customers can establish whether the benefit of using it exceeds its cost (PricewaterhouseCoopers (PwC), 2010a). Increasing the volumetric charge beyond its marginal cost will mean less water is used than available for consumptive purposes and farm output would be reduced;

(b) the tariff structure signals the full fixed costs of holding WAE and provides an incentive for customers to reduce their WAEs, if they currently hold more than is necessary. This incentive also applied to SunWater where it holds WAEs;

(c) in respect of setting tariffs to meet environmental objectives, the Authority notes that the institutional arrangements in Queensland administered by DERM establish the quantum, and allocation of water, between environmental and consumptive use. The Authority has

been required to establish prices to recover SunWater's efficient business costs – to seek to achieve other broader goals would require a clear specification of those goals to enable the Authority to respond with relevant pricing recommendations.

Setting prices of delivered water at its true cost will also allow irrigators to make appropriate decisions about the need for, and nature of, any further on-farm initiatives to improve water use efficiency (which will in turn ensure that total farm costs, including associated environmental costs, are minimised over the longer term). The water planning framework needs to take into account and adjust allocations for consumptive purposes if the broader effects of current allocations for consumption are considered inappropriate; and

(d) where a volumetric charge is relatively low (or zero) and, as a result, fixed costs are high, then there are incentives for customers to utilise all of an announced allocation. However, the appropriate degree of utilisation of capacity allocated for consumption can only be determined by irrigators (and other customers) in the light of market conditions for their products, in the knowledge of the cost of water delivered (including on-farm costs) and the understanding of the impact of changed water consumption on their farms.

Moreover, the Authority also recognises that tariff structures are only part of a mix of institutional arrangements in Queensland designed to direct water to its highest and best use from the overall community perspective. In addition to these institutional arrangements, normal commercial profit motives and water trading are relevant to ensuring water is directed to its highest and best use.

The volumes of temporary water traded for the Callide Valley WSS are identified in Table 3.1.

Table 3.1: Volume of Temporary Water Traded (ML)

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Temporary water traded	345	504	541	162	378	254	11	28

Source: SunWater Annual Reports (2003 - 2010g) and Queensland Valuation Services (2010).

3.2 Water Use Forecasts

Introduction

During the 2006-11 price paths, water use forecasts played an essential role in the determination of the tariff structure.

In the previous review, up to 19 years of historical data was collated for nominal WAE, announced allocations and volumes delivered. The final water usage forecasts were based on the long term average actual usage level. Where there was a clear trend away from the long term average, SunWater adjusted the forecast in the direction as that trend. Usage forecasts also took into account SunWater's assessment of future key impacts on water usage, such as changes in industry conditions, impact of trading and scheme specific issues (SunWater, 2006a).

For the Callide Valley WSS, SunWater (2006a) assumed a water usage forecast of 50% of the WAE in the system. Water usage for the high and medium priority irrigation WAE was not separately identified (SunWater, 2011g).

It was also noted that as the Callide Valley WSS is a Category 3 scheme and with the proposed increases in the Part A charge, changing the water use forecast would not significantly affect the tariffs in the next price path.

Stakeholder Submissions

SunWater

The available supply of water is determined by the announced allocations which are set according to rules contained in the Interim Resource Operations Licence (IROL).

SunWater (2011d) noted that demand forecasts are not relevant for price setting under SunWater's proposed tariff regime.

SunWater's usage forecasts for 2012-17 are made having regard to historic averages over an eight-year period and the usage forecast applied for the current price path. However, SunWater advised that usage of high priority and medium priority irrigation water cannot be separately identified, as holders of high priority WAE also hold medium priority WAE which passes through the same meter.

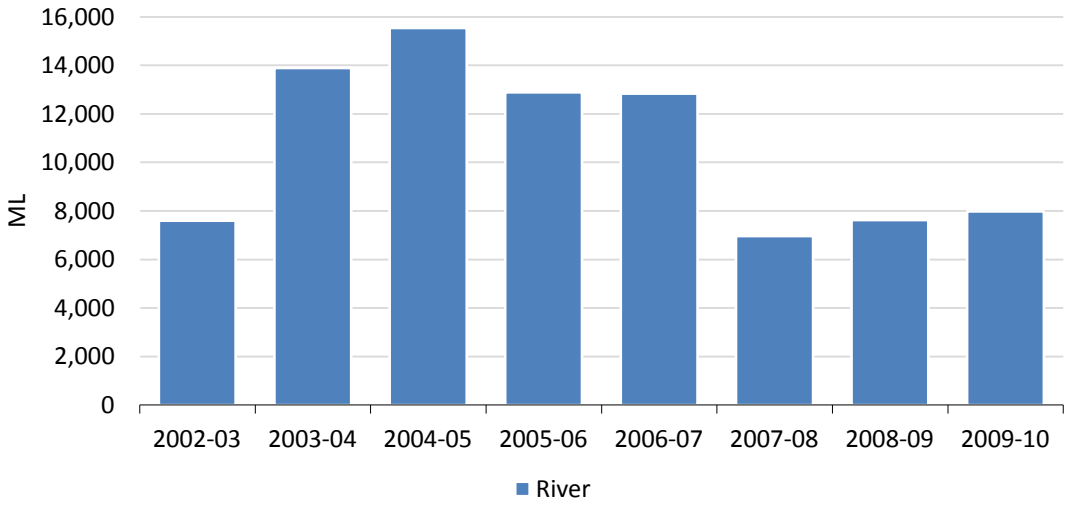
Based on the last eight years observations, SunWater forecast use as follows:

(a) at a whole scheme level (all sectors) – an average of 44% of total WAE (including SunWater's distribution loss WAE and its other WAE); and

(b) for the irrigation sector only – an average of 37% of irrigation WAE. This compares with the use assumption adopted in the 2005-06 price paths of 50% of WAE.

Figure 3.1 shows the historic usage information for the Callide Valley WSS submitted by SunWater (2011). The river category includes all irrigation and other usage sourced from the river.

Figure 3.1: Water Usage for the Callide Valley WSS



Source: SunWater (2011).

Other Stakeholders

During Round 2 consultation in April 2011, stakeholders submitted that:

(a) the year 2008 was a dry year, however, SunWater costs do not reflect this;

(b) diversion channels have not had much rain in the last three years, and surface water has poor reliability in the area because water is mostly groundwater; and

(c) SunWater's promise of water delivery does not always eventuate and irrigators pay regardless.

Authority's Analysis

As noted in Volume 1, the Authority does not consider that water use forecasts are relevant to establishing cost-reflective prices for SunWater.

Nonetheless, the Authority has considered past water use in calculating cost-reflective volumetric charges that recover variable costs (see Chapter 6 – Draft Prices).

Under the Direction, the Authority must recommend prices that maintain revenues in real terms where current prices are above the level required to recover prudent and efficient costs. For this purpose, the Authority has considered forecast irrigation water use (see Chapter 6 – Draft Prices)..

In respect of issues raised, the Authority notes:

(a) that a longer term average of water use may be a more relevant indicator than the eight-year average proposed by SunWater, particularly in schemes such as Callide Valley WSS which have highly variable water supply;

(b) the low reliability in the scheme; and

(c) that SunWater's ability to deliver depends on climatic and hydrological factors beyond its control. This risk is appropriately passed through to irrigators.

3.3 Tariff Groups

The amended Ministerial Direction specifically directs the Authority to adopt the tariff groups proposed in SunWater's NSPs.

The previous SunWater Irrigation Price Paths Final Report (SunWater, 2006b) nominated two tariff groups for the river segment of the Callide Valley WSS:

(a) Benefited Groundwater Area; and

(b) Surface Water.

SunWater proposed in its NSP that the current bulk tariff groups continue.

In accordance with the Ministerial Direction, the Authority will adopt the proposed tariff groups for this WSS.

3.4 Storage Rental Fees

Introduction

Storage rental (carry-over) fees are charged in the Callide Valley WSS. The original intent of these fees was to provide disincentives for irrigators to carry over water when they do not intend to use the water in the future as the collective amount of carry-over available is capped.

Previous Review

The previous review did not review storage rental fees but did require that the expected revenue from these fees be used as a revenue offset.

In 2010-11, the storage rental fee for the Callide Valley WSS was $5.73 per ML and the average annual revenue between 2005-06 and 2009-10 was $8,500. In 2011-12, the fee was rolled forward to $5.94 per ML.

Stakeholder Submissions

SunWater

For the three schemes (Callide Valley, Dawson Valley and Nogoa-Mackenzie), with storage rental fees, SunWater submitted that it assumed [if the proposed tariff structure reforms are adopted by the Authority] that storage rental fees would no longer apply. However, SunWater indicated that it is not opposed to a charge for storage rental should the Authority recommend the continuation of this approach. SunWater's (2011o) submission on storage rental fees and carry-over water is analysed in more detail in Volume 1.

Other Stakeholders

Cotton Australia/Queensland Farmers' Federation (QFF) (2011a) submitted that if SunWater charges for 100% of WAE regardless of use and thus removes all references to storage rental fees, the value of spending money on water use efficiency will be put into question.

Authority's Analysis

The Authority has, in Volume 1, proposed to accept SunWater's proposal to cease charging storage rental fees.

In response to Cotton Australia/QFF, the Authority considers that a cost-reflective tariff structure with high fixed costs will signal the costs of holding a WAE and provides sufficient incentive to minimise the carry-over of water. The cost of delivering carry-over water will be met by the Part B variable tariff for bulk water.

Essentially, therefore, there will be no revenues from this source to be taken into account.

4. RENEWALS ANNUITY

4.1 Introduction

Ministerial Direction

Under the Ministerial Direction, the Authority is required to recommend a revenue stream that allows SunWater to recover prudent and efficient expenditure on the renewal and rehabilitation of existing assets through a renewals annuity.

The Ministerial Direction also requires the Authority to have regard to the level of service provided by SunWater to its customers.

Previous Review

In 2000-06 and 2006-11, a renewals annuity approach was used to fund asset replacement for SunWater WSSs.

As discussed in Volume 1, the renewals annuity for each WSS was developed in accordance with the Standing Committee for Agriculture and Resource Management (SCARM) Guidelines (Ernst & Young, 1997) and was based on two key components:

(a) a detailed asset management plan, based on asset condition, that defined the timing and magnitude of renewals expenditure; and

(b) an asset restoration reserve (ARR) to manage the balance of the unspent (or overspent) renewals annuity (including interest).

The determination of the renewals annuity was then based on the present value of the proposed renewals expenditure minus the ARR balance.

The allocation of the renewals annuity between high and medium priority users was based on water pricing conversion factors (WPCFs). Separate ARR balances were not identified for bulk and distribution systems.

Issues

In general, a renewals annuity seeks to provide funds to meet renewals expenditure necessary to maintain the service capacity of infrastructure assets through a series of even charges. SunWater's renewals expenditure and ARR balances include direct, indirect and overhead costs (unless otherwise specified).

The key issues for consideration for the 2012-17 regulatory period are:

(a) the establishment of the opening ARR balance (at 1 July 2012), which requires:

  (i) whether renewals expenditure in 2007-11 was prudent and efficient. This affects the opening ARR balance for the 2012-17 regulatory period;

  (ii) the unbundling of the opening ARR balance for bulk and distribution systems (where applicable);

  (iii) the extension of the opening ARR balance (calculated for 1 July 2011) to 1 July 2012 to account for the adjusted timelines specified in the amended Ministerial Direction;

(b) the prudency and efficiency of SunWater's forecast renewals expenditure;

(c) the methodology for apportioning bulk and distribution renewals between medium and high priority WAEs; and

(d) the methodology to calculate the renewals annuity.

The Authority's general approach to addressing these issues is outlined in Volume 1.

The Authority notes that SunWater has estimated that it has under management about 50,000 assets relevant to irrigators and, given this number of assets, has developed an asset planning methodology designed to cost-effectively identify assets requiring renewal or refurbishment.

Some of the assets were renewed during the 2006-11 price paths. Others are eligible for renewal over the 2012-17 regulatory period. Depending on their asset life, some are renewed several times during the Authority's recommended 20-year planning period.

It was therefore not practicable within the timeframe for the review, nor desirable given the potential costs, to assess the prudency and efficiency of every individual asset.

The Authority initially relied on its four principal scheme consultants: Arup, Aurecon, GHD and Halcrow to identify and comment upon SunWater's renewals expenditure items. However, the Authority's four consultants expressed concerns about the lack of timely information relating to the past and proposed expenditures at the time of their reviews.

Subsequently, the Authority liaised directly with SunWater to obtain further information, and commissioned Sinclair Knight Merz (SKM) to address material expenditure items (that is, those renewals items which represented more than 5% of the present value of forecast expenditure) and/or those of particular concern (usually in response to customers' submissions). Across all schemes, a total of 36 past and forecast renewals items were reviewed by SKM.

The Authority's assessment of the prudency and efficiency of proposed renewals expenditures therefore draws upon the contributions of all of these sources as detailed below.

4.2 SunWater's Opening ARR Balance (1 July 2006)

The 2006-11 price paths were based on the opening ARR balance at 1 July 2006.

SunWater submitted that the opening balance for the Callide Valley WSS was negative $393,000.

The Authority has accepted SunWater's opening ARR balance for Callide Valley WSS of negative $393,000.

In Volume 1 the Authority noted that the opening ARR balance at 1 July 2006 is not subject to review for the 2012-17 regulatory period.

4.3 Past Renewals Expenditure

As noted in Volume 1, the Authority has reviewed the prudency and efficiency of selected renewals expenditures over the 2006-11 price paths. The Authority has also sought to compare the original expenditure forecasts underlying the 2006-11 price path with actual expenditure, to establish the accuracy of SunWater's forecasts.

Submissions

SunWater

SunWater (2011) submitted actual renewals expenditure for the Callide Valley WSS for 2006-11 (Table 4.1) in real terms as at 2010-11. This expenditure included indirect and overhead costs which are subject to a separate review by the Authority (see Chapter 5 – Operating Costs). SunWater advised that it was unable to provide the forecast renewals expenditure (approved for the 2005-06 review) for this period.

These estimates reflect SunWater's most recent information (including that received by the Authority in September 2011 relating to renewals expenditure) and differ from SunWater's NSP.

Table 4.1: Past Renewals Expenditure 2006-11 (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Past Renewals Expenditure	51	56	96	186	127

Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011. Source: SunWater (2011an).

Other Stakeholders

During Round 2 consultation in April 2011, stakeholders stated that:

(a) they wanted to understand the background regarding the 2007-08 renewals expenditure; and

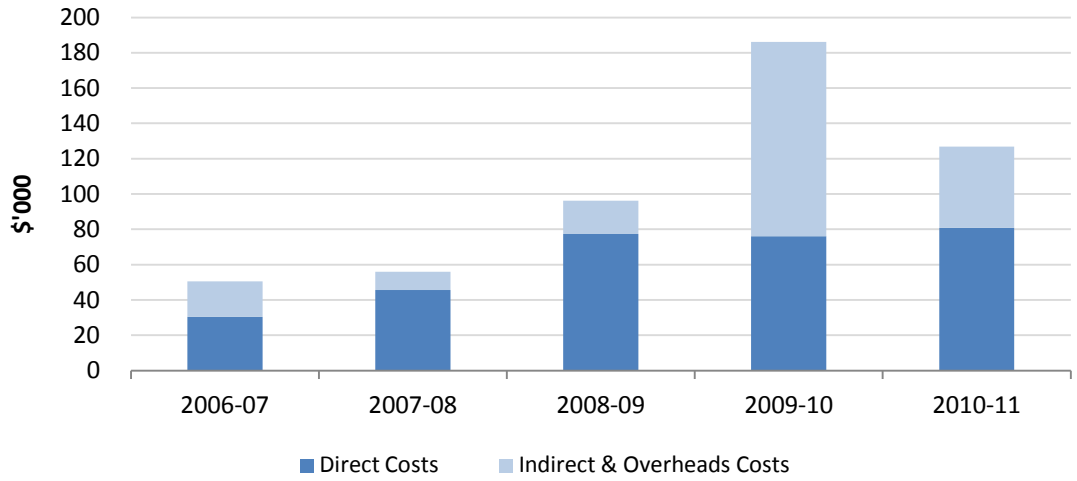
(b) smaller schemes are not necessarily efficient because they have lower costs.

Authority's Analysis

Total Renewals Expenditure

The total renewals expenditure over 2006-11 is detailed in Figure 4.1 below. Indirect and overhead costs are addressed in the following chapter.

Figure 4.1: Past (Actual) Renewals Expenditure 2006-11 (Real $'000)



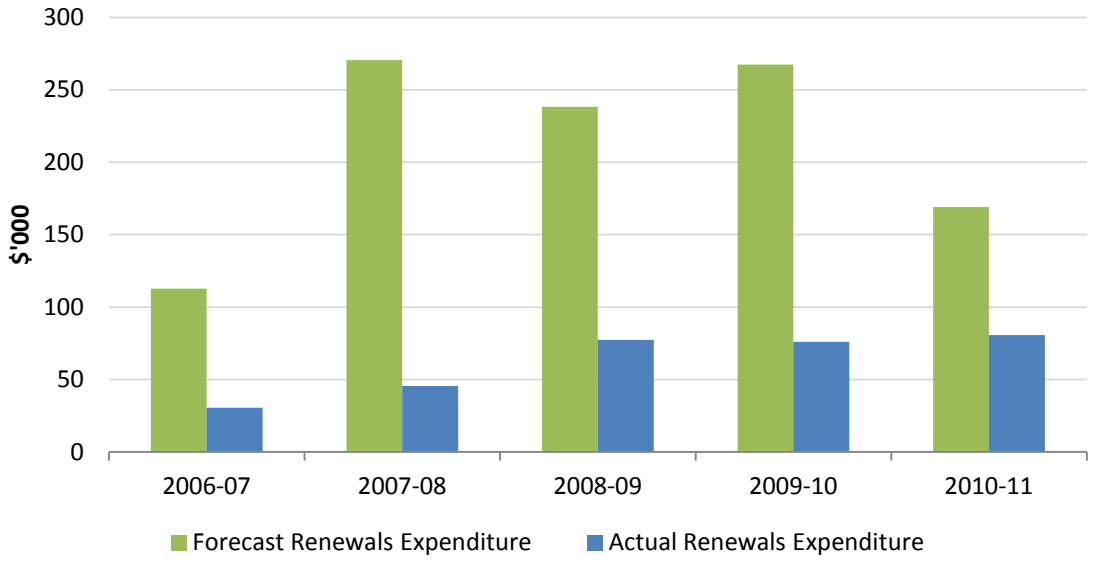
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011. Source: SunWater (2011an).

Comparison of Forecast and Actual Costs

The Authority was able to source details of forecast direct renewals expenditure from Indec, who undertook the analysis for the 2005-06 review.

A comparison of forecast and actual renewals expenditure in the Callide Valley WSS for 2006-11 is shown in Figure 4.2.

Figure 4.2: Direct Renewals Expenditure 2006-11 (Real $'000)



Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011. Source: SunWater (2011an).

Actual renewals expenditure was $747,776 (direct costs) below that forecast over the period.

Notwithstanding this, the Authority notes that there was unplanned expenditure with respect to the:

(a) Intersafe Program costing $51,100 (nominal total cost, including non-direct) in 2010-11; and

(b) Public Safety Strategy (Fencing) for the Callide Diversion Channel costing $59,139 (nominal total cost, including non-direct) in 2008-09.

Halcrow was appointed to review the efficiency (and prudency where not previously approved) of past renewals items.

In March 2011, Halcrow undertook a site visit to the Callide Valley WSS to gain an understanding of the scheme and its key components; the operations and maintenance activities undertaken in the scheme; and the proposed and completed renewals projects.

In the absence of forecast renewals expenditure for 2006-11 from SunWater (at the time of Halcrow's review), Halcrow sought to identify variances between SunWater's annually budgeted and actual expenditure for certain items. Based on available information, Halcrow was able to conclude that the sample of items selected for review was prudent and efficient on the basis of their professional judgement. Table 4.2 refers.

Table 4.2: Past Renewals Expenditure – Selected Items

Item	*Cost*	*Year*	*Halcrow's Comment/Assessment*
Callide Gauging Stations – Install Air Compressors	$12,300	2007-08	Required for operation of gauging stations; expenditure deemed prudent. Units installed at 3No sites; expenditure deemed efficient.
Callide Dam Inlet Tower – Install Fall Arrest System to Ladder	$22,300	2007-08	Fall arrest system required on steep ladder for occupational health and safety (OHS) compliance; expenditure deemed prudent. Expenditure deemed efficient, particularly given that access gained and work undertaken over water.
Replace Hoist Ropes – Callide Inlet Tower	$29,400	2009-10	Hoist ropes used to raise and lower trash racks and bulkheads on the inlet tower had reached the end of their useful life (in compliance with safety requirements); expenditure deemed prudent. Expenditure deemed efficient, particularly given that access gained and work undertaken over water.
Undertake Comprehensive Risk Assessment – Kroombit Dam	$52,000	2009-10	Dam risk assessment undertaken in accordance with statutory compliance requirements; expenditure deemed prudent. Expenditure consistent with other reviews (for size and complexity of installation); expenditure deemed efficient.
Replace Switchboard – Main Switch House – Callide Dam	$92,700	2010-11	Existing switchboard of 1970s vintage; in view of asset life and technology changes; proposed expenditure deemed prudent. Significant switchboard; expenditure deemed efficient.

Note: Costs include indirect and overhead costs. Source: Halcrow (2011).

Further, Halcrow and SKM made some general comments about the Intersafe program and Public Safety Strategy (Fencing Policy), which are provided below.

Item 1: Intersafe

SunWater

SunWater indicated that this item was not included in the 2006-11 price paths. However, the SunWater Board decided to undertake the work following a report from Intersafe Group Pty Ltd recommending that SunWater take action to reduce the safety risk to staff.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow (2011) supported SunWater's submission (above) that the SunWater Board approved the work to reduce the safety risk to staff.

As noted in Volume 1, the Authority has accepted Halcrow's (2011) findings on the overall Intersafe Program (actual expenditure of $13.6 million) which found that:

(a) the expenditure was prudent on the basis that SunWater has a legal obligation to ensure the workplace health and safety (WHS) of its employees;

(b) costs represent market rates as SunWater sought competitive tenders and used contractors to deliver the program; and

(c) the program was completed on time and within budget.

Similarly, SKM (2011) concluded that:

(a) SunWater's procedures were robust and, by developing standard infrastructure, implementation costs will have been reduced through economies of scale;

(b) given the nature of the works, it was appropriate for SunWater to develop a program of works to implement the identified solutions as swiftly as reasonably possible; and

(c) the costs incurred by SunWater in implementing the works have been subjected to competitive forces and hence can be considered as market costs.

Authority's Analysis

The Authority accepts the recommendation of its consultants that expenditure on Intersafe was both prudent and efficient.

Item 2: Public Safety Strategy (Fencing Policy)

SunWater

SunWater indicated that the Fencing as per Policy – Callide Diversion Channel had a revised budget of $66,308 with works (with an actual cost of $59,139, nominal, total including indirect costs) occurring in 2008-09. SunWater indicated that this item was also not included in the 2006-11 price paths.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow has not undertaken a detailed review of this item and is therefore unable to provide constructive assessment as to its efficiency and prudency. However, Halcrow reports that, on the basis of the item's description, it is generally of a nature and order of cost that would be expected for irrigation system infrastructure.

Authority's Analysis

SunWater has advised that compliance with the *Workplace Health and Safety Act 1995* (the WHS Act) is the driver of the Public Safety Strategy.

SunWater's Public Safety Strategy is an organisational commitment aimed at reducing the risk of injury or damages to people (or property) that access or use land controlled by SunWater and its water supply infrastructure and assets.

The Public Safety Strategy has a framework that is comprised of policies and standards that includes: the Hazard Warning Signing Manual, the Storage Marker Buoy Policy, the Flooding and Inundation of Public Roads Standard and the Fencing Policy.

As outlined in Volume 1, SunWater clarified that all channel fencing aimed at protecting the public is part of SunWater's separate Public Safety Strategy (and not the Intersafe Project). Further, SunWater indicated that this policy will be fully implemented by 30 June 2012 with higher risk sites prioritised (e.g. channel systems adjoining residential properties).

The Authority notes that SunWater's fencing policy document specifies that the *Dividing Fences Act 1953* requires both parties to contribute an equal share towards fencing costs. It is unclear from the information that SunWater has provided whether the renewals expenditure included a 50% land holder contribution.

Therefore, although Halcrow concluded that costs associated with the Public Safety Strategy are generally in order, the Authority recommends that 50% of fencing costs be removed from the calculation of the renewals annuity, pending SunWater confirming the basis of its forecast fencing estimates.

Conclusion

In summary, seven items for the Callide Valley WSS were sampled. On the basis of the consultant's review of available information, the Authority considers that:

(a) six items are prudent and efficient and have been retained as past expenditure; and

(b) one item is prudent but not efficient, requiring adjustment to past expenditure.

Further, as noted in Volume 1, after a consideration of all its consultants' reviews, the Authority has recommended that a 10% saving be applied to all non-sampled and sampled items for which there was insufficient information.

In total, the Authority recommends the expenditure be adjusted as summarised in Table 4.3.

Table 4.3: Review of Selected Past (Direct and Indirect) Renewals Expenditure 2006-11

	Item	*Date*	*SunWater ($'000)*	*Authority's Findings*	*Recommended ($'000)*
Sampled Items					
1.	Callide Gauging Stations – Install Air Compressors	2007-08	12	Prudent and efficient	12
2.	Callide Dam Inlet Tower – Install Fall Arrest System to Ladder	2007-08	22	Prudent and efficient	22
3.	Replace Hoist Ropes – Callide Inlet Tower	2009-10	29	Prudent and efficient	29
4.	Undertake Comprehensive Risk Assessment – Kroombit Dam	2009-10	52	Prudent and efficient	52
5.	Replace Switchboard – Main Switch House and Callide Dam	2010-11	92	Prudent and efficient	92
6.	Intersafe	2010-11	51	Prudent and efficient	51
7.	Public Safety Strategy (Fencing Policy)	2008-09	59	Prudent but not efficient	30
Non-Sampled Items					10% saving applied

Source: SunWater (2011), Halcrow (2011) and SKM (2011).

4.4 Opening ARR Balance (at 1 July 2012)

Submissions

SunWater

SunWater indicated that the renewals opening ARR balance as at 1 July 2011 was negative $434,000 for the Callide Valley WSS. This estimate reflects the most recent information provided by SunWater to the Authority in September 2011 and may differ from the NSP.

Other Stakeholders

During Round 2 consultation in April 2011, stakeholders requested an explanation as to why the scheme is in negative balance and for how long this has been the case.

Authority Analysis

Based on the Authority's assessment of the prudency and efficiency of past renewals expenditure, the recommended opening ARR balance for 1 July 2011 for Callide Valley WSS is negative $368,000.

The Authority calculated the opening ARR balance at 1 July 2011 by:

(a) adopting the opening balance as at 1 July 2006;

(b) adding 2006-11 renewals annuity revenue;

(c) subtracting 2006-11 renewals expenditure; and

(d) adjusting interest over the period consistent with the Authority's recommendations detailed in Volume 1.

To establish the closing ARR balance as at 30 June 2012 of negative $203,000, the Authority:

(a) added forecast 2011-12 renewals annuity revenue;

(b) subtracted forecast 2011-12 renewals expenditure; and

(c) adjusted for interest over the year.

The closing ARR balance for 30 June 2012 is the opening ARR balance for 1 July 2012.

4.5 Forecast Renewals Expenditure

Planning Methodology

The Authority has reviewed SunWater's Asset Management Planning Methodology in Volume 1 and recommended improvements to its current approach, including:

(a) high-level options analysis for all material renewals expenditures expected to occur over the Authority's recommended planning period (20 years), with a material renewals expenditure being defined as one which accounts for 10% or more in present value terms of total forecast renewals expenditure; and

(b) detailed options analysis (which also take into account trade-offs and impacts on operational expenditures) for all material renewals expenditures expected to occur within the first five years of each planning period.

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's proposed renewals expenditure for the Callide Valley WSS is presented in Table 4.4 as provided in its NSP (submitted prior to the Government's announced interim prices for 2011-12).

Table 4.4: Forecast Renewals Expenditure 2012-16 (Real $'000)

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Callide Creek Weir	-	12	-	-	-
Callide Dam	26	291	124	376	409
Callide Diversion Channel	54	-	-	-	-
Kroombit Dam	27	12	18	67	25
Service Contract	82	-	-	-	-
Total	**189**	**316**	**142**	**444**	**434**

Note: includes indirect and overhead costs. Source: SunWater (2011).

The major items incorporated in the above estimates are:

(a) Callide Dam – replacement of switchboards at an estimated cost of $186,000 in 2012-13;

(b) Callide Dam – five year comprehensive inspection at an estimated cost of $25,000 in 2015-16. The five year inspection is required by law;

(c) Callide Dam – replacement of inlet screens at an estimated cost of $134,000 in 2014-15. Condition assessment identified that these inlet screen require replacement; and

(d) Callide Dam – replacement of standby diesel alternator at an estimated cost of $275,000 in 2015-16. The standby generator requires replacement due to its age and condition.

The major expenditure items from 2016-17 are:

(a) refurbishment of electrical installation at Callide Dam at an estimated cost of $942,000 in 2016-17; and

(b) refurbishment of 1200mm outlet pipes at Callide Dam at an estimated cost of $720,000 in 2025-26.

SunWater's forecast renewal expenditure items greater than $10,000 in value, for the years 2011-12 to 2035-36 in 2010-11 dollar terms are provided in **Appendix A**.

Other Stakeholders

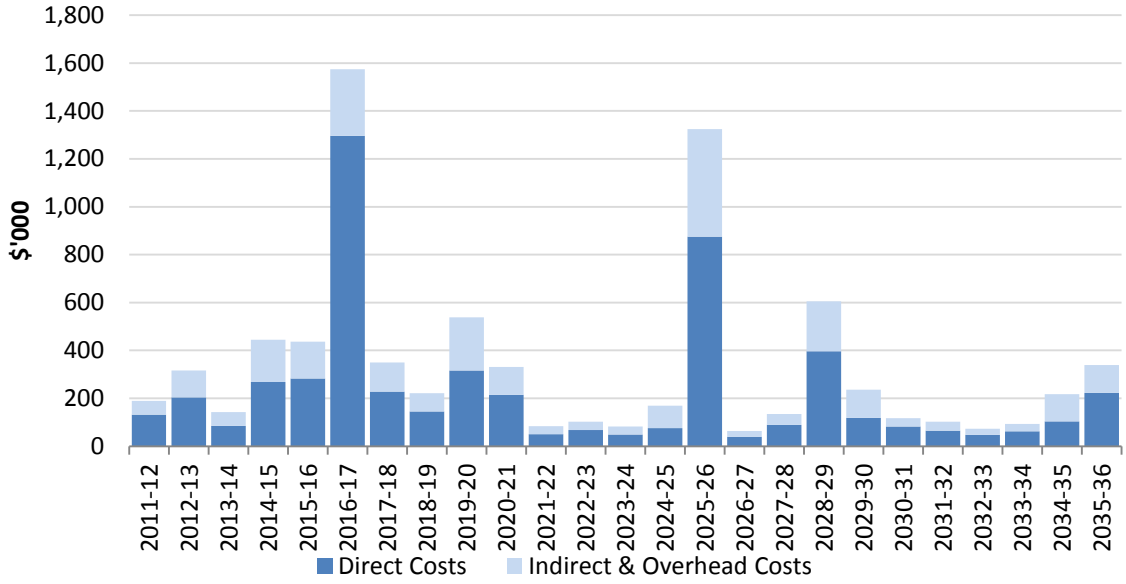
No other stakeholders have commented on this matter.

Authority's Analysis

Total Costs

SunWater's proposed renewals expenditure for 2011-36 for the Callide Valley WSS is shown in Figure 4.3. This reflects the most recent renewals information provided by SunWater to the Authority in September 2011, and differs from the NSP. The Authority has identified the direct cost component of this expenditure, which is review below. The indirect and overheads component of expenditure relating to these items are reviewed in Chapter 5 – Operating Costs.

Figure 4.3: Forecast Renewals Expenditure 2011-36 (Real $'000)



Source: SunWater (2011am).

Item Review

Halcrow reviewed the prudency and efficiency for a sample of items. The Authority also requested that SKM review an additional item.

Each of the assessed future renewals items are discussed below.

Item 1: Callide Dam – LBC/1 Replace Switchboard – Building Services Electrical Services Building

SunWater

This item involves the replacement of an existing switchboard in the electrical services building which is the primary electrical control facility at the Dam. The item is forecasted to occur in 2012-13 at a cost of $62,000 ($39,000 direct).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow stated that during the site visits it was noted that the switchboards were typically of 1970s vintage. In view of the asset life and technology changes, Halcrow concluded that the proposed expenditure is prudent.

Further, whilst the scope of work was not definitive, and Systems, Applications and Products (SAP) extracts were not provided for this item, Halcrow considered that the proposed expenditure is appropriate for a relatively basic switchboard.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent and efficient.

Item 2: Callide Dam – LBC/2 14CVA – Refurbish Spillway Gate 1

SunWater

This item is one of six items to be undertaken on the six spillway gates of Callide Dam. This minor refurbishment work is scheduled to be undertaken in 2013-14 at a cost of $12,000 ($9,000 direct), with an equivalent allowance for all six spillway radial gates.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow stated that the condition of the gates was assessed as good, with only some minor issues, during the Five Yearly Dam Safety Inspection in 2010.

The expenditure forecast allows for the work to be repeated for Gate 1 in 2032 and Gates 2-6 in 2033-34. Halcrow stated that while the reason for this timing discrepancy was not apparent, the SAP extract provided by SunWater indicated that this activity was scheduled to recur every 18 years and that the next minor refurbishment was required in 2031-32 (as proposed for Gate 1).

Halcrow considered that the cost allowance of $9,000 (direct) allowed for relatively minor refurbishment work (e.g. minor patching work to gate coating, bearing inspection/renewal, replacement of a section of seal or similar).

On the basis of the available information, Halcrow concluded that the expenditure is both prudent and efficient.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent and efficient.

Item 3: Callide Dam - LBC/3 10CVA01 – Undertake 5yr Dam Safety Callide

SunWater

SunWater stated that this item was scheduled for 2014-15 and then at five-yearly intervals. This work is required for statutory compliance purposes, in relation to Dam Safety. In 2014-15 the item is forecast to cost $91,000 ($36,000 direct).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow considered that the expenditure is prudent, as SunWater is required by law to undertake the five-yearly safety inspection of Callide Dam.

Halcrow noted that while the total cost including indirect and overhead costs varies in future years ($88,000 in 2019-20, $86,000 in 2024-25, $86,000 in 2029-30 and $87,000 in 2034-35), the direct cost remains consistent.

Halcrow considered that in the absence of a breakdown of the historical costs and given the consistent nature of these programmed reviews, it is assumed that the direct cost has remained consistent in real terms and is deemed to be efficient.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent and efficient.

Item 4: Callide Dam - LBC/4 12CVA-Replace Inlet Screens

SunWater

SunWater stated that the replacement of the inlet screens (trash racks) is proposed to be undertaken in 2014-15 at an estimated total replacement cost of $134,000 ($107,000 direct).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that this work was initially scheduled for 2011-12, but was deferred on the basis of condition assessment undertaken by divers. Halcrow stated that while the trash racks were submerged at the time of inspection and were not visible to enable any assessment of size or condition, it was understood from interviews with SunWater Asset Planning staff that the trash racks comprise 10 or 12 panels of approximate dimensions 5 metres by 3 metres.

Halcrow noted that at an estimated total replacement cost of $134,000 ($107,000 direct), this equates to approximately $10,000 per screen.

On this basis, Halcrow considered the proposed expenditure is both prudent and efficient.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent and efficient.

Item 5: Callide Dam - LBC/5 Replace Ladders, Platforms, Handrails and Safety

SunWater

This activity involves the replacement of access and safety equipment/facilities on structures at Callide Dam in 2014-15 at a cost of $88,000 ($56,000 direct).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Operators indicated that replacement of ladders, platforms and handrails on the inlet tower is required. However, a review of historical expenditure by Halcrow revealed that this work was initially scheduled to be undertaken in 2008-09, with completion deferred to 2010-11.

Halcrow noted that while the maintenance of ladders, platforms and handrails can generally be considered prudent on the basis that they are required to maintain safe work environments, details of the actual location and scope of the proposed works had not been provided by SunWater for review. Therefore, Halcrow stated the expenditure cannot be considered to be prudent or efficient due to the lack of supporting information.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is not prudent or efficient due to the lack of supporting information and has excluded this item amount from the calculation of the future renewals annuity.

Item 6: Callide Dam - LBC/6 Replace Standby Diesel Alternator

SunWater

SunWater stated that this activity provides for the replacement of the Standby Diesel Alternator at Callide Dam. The item is proposed to occur in 2015-16 at a cost of $275,000 ($178,000 direct cost).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that based on the SAP extract provided by SunWater, an asset life of 40 years had been assigned to the alternator, with an estimated replacement date of 2027-28. During interviews, SunWater Asset Planning staff indicated that the alternator was assessed as being in good condition during the Five Yearly Dam Safety Inspection undertaken in 2010. Therefore, Halcrow stated that it was not apparent why this item has been scheduled for replacement in 2015-16.

Halcrow noted that the proposed expenditure was based on the 2007-08 Bill of Materials (BOM). The indicative cost for replacement of the unit was in the order of $100,000-$120,000, although this excluded an allowance for SunWater staff inputs. A review of the cost breakdown provided by SunWater revealed that contractor, material and plant direct costs appeared reasonable. However, given that the equipment was apparently to be supplied and installed under contract, the allowance for SunWater labour appeared excessive. Halcrow stated that a total direct cost in the order of $150,000 is considered appropriate.

Therefore, Halcrow recommended that an allowance of $150,000 (direct) be provided for the replacement of the alternator in 2027-28, i.e. the proposed expenditure should be reduced and deferred.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent but, but should be deferred to 2027-28, that the efficient directs costs is $150,000.

Item 7: Callide Dam – LBC/7 Refurbish Electrical Installation

SunWater

This work is scheduled to be undertaken in 2016-17 at a cost of $942,000 ($882,000 direct).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow observed that SunWater Operations staff were unsure of the nature of this work. However, reference SAP extracts provided by SunWater indicated that it involved the

replacement of power supply cabling and cableways. Halcrow also noted that the extent of the work was not apparent from the information available.

A review of the SAP extracts indicated that based on average asset lives and date of installation, replacement of the cabling was originally scheduled for 2000, whilst the replacement of cableways and pits was scheduled for 2044-45 (assumed asset lives of 35 years and 80 years respectively). A condition assessment undertaken in 2004-05 assigned a remaining life of 10 years for both asset components. A further condition assessment is now scheduled for 2015-16, with full replacement currently scheduled for 2016-17.

Halcrow considered that given that refurbishment (replacement) had been planned on the basis of SunWater's adopted asset lives and that a further condition assessment is to be undertaken prior to implementation, the proposed expenditure is considered prudent.

However, Halcrow considered that there was insufficient information available to assess whether the expenditure is efficient.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent. However, there was insufficient information provided for Halcrow to determine the efficiency of the item. The Authority has applied a 10% saving to sampled items for which there was insufficient information.

Item 8: Callide Dam - LBC/8 Refurbishment DN1200 Outlet Pipe (Left Hand Side)

SunWater

The Callide Dam outlet comprises two outlet pipes in a dry tunnel, one of which is used to service the irrigation area. Refurbishment of the pipelines is scheduled to be undertaken in 2025-26 at a cost of $733,000 ($485,000 direct).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that the adopted asset life is at variance to the recommendations presented in SunWater's SAP Guideline Document, which identified estimated asset lives of 80 years for Mild Steel Cement Lined pipe and 50 years for Mild Steel Unlined pipe.

Halcrow stated that adopted asset life for mild steel cement lined pipe is more typically in the order of 100-120 years, except when in highly aggressive environments and the later is not considered applicable for the asset being considered. Within the planned timeframe, Halcrow expected recoating of the external surfaces of the pipework and (potentially) repair of the internal cement lining may be required. This would be expected to cost in the order of 25-30% of the cost of replacing the pipework.

Further, Halcrow noted that at an approximate length of 300 metres for the two pipes, the proposed expenditure amounts to a cost of approximately $1,600 (direct cost) per metre for refurbishment works. The cost of new DN1200 pipeline installation would be in the order of $4,000-$5,000 per metre (in total). Therefore, the proposed expenditure is at the upper bound of the cost expected for refurbishment works. The relatively high SunWater labour component identified in SunWater's cost breakdown is expected to relate to the need to manage supply during execution of the works.

Halcrow considered that SunWater's planning processes will involve condition assessment prior to proceeding with the scheduled work and on that basis Halcrow considered that the proposed expenditure is both prudent and efficient.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent and efficient.

Item 9: Callide Dam - LBC/9 Major Refurbishment – Spillway Gates

SunWater

This activity is scheduled to occur in 2028-29 at a total cost of $562,000 ($368,000 direct) for all six spillway radial gates. This correlates to expenditure in the order of approximately $60,000 (direct) for each gate.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

The SAP extract provided by SunWater indicated that this activity is scheduled to recur every 18 years, which is the same frequency at which minor refurbishment of the gates is scheduled to occur.

Halcrow questioned the relative timing of minor and major refurbishments of the spillway gates. Halcrow also noted that under the current proposal, there is a planned 15-year period between minor and major refurbishment, with only a further three years (nominal) until the next minor refurbishment. Further, Halcrow considered that normally minor refurbishment should be undertaken at intervals of 5-10 years and major refurbishment at intervals of 15-20 years.

Halcrow stated that the inspection of the gates revealed that the provision of access to enable the work to be undertaken would attract significant costs, as access will need to be via the spillway and extensive scaffolding (or similar equipment) will also be required.

Halcrow considered the proposed expenditure for major refurbishment of the spillway gates is both prudent and efficient. However, Halcrow noted that further consideration should be given to the proposed relative timing of both minor and major refurbishments.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent and efficient (as the proposed timing falls within the appropriate interval nominated by Halcrow).

Item 10: Callide Diversion Channel LBC/10 Refurbish Channel Earthworks

SunWater

This activity involves minor refurbishment such as profiling of the channel earthworks and refurbishment/grading of the channel berm roads. The item is scheduled for 2011-12 and expected to cost $42,000 ($37,000 direct).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that whilst the channel has been operated only three times during the last 30 years, there would have been some erosion and/or collapse of the channel formation due to the impacts of weather and (potentially) wildlife. Halcrow also noted that some corrective maintenance was carried out in early 2011 to repair damage caused by overland flows.

Halcrow stated that based on the contracted element of the cost and assuming that the works would be undertaken using a tracked excavator or similar equipment, the estimated cost would allow for some 20 days of plant operation. This equated to refurbishment of approximately one kilometre of channel per day, which Halcrow considered was reasonable.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent and efficient.

Item 11: Service Contract - LBC/11 Assessment of Height Safety Risks

SunWater

This activity will involve the assessment of height safety risks across the whole of the Callide Valley Scheme. The item is scheduled for 2011-12 and expected to cost $82,000 ($53,000 direct).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted the SAP extracts provided by SunWater revealed that the expenditure was required to address the risk of falls from vertical ladders. Halcrow considered this expenditure to be prudent, given it was required to comply with OHS requirements.

Halcrow also noted that the expenditure of $22,300 (including indirect and overhead costs) was incurred to install a fall arrest system to a ladder on the Callide Dam Inlet Tower in 2007-08. On this basis, Halcrow considered that the allowance of $82,000 ($53,000 direct) would provide for three or four additional installations. Based on Halcrow's observations made during the site visit, it considered that there was potential for at least this number of installations at Callide and Kroombit Dams.

Halcrow considered this expenditure to be both prudent and efficient.

Authority's Analysis

The Authority accepts Halcrow's recommendation that the item is prudent and efficient.

Item 12: Callide Dam – Replace Cables and Cableways

SunWater

This renewals item relates to the replacement of cables and cableways at Callide Dam. SunWater submitted that the asset has been in operation since 1965 and was installed as part of the original construction works of the dam. Further, SunWater submitted an annuity item value of $871,000 for replacement of the existing cable in 2016-17.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

SKM noted that in SunWater's report (Table 1), a value of $862,600 is stated, however this is not the value captured in the SAP Works Management System (WMS), nor in the submission to the Authority.

Available Information

In particular, SKM have drawn on the following annuity item specific replacement/refurbishment report produced by SunWater for this review:

Table 4.5: Documentation Reviewed Specific to Callide Dam Cableways

Document No.	*Document Name*	*Document Title*	*Date*
1110067	1110067 34 QCA Justification paper H19 – Callide Dam Cable and Cableways	CVA-CDAM-ELEC-CBLE Replace Cables and Cableways - $862,600	5th September 2011

Source: SunWater (2011) and SKM (2011).

Prudency Review

SunWater has advised that this item is classified as cables and cableways - a high level object type that is no longer in use and to which asset lives are not attributed. The asset details are held in SAP-WMS at a lower level in the hierarchy and the object types at the lower levels include power pole and Low Voltage (LV) underground cable.

SKM noted that in SunWater's Whole of Life Maintenance Planning Tool (Master), SunWater has allocated a standard run to failure asset life of 35 years and a maximum condition assessment frequency of every five years. SKM considered the standard run to failure asset life to be towards the low end of what may be expected for underground LV cable. Currently, in Australia, electrical distribution network services providers are allocating undergrounded XLPE (cross linked polyethylene) low voltage cable a run to failure asset life of 60 years. However, as this cable was installed in 1965, the insulation may not be XLPE and hence SKM considered it would be appropriate to assume a 45-year life. SKM considered the condition assessment frequency of every five years applied to this asset type to be reasonable.

SunWater has applied its risk evaluation method to this asset and, during the most recent risk assessment in 2005, determined that it has production/risk and Stakeholder Relations criteria consequence ratings of Major (score 40). This, together with a probability (likelihood of occurrence) score of 3 results in an overall risk score of 120 which, under SunWater's risk assessment method, places this asset in a Low risk category. Under SunWater's asset life adjustment policies, where an asset scores a Low or Medium risk and where the worst business criterion consequence score is greater than 8 (i.e. a Major consequence or above), SunWater reduces the run to failure asset life to a risk adjusted run to failure life of 88% of the asset type standard run to failure life, in this case 31 years.

The next stage of SunWater's method for determining asset replacement/refurbishment timing is by means of adjusting the risk adjusted run to failure asset life according to the variance of the

condition score of the asset, at the time the last condition assessment was undertaken, with the condition that the standard asset condition decay curve predicts at that time.

The last condition assessment was undertaken in 2005 and SunWater advises that the condition assessment was *"incomplete but noted that the cabling needed to be assessed."* The condition score allocated in 2005 was a 2 (Minor defects only).

Inputting a condition score of 2, a standard run to failure life of 35 years, a medium business risk rating (to take account of the consequence score of greater than 8) and in operation date of 1965 into SunWater's condition based replacement life adjustment modelling tool yields a recommended condition based replacement date of 2179-80. It would be unrealistic to plan a replacement in 2179-80 and it is concluded that the modelling tool becomes unreliable for low condition scores, which SunWater acknowledges.

However, even if a 45 year operating life is adopted, risk adjusted down to 40 years, the asset should have been replaced by 2004-05 (by 1996 on a 31-year life). Given the major consequence for in service failure, it would appear to SKM that replacement of the cable is something that should be addressed promptly.

SKM noted, however, that SunWater has advised that at the time of the 2005 field condition assessment, the assessor, an experienced engineer, estimated that the asset had a remaining life of approximately 10 years.

SKM assumed that this was a visual assessment given that the condition score was applied to cabling (which has assessment criteria of colour/brittleness/cracking/fraying). Given the consequence of failure score, SKM considered that it would be more appropriate to assess the cables condition on electrical tests such as insulation breakdown testing, earth impedance testing etc.

Given that the asset is beyond its nominal life and that the cable condition assessment was only just within the allowed frequency of every five years when the NSPs were developed, it is not clear to SKM why SunWater has departed from its standard risk policy and planned for replacement in 2016-17 rather than earlier. SKM recommended that, if it were possible, an earlier replacement date than the 2016-17 date planned is appropriate and in keeping with good industry practice.

Efficiency Evaluation

For assets that are planned to be replaced five years or more hence of the planning date, SunWater uses a valuation method based on a BOM for the asset. The BOM has been developed from as built drawings and a 1996-97 value (determined from a 1997 valuation) attached to each item making up the BOM based on a 1996-97 valuation. The 1996-97 value for each line is then escalated by a multiplier determined by Cardno in a 2007-08 valuation. This multiplier varies according to the component type being escalated. For example, all electrical equipment should be escalated by a 2.13 multiplier. The sum of costs is then adjusted by an indirect multiplier (in this case (1+47.35%) to take account of annuity item replacement specific factors such location, project management costs etc.

This approach (including the indirect uplift multipliers) has been audited by Arthur Anderson in 2000 and found by Arthur Anderson to be robust and appropriate. Given the large portfolio of assets that SunWater is required to determine a replacement value for over a 25-year asset replacement/refurbishment cycle, SKM agreed with Arthur Anderson's conclusions and considered the approach to be appropriate.

SKM reviewed SunWater's calculation for determining a replacement cost and confirmed that it has applied the Indirect Cost multiplier contained in the BOM for this asset item in its SAP-WMS of 47.35%. While this is at the upper end of the range of multipliers used by SunWater to capture asset item specific costs such as location, project management, engineering, SKM had insufficient information to determine its reasonableness, but noted that location may explain the high Indirect Cost uplift.

SKM benchmarked the annuity item replacement costs proposed by SunWater as submitted to the Authority against database costs for a modern equivalent electrical asset. SKM estimated a cost of $793,759 ($2009-10) as compared to SunWater's $871,000.

SKM noted that SunWater has developed a planning order for this annuity item replacement which details the following breakdown of costs between contractors, overheads and materials is shown in Table 4.6.

Table 4.6: SunWater Breakdown of Costs – Mt Alice Pump Station Pump No 3 Refurbishment

Cost Item	*Planned Costs*
Contractors	$812,420
Internal Labour Transfer	$8,240
Internal Overhead Transfer	$50,234
Materials	$0
Service Charges	$0
Total	**$870,894**

Source: SunWater (2011) and SKM (2011).

SunWater advised SKM that the Internal Overhead Transfer relates to corporate overhead costs that are allocated to this annuity item replacement activity.

The annuity value submitted by SunWater for replacement of this annuity item was within the estimating range of SKM's estimate for a modern equivalent replacement asset. As such, SKM considered the SunWater proposed annuity item value of $870,894 to be efficient.

Summary and Conclusions

SKM considered that it is prudent to plan for replacement of this asset within this annuity period and considered that an earlier date than the 2016-17 date planned by SunWater would be appropriate and in keeping with good industry practice. SKM was satisfied that the annuity item replacement value submitted by SunWater is efficient.

Authority's Analysis

The Authority accepts SKM's recommendation that this renewals item is both prudent and efficient.

Conclusion

In summary, 12 items for the Callide Valley WSS were sampled. Of these:

(a) nine items are prudent and efficient and have been retained as forecast expenditure;

(b) two items are prudent but not efficient, requiring adjustment to forecast expenditure; and

(c) one item is not prudent and has been removed from forecast expenditure.

Further, as noted in Volume 1, after a consideration of all its consultants' reviews, the Authority has recommended that a 10% saving be applied to all non-sampled and sampled items for which there was insufficient information.

In total, the Authority recommends the direct renewals expenditure be adjusted as shown in Table 4.7.

Table 4.7: Review of Forecast (Direct) Renewals Expenditure 2011-36

Item	*Year*	*SunWater ($'000)*	*Authority's Findings*	*Recommended ($'000)*
Sampled Items				
1. LBC/1 Replace Switchboard - Bldg Serv Elec Bldg	2012-13	39	Prudent and efficient	39
2. LBC/2 14CVA-Refurbish Spillway Gate 1	2013-14 and 2031-32	9,9	Prudent and efficient	9
3. LBC/3 10CVA01-Undertake 5yr Dam Safety Callide	5yrly from 2014-15	36,36,36,36,36	Prudent and efficient	36
4. LBC/4 12CVA-Replace Inlet Screens	2014-15	107	Prudent and efficient	107
5. LBC/5 Replace Ladders, Platforms, Handrails & Safety	2014-15	56	Not prudent and not efficient	0
6. LBC/6 Replace Standby Diesel Alternator	2015-16	178	Prudent but not efficient and deferred to 2028	150
7. LBC/7 14CVA-Refurbish Electrical Installation	2016-17	882	Prudent but insufficient information to determine efficiency	10% saving applied
8. LBC8/ Refurbish 1200Dia Outlet Pipe Lhs	2025-26	485	Prudent and efficient	485
9. LBC9/ Major Refurbishment	2028-29	368	Prudent and efficient	368
10. LBC/10 12CVA-Refurbish Channel Earthworks	2011-12	37	Prudent and efficient	37
11. LBC11/ 12CVAXX Address Height Safety Risks CVA	2011-12	53	Prudent and efficient	53
12. Callide Dam – Replace Cables and Cableways	2016-17	871*	Prudent and efficient	871
Not Sampled Items				10% saving applied.

Note: Estimates based on SunWater's forecasts. Source: SunWater (2011), Halcrow (2011), SKM (2011) and QCA (2011). This cost reflects the total cost not the direct cost.

4.6 SunWater's Consultation with Customers

Submissions

SunWater

SunWater (2011b) submitted that through Irrigator Advisory Committees (IACs), customers are:

(a) able to offer suggestions on planned asset maintenance which are considered by SunWater in the context of asset management planning;

(b) consulted on various operational and other aspects of service provision, including the timing of shutdowns and managing supply interruptions; and

(c) provided with information about renewals expenditure, particularly where supply interruptions may result.

Nonetheless, SunWater noted opportunities for greater consultation with irrigators do exist.

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

In Volume 1 the Authority noted customers' concerns about the lack of involvement in the planning of future renewals expenditure has been raised by irrigators and their representatives.

The Authority recommends that there be a legislative requirement for SunWater to consult with its customers about any changes to its service standards and proposed renewals expenditure program. SunWater should also be required to submit the service standards and renewals expenditure program to irrigators for comment whenever they are amended and that irrigators' comments be documented and published on SunWater's website and provided to the Authority.

4.7 Allocation of Headworks Renewals Costs According to WAE Priority

Previous Review

For the 2006-11 price path, the renewals costs for the Callide Valley bulk water infrastructure were apportioned between priority groups using converted nominal water allocations. The conversion to medium priority WAE was determined by a water pricing conversion factor of 3:1; that is, one ML of high priority WAE was considered equivalent to 3 ML of medium priority WAE.

Stakeholder Submissions

SunWater

For the 2012-17 regulatory period, SunWater proposed that renewals costs for bulk water infrastructure be apportioned in accordance with the share of utilisable storage headworks volumetric capacity dedicated to that priority group – as measured by the headworks utilisation factor (HUF).

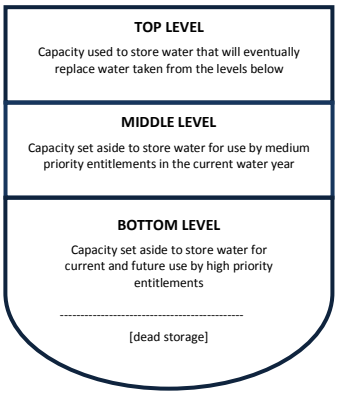
SunWater submitted that, in general, the HUF allocates a greater proportion of capital costs per ML to high priority WAE. Specifically, the HUF methodology takes into account water sharing rules, critical water sharing arrangements (CWSAs) and other operational requirements that typically give high priority entitlement holders exclusive access to water stored in the lower levels of storage infrastructure.

SunWater (2010d) submitted a detailed outline of the HUFs methodology, outlining its derivation and application for each scheme. This methodology, discussed in detail Volume 1, can be summarised as follows.

Step 1: Identify the water entitlement groupings for each scheme, as listed in DERM's Water Entitlement Register, and establish which groups are to be considered as high priority (HP) and medium priority (MP) for the purposes of the HUFs calculation[1].

Step 2: Determine the volumes associated with the high and medium priority groupings identified in Step 1, taking into account any allowable conversion from medium to high priority under the scheme's IROL.

Step 3: Determine the extent to which water sharing rules, CWSAs and other operational requirements give the different water entitlement priority groups exclusive or shared access to capacity components of the storage infrastructure.



This step divides the storage infrastructure into three levels: the bottom layer, which is exclusively reserved for high priority; the middle layer, which is effectively reserved for medium priority; and the top layer, which is shared between the medium and high priority groups.

Step 4: Assess the hydrological performance in 15-year sequences of each layer identified in Step 3 to determine the probability of each component of headworks storage being accessible to the relevant priority group.

Step 5: Calculate the percentage of storage headworks capacity to which medium priority users have access for each of the 15-year sequences analysed in Step 4:

$$\frac{MP\ Utilised\ Capacity}{Total\ Utilised\ Capacity} = \frac{MP_{1(utilised)} + MP_{2(utilised)}}{MP_{1(utilised)} + HP_{1(utilised)} + MP_{2(utilised)} + HP_{2(utilised)}}\ (\%)$$

Set HUF_{mp} equal to the minimum of these values to reflect the worst 15-year period (HUF_{hp} = 1-HUF_{mp}).

If more than two types of water entitlements were aggregated in Step 1 these are then disaggregated.

The parameters used for determining the HUFs for the Callide Valley WSS are summarised in Table 4.8. The HUFs for this scheme (SunWater 2010d) are 9.8% for medium priority (ground water), 0.2% risk priority (surface water) and 90% for high priority.

[1] If more than two priority groups exist, water sharing rules and other differentiating characteristics are taken into account to determined whether they are included in the high or medium priority grouping, or neither.

Table 4.8: Application of HUFs Methodology

STEP 1: Water Entitlement Groups (DERM's Water Allocation Register)			
Nominal Group	(ML)	HUF Group	(ML)
Medium Priority (Ground Water)	19,527	MP_A	19,970
Risk Priority (Surface Water)	443		
High Priority	4,311	HP_A	4,311

STEP 2: IROL Conversion Factor Adjustment	
Conversion Factor: $IROL_{CF}$	N/A
Maximum volume of HP: $HP_A max$	4,311
Corresponding volume of MP: $MP_A min = MP_A-(HP_A max-HP_A)*IROL_{CF}$	19,970

STEP 3: Water Sharing Rules & Operational Requirements	
Water Sharing Rules	
Volume below which MP not available: $MP_0 AA$	N/A
Volume above which max. MP available: $MP_{100} AA$	N/A
CWSAs and other operational requirements	
Likely increase in volume effectively reserved for HP: MP_0	26,500
Likely increase in min. storage before maximum MP available: MP_{100}	48,700
Key Dam Level Measures	
Full Supply Level: FSV_{hwks}	136,370
Dead Storage Level: DSL_{hwks}	2,880

STEP 4: Hydrologic performance of headworks storage			
Storage Layer	Storage Capacity (ML)	Prob of Utilisation	Utilised Capacity (ML)
Top: $max\{(FSV_{hwks}-MP_{100}),0\}$*	MP_2 = 42,477; HP_2 = 45,193	0%	MP_{2u} = 8; HP_{2u} = 8
Middle: $min\{(MP_{100}-MP_0),(FSV_{hwks}-MP_0)\}$	MP_1 = 22,200	7%	MP_{1u}= 1,635
Bottom: $MP_0 - DSV_{hwks}$	HP_1 = 23,620	66%	HP_{1u}= 15,678

STEP 5: Calculation of HUFs for each Water Entitlement Group		
Formula	HUF Group	Nominal Group
MP_A: $(MP_{1u}+MP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ = (1,635+0) / (1,635+15,678+0+0)	HUF_{mp} = 10%	Medium Priority (Ground Water) = 9.8% Risk Priority (Surface Water) = 0.2%
HP_A: $(HP_{1u}+HP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ = (15,678+0) / (1,635+15,678+0+0)	HUF_{hp} = 90%	High Priority = 90%

**Apportioned between MP_2 and HP_2 using the ratio MP_1:HP_1. Source: SunWater (2010d).*

Other Stakeholders

During Round 1 consultation in May 2010, stakeholders:

(a) raised the issue of conversion of medium reliability water to high reliability water and associated conversion factors required; and

(b) questioned how capital costs would be allocated to different users, in particular to high reliability users (power stations and townships) and medium reliability users.

Authority's Analysis

The Authority commissioned Gilbert & Sutherland (G&S) to conduct an independent review of SunWater's proposed HUFs methodology. G&S (2011) concluded that the input data and model sources were appropriate, calculations were accurate to the method and input data utilised, the methodology exhibits rigour and is generally robust in providing consistent outcomes. G&S also recommended some amendments to SunWater's approach.

As discussed in Volume 1, the Authority endorsed SunWater's proposed approach for the allocation of capital costs, subject to the following amendment proposed by G&S – that the method for apportioning the top layer of storage between medium and high priority be modified to reflect the ratio of nominal volumes rather than ratio of MP_1:HP_1. Although the G&S recommendation does have an impact on the values to apportion the top layer of storage, there is no change to HUF values as the probability of utilisation in the top layer is zero.

SunWater (2011y) accepted these recommendations and submitted recalculated HUFs for each scheme. For the Callide Valley WSS, there were no material changes in the HUF values for each priority group (see Table 4.9).

Table 4.9: Revised HUF Calculations

STEP 4: Hydrologic performance of headworks storage			
Storage Layer	Storage Capacity (ML)	Prob. of Utilisation	Utilised Capacity (ML)
Top layer			
Initial	MP_2 = 42,477; HP_2 = 45,193	0%	MP_{2u} = 8; HP_{2u} = 8
*Revised**	MP_2 = 72,105; HP_2 = 15,565	no change	MP_{2u} = 13; HP_{2u} = 3
Middle Layer	MP_1 = 22,200	7%	MP_{1u}= 1,635
Bottom Layer	HP_1 = 23,620	66%	HP_{1u}= 15,678

STEP 5: Calculation of HUFs for each Water Entitlement Group			
	Initial	Revised	Nominal Group
HUF_{mp}	10%	10%	Medium Priority (Ground Water) = 9.8% Risk Priority (Surface Water) = 0.2%
HUF_{hp}	90%	90%	High Priority = 90%

**Apportioned between MP_2 and HP_2 using the ratio of nominal volumes (MP_A:HP_A). Source: SunWater (2011x.).*

The Authority estimates that based on the HUF methodology, the conversion for medium priority to high priority would be 41.7:1. This compares with the WPCF of 3:1 used for 2006-11 price paths. Further, the Authority notes that under the HUF approach, medium priority

irrigators will now pay 9.8% of the cost of renewals whereas previously medium priority irrigators paid 59.4%.

4.8 Calculating the Renewals Annuity

In Volume 1, the Authority recommends an indexed rolling annuity, calculated for each year of the 2012-17 regulatory period.

For the Callide Valley WSS the recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.10. The renewals annuity for 2006-11 and SunWater's proposed annuity for 2012-16 is also presented for comparison.

Table 4.10: Callide Valley WSS Renewals Annuity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	272	253	235	232	229	445	438	431	425	420	420
Authority	-	-	-	-	-	-	364	355	347	342	340
High Priority	-	-	-	-	-	-	307	299	292	288	286
Medium Priority	-	-	-	-	-	-	57	56	55	54	54

Note: Includes indirect and overhead costs relating to renewals expenditure, which is discussed in Chapter 5.
Source: Actuals (SunWater, 2011) and Recommended (QCA, 2011).

5. OPERATING COSTS

5.1 Background

Ministerial Direction

The Ministerial Direction requires the Authority to recommend a revenue stream that allows SunWater to recover efficient operational, maintenance and administrative (that is, indirect and overhead) costs to ensure the continuing delivery of water services.

Issues

To determine SunWater's allowable operating costs for 2012-17, the Authority considered the following:

(a) the scope of operating activities for the Callide Valley WSS;

(b) the extent to which previously anticipated cost savings (identified prior to the 2006-11 price paths) have been incorporated into SunWater's total cost estimates for the purpose of 2012-17 prices;

(c) the prudency and efficiency of SunWater's proposed operating expenditures including direct and non-direct costs and escalation factors; and

(d) the most appropriate methodologies for assigning operating costs to service contracts[2] and to different priority customer groups (within each service contract).

5.2 Total Operating Costs

Operating costs are generally classified by SunWater as either non-direct or direct.

Non-direct costs are classified as either:

(a) overhead costs – allocated to all of SunWater's 62 service contracts for services that support the whole business (for example, Board, CEO and human resource management costs); and

(b) indirect costs – allocated to more than one service contract (but not all service contracts) for specialised services pertaining to a particular type of asset or group of service contracts (for example, asset management strategy and systems).

Direct costs are those readily attributable to a service contract (for example, labour and materials employed directly to service a scheme asset) and have been classified as operations, preventive maintenance (PM), corrective maintenance (CM), electricity and other costs.

In its NSP, SunWater described the scope of its operating activities for this scheme to include service provision, compliance, insurance, recreation and other supporting activities (these were not classified by direct and indirect costs). SunWater noted that:

(a) a Service Manager and 21 staff are located at the Biloela depot and are responsible for the day-to-day water supply management and for delivery of the programmed works for all users in this region;

[2] SunWater refers to each bulk scheme and each distribution system as a service contract. Consequently, SunWater has 22 irrigation bulk service contracts and eight irrigation distribution system service contracts.

(b) service provision relates to:

(i) water delivery – scheduling and releasing bulk water from storages, surveillance of water levels and flows in the river, and quarterly meter reading; and

(ii) customer service and account management – managing enquiries about accounts and major transactions; providing up to date online data on WAE, water balances and water usage; and managing transactions such as temporary trades, transfers and other scheme specific transactions;

(c) compliance requirements to provide the bulk service include those relating to:

(i) the IROL – a major part of which is gathering and reporting data at quarterly and annual intervals on water sharing rules, water accounting and reporting on stream flow, water quality and other data (see Table 5.1 below);

Table 5.1: DERM's Water Quality Monitoring Requirements of SunWater

Storage	*Monthly Monitoring Requirements*			
	Inflow	*Head Water*	*Tail Water*	*BGA*
Callide Dam	No	Yes	Yes	Yes
Kroombit Dam	No	Yes	Yes	No

Includes sampling for the following variables: Dissolved oxygen, electrical conductivity, pH, temperature; total nitrogen, phosphorus and BGA. Source: SunWater (2011).

(ii) dam safety – the Callide and Kroombit Dams are classified as referable dams under the *Water Act 2000*. Routine dam safety inspections are carried out monthly on Callide and Kroombit Dams and quarterly on the weirs. Specific dam safety inspections are required at the dams, which include monitoring of embankments, piezometers, seepage and general condition of the storages as defined in the dam surveillance specification. They also include condition inspections to identify and plan maintenance requirements and to provide information for management planning of water delivery assets;

(iii) environmental management to comply with the IROL and *Environmental Protection Act 1994* which require SunWater to deal with risks such as fish deaths, chemical usage, pollution, contaminants and approvals for instream works; and

(iv) land management (weed and pest control, rates and land tax, security and trespass and access to land owned by SunWater) as well as other obligations in relation to WHS, financial reporting and taxation and irrigation pricing;

(d) insurance is obtained on a portfolio basis and allocated to the scheme;

(e) SunWater has sought to transfer the management and cost of recreation activities to private operators or Government. However, recreation facilities at Callide Dam continue to be operated and maintained by SunWater (the cost of which is outlined further below); and

(f) other supporting activities include central procurement, human resources and legal services.

Previous Review

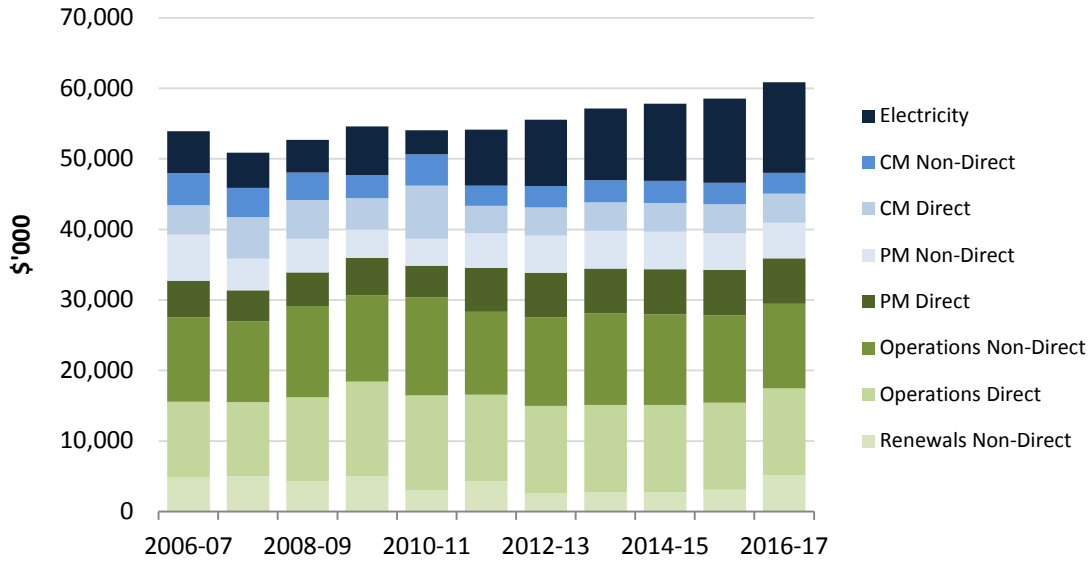
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

Stakeholder Submissions

SunWater

SunWater's past and forecast total operating costs for its irrigation service contracts (all sectors) are summarised in Figure 5.1 below. SunWater's allocation of non-direct costs to activities (including renewals) is also identified. These estimates reflect SunWater's most recent information (including that received by the Authority in October 2011) and differ from SunWater's NSP as noted in Volume 1.

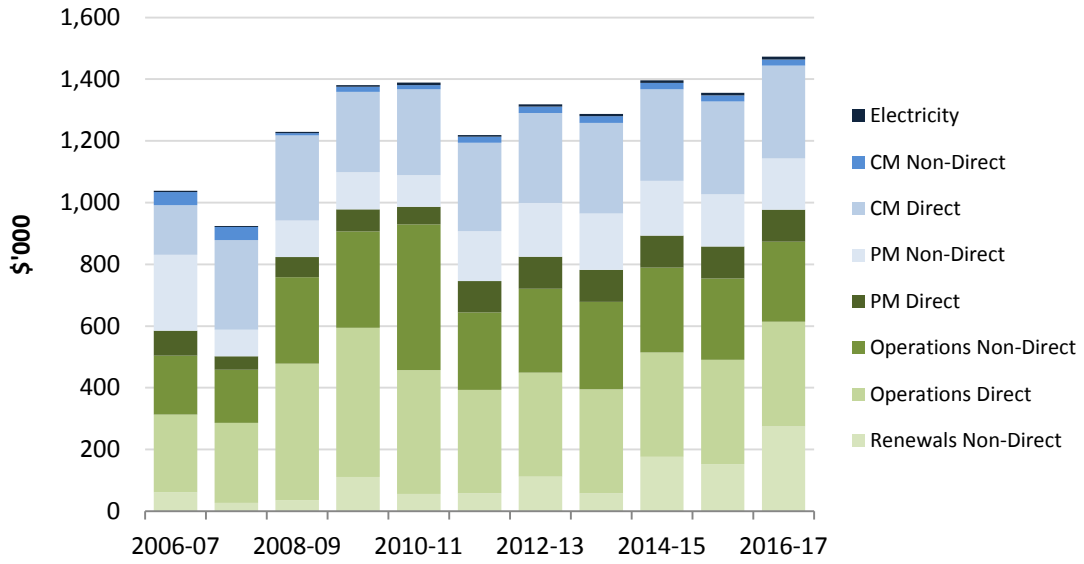
Figure 5.1: SunWater's Total Operating Costs (Real $'000) – All Service Contracts



Note: Renewals direct costs are discussed in the previous chapter. Renewals non-direct costs are the non-direct operating costs allocated to renewals. Totals vary from NSP due to the inclusion of renewals non-direct costs, SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter) and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source: SunWater (2011ap) and SunWater (2011ao).

Expenditure by activity in Callide Valley WSS (all sectors) is shown in Figure 5.2 and Table 5.2 and Table 5.3.

Figure 5.2: Total Operating Costs – Callide Valley WSS (Real $'000)



Note: Renewals direct costs are discussed in the previous chapter. Renewals non-direct costs are the non-direct operating costs allocated to renewals. Totals vary from NSP due to the inclusion of renewals non-direct costs, SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter) and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source: SunWater (2011ap) and SunWater (2011ao).

Table 5.2: Expenditure by Activity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	443	432	723	795	874	587	610	621	613	602	597
Electricity	5	2	3	5	9	6	7	7	8	9	9
Preventive maintenance	326	130	184	192	159	263	278	286	281	273	270
Corrective maintenance	66	69	23	28	36	34	36	37	36	35	35
Renewals non-direct	61	26	35	111	56	58	112	58	177	153	276
Total	**901**	**660**	**969**	**1,131**	**1,134**	**947**	**1,042**	**1,008**	**1,115**	**1,071**	**1,188**

Note: Renewals direct costs are discussed in the previous chapter. Renewals non-direct costs are the non-direct operating costs allocated to renewals. Totals vary from NSP due to the inclusion of renewals non-direct costs, SunWater's revised approach to insurance and electricity exclusion of revenue offset (which is dealt with in the following chapter) and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source: SunWater (2011ap) and SunWater (2011ao).

Table 5.3: Expenditure by Type (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	131	107	168	228	228	219	222	222	222	222	222
Electricity	5	2	3	5	9	6	7	7	8	9	9
Contractors	19	14	31	57	42	14	15	15	15	15	15
Materials	24	20	66	14	9	13	13	14	14	14	14
Other	183	189	259	267	201	205	205	205	205	205	205
Non-Direct	540	328	441	559	644	489	579	545	650	606	722
Total	**901**	**660**	**969**	**1,131**	**1,134**	**947**	**1,042**	**1,008**	**1,115**	**1,071**	**1,188**

Note: Renewals direct costs are discussed in the previous chapter. Non-direct costs include the non-direct operating costs allocated to renewals. Totals vary from NSP due to the inclusion of renewals non-direct costs, SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter), and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source: SunWater (2011ap) and SunWater (2011ao).

In its NSP, SunWater submitted that the operating costs for this scheme averaged $833,000per year over the period of the current price path (in real terms). [Operating costs as defined in the NSP exclude the indirect and overhead costs allocated to renewals expenditure.] The projected efficient average operating costs in the NSP for 2011-16 are $903,000 per annum (in real terms).

Other Stakeholders

During Round 2 consultation in April 2011, stakeholders submitted that:

(a) a lesser number of staff in the schemes means a lower level of service. Staff numbers had been reduced from 30 to15;

(b) if SunWater and the Authority's consultants undertaking the operating expenditure review do not have sufficient cost data, then irrigators will have no way of knowing if their costs are prudent and efficient. Irrigators involved in the current price path review claimed that SunWater has more detailed cost breakdown, which the Tier 2 group used for their decisions. The Authority should insist on getting these costs from SunWater; and

(c) labour and materials should also decrease if direct labour is decreased. Labour and materials are normally presented in ordinary business budgets instead of separately. Labour costs are much higher relative to materials.

Authority's Analysis

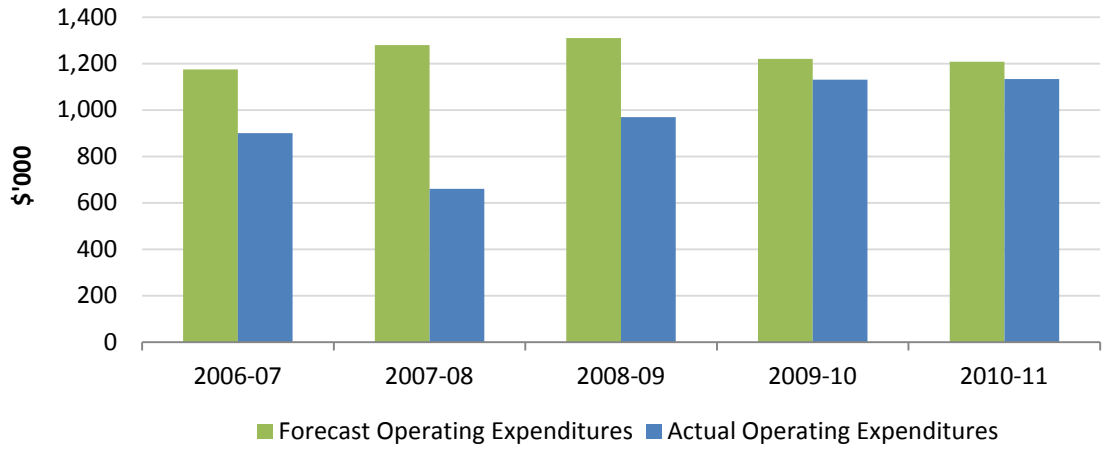
The Authority has sought to review the extent to which previously anticipated cost savings (identified prior to the 2006-11 price paths) have been incorporated into SunWater's total cost estimates for the purpose of 2012-17 prices.

In Volume 1, the Authority noted that during the beginning of the 2006-11 price paths, SunWater's total operating costs increased above those previously forecast. In response, in July 2009 SunWater instigated a program to reduce costs by $10 million (the Smarter Lighter Faster

Initiative (SLFI)). SunWater submitted that these savings should be fully realised by 30 June 2012.

In 2011, the Authority engaged Indec to assess whether SunWater achieved the cost savings forecast in 2005-06. A comparison of forecast and actual operating costs for the Callide Valley WSS is shown in Figure 5.3 below. For this scheme, SunWater's actual operating cost were less than Indec's forecast efficient operating costs by approximately $1,398,000 over the period.

Figure 5.3: Forecast and Actual SunWater Operating Expenditure 2006-11 (Real $'000)



Source: SunWater (2011ap) and Indec (2011f).

Indec has not, however, inferred from its analysis that SunWater should adjust its costs over the 2012-17 regulatory period to the level of efficient costs determined for 2010-11. It observed that further analysis would be required to justify and support such an inference (see Volume 1). The Authority has engaged other consultants to address potential scheme specific cost savings.

In response to stakeholder submissions, the Authority notes that:

(a) staff levels do impact upon the level of service received by customers. However, SunWater is required to obtain the most efficient level of staff numbers to achieve the required level of service for its customers. Hence, while staff numbers have decreased, the level of service should be maintained at required levels;

(b) the review of SunWater's operating expenditure has been undertaken with the data and information provided by SunWater and additional information collated by Halcrow. Where necessary additional information has been requested; and

(c) the Authority has adopted efficient labour and material costs in its review. Details are provided below.

5.3 Non-Direct Costs

Introduction

Since structural reforms were implemented, SunWater has become a more centrally organised business. SunWater's strategic operational management (for example, Finance, Strategy and Stakeholder Relationships) is provided centrally. This arrangement seeks to ensure that appropriate systems and processes are in place, are being applied in a consistent manner, are addressing key regulatory compliance and business requirements; and to ensure a high degree of flexibility across SunWater's workforce.

Some specialist operations staff with expertise in key operational areas may be located either in Brisbane or regional locations. Their specialist expertise is applied to technical problems and issues in support of local operators.

Operational works planning and maintenance scheduling is provided by regional management, although all staff positions and budgets are managed centrally. For example, spare capacity in one region will be diverted (and billed) to regions with higher demand. Similarly, staff may be assigned to either irrigation or non-irrigation service contracts.

The nature of these non-direct activities, as either indirect or overhead costs, is detailed in Volume 1.

Previous Review

As noted above, in the previous review, Indec reviewed SunWater's non-direct costs for 2006-11.

Non-direct costs were allocated to schemes on the basis of total direct costs.

Stakeholders

SunWater

As noted in Volume 1, SunWater submitted that it will incur $23.5 million in total non-direct costs in 2012-13 (Table 5.4). SunWater's approach to the forecasting of non-direct operating expenditures is detailed in Volume 1.

In brief, SunWater forecast non-direct costs for 2010-11 and then escalated these forward using indices applied to the components of these costs. The costs in 2010-11 were based on actual costs over the past four years (excluding spurious costs) and adjustments for known or expected changes in costs. In particular, SunWater proposed that salaries and wage costs generally will rise by 4% per annum. However, SunWater has forecast that its total salaries and wages will rise by only 2.5% per annum, with the difference (1.5% per annum) being accounted for by (unspecified) productivity improvements.

SunWater proposed that the total direct labour costs (DLCs) of each service contract be used to allocate non-direct costs.

Total non-direct costs and those allocated to the Callide Valley WSS are in Table 5.4 below.

Table 5.4: SunWater's Actual and Proposed Non-Direct Costs (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	27,831	25,097	25,872	24,579	25,152	23,770	23,512	24,244	24,055	23,708	25,089
Callide Valley WSS	540	328	441	559	644	489	579	545	650	606	722

Source: SunWater (2011ap) and SunWater (2011ao).

The non-direct costs for this scheme include a portion of SunWater's total overhead costs (for example, HR, ICT and finance), as well as a share of Infrastructure Management costs for each region (South, Central, North and Far North) and a share of the overhead costs of SunWater's Infrastructure Development Unit.

Other Stakeholders

During Round 2 consultation in April 2011, stakeholders submitted that:

(a) indirect costs are too high;

(b) irrigators question why Brisbane overhead costs are included on top of that of Rockhampton;

(c) the Brisbane office seems overstaffed and so far removed from issues in the scheme; and

(d) irrigators should not pay for insurance.

Authority's Analysis

As noted in Volume 1, the ratio of non-direct to total costs reflects the structure of the organisation. A more centralised organisation can be expected to have a higher ratio of non-direct to direct costs.

In seeking to establish prudency and efficiency, the Authority commissioned Deloitte Touche Tohmatsu (Deloitte) to review SunWater's non-direct costs. Deloitte carried out benchmarking to assess where potential efficiencies within SunWater may be achieved. Deloitte identified savings of $495,314 (in 2010-11 dollars) per annum in finance, human resources, information technology, and health, safety, environmental and quality areas (for the whole of SunWater).

Deloitte was unable to draw any definitive conclusions from an attempt to benchmark against Pioneer Valley Water Board (PVWater) and other Australian rural water service providers. Deloitte noted that PVWater's non-direct costs were higher than those of SunWater as a percentage of total operating costs – but that there are differences between PVWater and SunWater which made the comparison unreliable.[3]

The Authority accepted that $495,314 of full time equivalent (FTE) staff costs were not efficient and should be excluded from SunWater's total non-direct costs (of which an amount of approximately $297,189 relates to irrigation service contracts under SunWater's proposed cost allocation methodology). See Volume 1.

In addition, the Authority recommends that SunWater's forecast total non-direct operating costs should be reduced by a compounding 1.5% per annum (based on the Authority's view that non-labour productivity gains are achievable in line with labour productivity gains).

The Authority has also reviewed the allocation of non-direct costs to irrigation service contracts.

SunWater's proposed use of DLCs is on the basis that it: best reflects activity and effort; is a proxy for other drivers; and provides consistency across service contracts.

Deloitte reviewed SunWater's proposal and identified alternative cost allocation bases (CABs). On the basis of this analysis, the Authority concludes that no alternative CAB is superior to DLC and that the introduction of any alternative would likely be costly and complex.

[3] For example, PVWater has only four FTE staff. For the benchmarking exercise, PVWater needed to estimate the proportion of staff time spend on administration versus operations and maintenance activities, which varied considerably depending on weather conditions and workloads. Deloitte found it difficult to compare PVWater's estimated apportionments with SunWater, who have around 500 staff assigned to specific projects or centralised functions.

On this basis, the Authority has therefore accepted SunWater's proposed DLC methodology with two exceptions recommended by Deloitte:

(a) the overhead component of Infrastructure Management (Regions) should be allocated directly to the service contracts serviced by each relevant resource centre (South, Central, North and Far North), on the basis of DLC from each respective resource centre (that is, targeted DLC); and

(b) the overhead component of the Infrastructure Development unit should be allocated (on the basis of DLC) to service contracts receiving services from that unit (that is, targeted DLC).

This adjustment ensures that schemes are paying for the overhead costs from those resource centres that that are most directly related to their schemes and not, for example, for Infrastructure Management overhead costs from the other three regions.

The Authority's recommended level of non-direct costs to be recovered from the Callide Valley WSS (from all customers) is set out in Table 5.5 below. The allocation of these costs between high and medium priority customers is discussed below.

Table 5.5: Recommended Non-Direct Costs (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	540	328	441	559	644	489	579	545	650	606	722
Authority							561	522	594	500	675

Source: SunWater (2011ap) and SunWater (2011ao).

Insurance and labour utilisation rates (which affect non-direct and direct costs) are addressed in Volume 1.

In response to stakeholder submissions, the Authority notes that:

(a) Deloitte was commissed by the Authority to review SunWater's non-direct costs and identified savings of $507,697 (in real terms) for the whole of SunWater;

(b) the costs associated with the Brisbane office relate to SunWater as a whole which are different to the scheme specific costs;

(c) as above, Deloitte was enaged to review SunWater's non-direct costs and identified cost savings; and

(d) insurance costs are addressed in Volume 1.

5.4 Direct Costs

Introduction

SunWater classified its operational activities into operations, preventive maintenance, corrective maintenance and electricity. SunWater's operating costs were forecast using this classification. The nature of these activities and costs are identified further below.

With the exception of electricity, SunWater has disaggregated each of the above activities into the following cost types:

(a) labour – direct labour costs attributed directly to jobs, not including support labour costs such as asset management, scheduling and procurement, which are included in administration costs;

(b) materials – direct materials costs attributed directly to jobs including pipes, fittings, concrete, chemicals, plant and equipment hire;

(c) contractors – direct contractor costs attributed directly to jobs, including weed control contractors, commercial contractors and consultants; and

(d) other – direct costs attributed directly to service contracts, including insurance, local government rates, land tax and miscellaneous costs.

Stakeholder Submissions

SunWater

SunWater estimated the costs of each activity in 2010-11, based on actual costs over the past four years (excluding spurious costs) with adjustments for known or expected changes in costs. Adjustments were also made to preventive maintenance in line with the Parsons Brinckerhoff (PB 2010) review. These estimates were then escalated forward for the 2012-17 pricing period. Further details are outlined in Volume 1.

SunWater's forecast direct operating expenditure by activity is set out in Table 5.6 below. These estimates reflect SunWater's most recent positions and differ from the NSP. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011.

Table 5.6: SunWater Direct Operating Expenditures by Activity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operation	252	260	443	484	401	336	338	338	338	338	338
Electricity	5	2	3	5	9	6	7	7	8	9	9
Preventive Maintenance	81	43	66	72	57	102	103	103	103	104	104
Corrective Maintenance	24	27	15	11	23	15	15	15	15	15	15
Total	**361**	**332**	**528**	**571**	**489**	**458**	**463**	**463**	**464**	**466**	**466**

Note: Totals vary from NSP due to SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter), and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Note: Renewals direct costs are discussed in the previous chapter. Renewals non-direct costs are the non-direct operating costs allocated to renewals. Totals vary from NSP due to the inclusion of renewals non-direct costs, SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter), and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source SunWater (2011ap) and SunWater (2011ao).

Table 5.7 presents the same operating costs developed by SunWater on a functional basis.

Table 5.7: SunWater Direct Operating Expenditures by Type (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	131	107	168	228	228	219	222	222	222	222	222
Electricity	5	2	3	5	9	6	7	7	8	9	9
Materials	24	20	66	14	9	13	13	14	14	14	14
Contractors	19	14	31	57	42	14	15	15	15	15	15
Other	183	189	259	267	201	205	205	205	205	205	205
Total	**361**	**332**	**528**	**571**	**489**	**458**	**463**	**463**	**464**	**466**	**466**

Note: Totals vary from NSP due to SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter), and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source: SunWater (2011ap) and SunWater (2011ao).

Authority's Analysis

The Authority engaged Halcrow to review the prudency and efficiency of SunWater's proposed direct operating expenditure for this scheme.

Halcrow (2011) noted that it sought to obtain detailed information to facilitate its assessment of prudency and efficiency. In particular, Halcrow sought to understand the basis for SunWater's expenditure forecasts, together with the key assumptions used in their development. Halcrow noted that while SunWater has provided information in response to the requests made, the data was insufficiently disaggregated to enable a detailed review of cost information. This limited Halcrow's ability to adequately assess the prudency and efficiency of the proposed expenditure.

In Volume 1, the Authority recommends that SunWater undertake a review of its planning policies, processes and procedures to better achieve its strategic objectives. The Authority also recommends that SunWater needs to improve the usefulness of its information systems. In particular, SunWater needs to document and access relevant information necessary to:

(a) attain greater operating efficiency;

(b) achieve greater transparency;

(c) facilitate future price reviews; and

(d) promote more meaningful stakeholder engagement.

Halcrow's review of specific cost categories for this scheme and the Authority's conclusions and views on cost escalation are outlined below.

Item 1: Operations

Stakeholder Submissions

SunWater

SunWater submitted that operations relates to the day-to-day costs of delivering water and meeting compliance obligations and include the following:

(a) collating water orders, scheduling released from Callide and Kroombit Dams and delivering water;

(b) operating regulating structures;

(c) cleaning of trash and weed screens;

(d) recording and reporting releases, water use and system losses;

(e) reading meters;

(f) undertaking system surveillance to ensure that customer standards are being met;

(g) liaising with customers; and

(h) notifying customers of interruptions.

SunWater's proposed operations costs are set out in Table 5.6 above.

Other Stakeholders

During Round 2 consultations in April 2011, stakeholders submitted that further explanation is required of the 1.5% increase in labour costs.

Authority's Analysis

Consultant's Review

Halcrow noted that operational activities associated with the dam structure at Callide Dam include: daily and weekly inspections; and reading of dam instrumentation, including: hydraulic piezometers (pore water pressure within the dam structure); and seepage weirs (dam leakage); and weather observations.

The radial gates fitted to the spillway are exercised monthly (by manual operation) when the water is lower than gate level. The gates are operated using a float/counterweight system; manual operation involves pumping water into the float chamber to raise the gate. A diesel generator, required for backup purposes in the event of power outage, is located in a building on the dam crest. This is operated monthly to ensure operational readiness.

Whilst operating, flow rates need to be monitored twice weekly. There are no environmental flow requirements in the Callide Valley Bulk WSS, which is currently operating under an IROL as opposed to a ROP, although this may change.

Water quality monitoring is undertaken at storages on a six-monthly basis unless water is being released, in which case, more regular monitoring is undertaken. Monitoring the presence of Blue Green Algae is also undertaken as required. Water quality monitoring is in accordance with the requirements of the IROL.

A breakdown of historical expenditure into key operations sub activities is shown in Table 5.8. A similar breakdown for forecast expenditure has not been provided. The key elements of operations expenditure relate to scheme management, dam safety, and water management. Table 5.9 provides a breakdown of historical and forecast expenditure on operations at the Callide Valley Bulk WSS.

Table 5.8: Historical Operations Expenditure (Real $'000)

Sub-Activities	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Customer Management	26	10	-	2
Workplace H&S	-	1	-	1
Environmental Management	28	49	26	28
Water Management	20	19	89	102
Scheme Management	226	240	337	393
Dam Safety	52	36	145	172
Schedule/Driver	12	18	12	37
Metering	-	15	16	15
Facility Management	76	45	34	40
Other	3	-	64	4
Total	**443**	**432**	**723**	**795**

Source: Halcrow (2011). Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Table 5.9: Historical and Forecast Operations Expenditure (Real $'000)

Type	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Labour	53	60	115	157	124	126	127	127	127	127
Materials	8	6	46	8	2	2	2	2	2	2
Contactors	14	10	27	54	6	6	6	6	6	6
Other	177	184	255	265	191	191	191	191	191	191
Total Direct Costs	**252**	**260**	**443**	**484**	**323**	**325**	**326**	**327**	**327**	**327**
Indirects	127	95	145	131	118	118	137	161	138	130
Overheads	64	77	135	181	131	132	135	149	137	133
Total	**443**	**432**	**723**	**795**	**572**	**575**	**598**	**637#**	**601**	**590**
Annual Change	-	(2%)	67%	10%	(28%)	1%	4%	7%	(6%)	(2%)
Change Since 2007	-	(2%)	63%	80%	29%	30%	35%	44%	36%	33%

Source: Halcrow (2011). Note (#) Minor differences in expenditure between this table and the NSP relates to indirects and overheads. Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

In its NSP, SunWater stated that it undertook a review of work practices in 2010 which resulted in revised work instructions upon which the cost forecasts are based. While SunWater provided a high level breakdown of operations data, Halcrow stated that no information on the review of work instructions has been provided. However, SunWater provided explanations for key movements in the expenditure.

Halcrow noted that the reason for the significant jump in expenditure on labour between 2007-08 and 2009-10 at Callide Valley was driven by significant water inflows (resulting in an increase in water delivery activities) from December 2008. Halcrow stated that a review of storage information for Callide Dam confirms that storage volume was significantly lower in 2006-07 and 2007-08 and that the volume of water stored has been increasing since 2007-08. Callide Dam is currently at full capacity.

Further, Halcrow stated that there has been a reduction in direct costs between 2009-10 and 2010-11. SunWater explained that this was due to the realignment of expenditure classified as Operations to Preventive Maintenance. Halcrow noted that operations surveillance was moved to Preventive Maintenance as a result of the PB review. Halcrow also noted that SunWater's forecast expenditure on Preventive Maintenance has increased, reflecting this adjustment.

SunWater has indicated that the forecast costs assume that the water management, scheme management and schedule/deliver costs will increase over historical costs on account of the increase in available water.

SunWater provided an extract of its resource planning tool used to develop labour forecasts for 2011-12. Halcrow confirmed that the forecast labour expenditure has been built up using a bottom-up approach, by assessing the tasks required and the most efficient method of delivering the required work. The extract provided indicated that the direct labour charge for operations in the Callide Bulk Water Supply scheme in 2011-12 is based on 1,954 hours per annum for operations staff from the Central resource centre and the Asset Management resource centre. This accounts for approximately $95,000 per annum of the labour expenditure. This is equivalent to approximately 1.3FTE staff working on operations. This allowance appears reasonable, although more information on the review of work practices and how these have driven allowances for labour hours is required to enable the prudency and efficiency assessment to be undertaken.

Labour hours and charges for Corporate Council, Strategy, Health & Safety or Services Delivery resource centres are not shown on the extract of the resource planning tool provided, but account for approximately $29,000 per annum of direct labour expenditure.

The labour forecast includes real increases of 1.5% in 2011-12 and 2012-13, which is consistent with its Enterprise Agreement (of an increase of 4% nominal for 2011-12 and 2012-13). Labour is forecast to remain steady (in real terms) thereafter. [The Authority's assessment of cost escalation is provided further below].

SunWater has forecast a reduction in other expenditure, to $191,000 in 2010-11. Expenditure is forecast to remain steady thereafter. SunWater noted that this is driven by a reduction in insurance costs of $50,000 due to the increase in asset value from other service contracts (the insurance premium calculation is based on the asset value for all SunWater assets). Insurance accounts for $130,000 per annum, Local Authority rates, $42,000 per annum and Land Tax $17,000 per annum.

Although Halcrow has been unable to undertake a detailed review of SunWater's operations expenditure, on the basis of the information and explanations provided by SunWater, Halcrow is generally satisfied that the expenditure appears to be reasonable. However, a definitive assessment of prudency and efficiency has not been possible from the information provided.

SunWater's Response

SunWater did not respond to the issues raised by Halcrow on operations expenditure.

Conclusion

In Volume 1, the Authority recommended that SunWater staff continue to conduct all quarterly meter reads.

Halcrow concluded that the expenditure appears to be reasonable. However, Halcrow was unable to draw definitive conclusions on the prudency and efficiency of proposed expenditures due to the insufficient information provided by SunWater. The Authority notes that Halcrow did not recommend any adjustments to SunWater's operations costs.

The Authority also notes that the consultants engaged to review operations costs in other SunWater schemes (Arup (2011), GHD (2011) and Aurecon (2011)) also did not recommend any adjustment to operations costs.

Further, SunWater's forecast average annual operations costs for the Callide Valley WSS are approximately 7% lower than the average over 2006-11.

On the basis of the consultants' reviews and SunWater's internal cost reductions over time, the Authority has not specifically adjusted SunWater's operations cost forecast.

In response to the stakeholder comment regarding the labour cost, the Authority notes that SunWater has effectively provided for a nominal 4% increase per year for the first two years (2011-12 and 2012-13), but only 2.5% in the years thereafter. SunWater would need to achieve efficiency gains to be able to cover the shortfall of 1.5% per year in later years.

Item 2: Operations – Recreation

Stakeholder Submissions

SunWater

SunWater provided separate recreation costs for the Callide Valley WSS which formed part of its operations expenditure.

SunWater stated that recreation facilities at Callide Dam continue to be operated and maintained by SunWater. SunWater's proposed recreational costs are set out in Table 5.10 below.

Table 5.10: Recreational Facility Costs (Real $'000)

	2011-12	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Recreational Facility Cost	5	5	28	5	5

Source: SunWater (2011).

Other Stakeholders

During Round 1 consultation in May 2010, stakeholders questioned how recreation costs would be allocated to incidental users.

Authority Analysis

Consultant's Review

Halcrow stated that the recreational area at Callide Dam includes lawns, picnic shelters, toilets and a boat ramp. Disused third party buildings and other structures on land owned by SunWater are a sailing club shed, a motor sports shed and a native fishstocking pond.

Halcrow noted that SunWater currently owns and maintains the recreational area at Callide Dam. This essentially involves:

(a) mowing of the grounds, which is undertaken under contract;

(b) cleaning of toilet blocks and other facilities, which is undertaken by SunWater staff; and

(c) periodic maintenance, which is undertaken by SunWater.

Halcrow noted that SunWater is currently in the process of handing over the recreation area, including areas that are no longer maintained by SunWater, to the Banana Shire Council. SunWater lodged a Development Application with Banana Shire Council on 19 November 2010. The purpose of this application was to reconfigure SunWater land at Callide Dam, allowing SunWater to retain land critical to ongoing operations whilst consolidating the recreational facilities on a separate parcel of land. During the site visit, SunWater Operations staff noted that the handover is a time consuming process that is expected to be complete later in 2011.

There are three SunWater owned houses at Callide Dam and are listed for disposal. It is understood that a single new house is to be constructed for SunWater use.

Expenditure by Type for recreational facilities at Callide Dam is listed in Table 5.11.

Table 5.11: Recreation Costs (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Labour Direct	13	8	1	2	-	-	-	-	-	-
Other Direct	32	13	2	1	5	5	5	5	5	5
Total Direct	**45**	**21**	**3**	**3**	**5**	**5**	**5**	**5**	**5**	**5**
Indirect	-	-	-	2	-	-	-	-	-	-
Overhead	15	9	1	2	-	-	-	-	-	-
Total Operating Cost	**60**	**30**	**3**	**7**	**5**	**5**	**5**	**5**	**5**	**5**
Renewals								**23**		

Source: Halcrow (2011). Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

The total operating costs have reduced from $60,000 in 2006-07 to $7,000 in 2009-10. Forecast operating expenditure is $5,000 per annum. This represents a 92% reduction in operating costs for the price period. It is understood that the reason operating costs have been able to be reduced significantly is due to the decline in visitors attracted to Callide Dam recreation area. This has allowed SunWater to close parts of the recreation area during periods when demands are low.

There is only one instance in the 2012-16 price path where forecast renewals expenditure associated with the recreation area is scheduled. In 2013-14 a total of $23,000 will be expended to replace the town water supply local isolator at cost of $6,000 and the town water supply pump and motor at a cost of $17,000.

While review of the specific handover agreements between the Banana Shire Council and SunWater is beyond the scope of this review, should hand-over take place, then the renewals forecast may need to be adjusted to account for this.

SunWater's Response

SunWater noted Halcrow's comment that renewals for town water supply local isolator may be avoided depending on SunWater's negotiations with Council to hand over the facilities.

In response, SunWater stated that it agrees and if this transpires than it will be reflected in actual renewals expenditure applied to the ARR.

Conclusion

The Authority accepts SunWater's proposed recreational expenditure.

Item 3: Preventive Maintenance

Stakeholder Submissions

SunWater

SunWater defined preventive maintenance in its NSP as maintaining the ongoing operational performance and service capacity of physical assets as close as possible to designed standards. Preventive maintenance is cyclical in nature with a typical interval of 12 months or less.

Preventive maintenance includes:

(a) condition monitoring – the inspection, testing or measurement of physical assets to report and record its condition and performance for determination of preventive maintenance requirements;

(b) servicing – planned maintenance activities normally expected to be carried out routinely on physical assets.

Further, SunWater stated that preventive maintenance costs are based on the updated work instructions developed for operating the scheme and an estimate of the resources required to implement that scope of work.

SunWater's proposed preventive maintenance costs are set out in Table 5.6 above.

Other Stakeholders

During Round 2 consultation in April 2011, stakeholders submitted that weeds have been non-existent in the last three years, and weed control costs are therefore not justified.

Authority's Analysis

Consultant's Review

A breakdown of SunWater's historical and forecast expenditure on preventive maintenance in the Callide Valley WSS is provided in Table 5.12 below.

Table 5.12: Historical and Forecast Expenditure - Preventive Maintenance (Real $'000)

Type	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Labour	67	32	50	63	82	84	85	85	85	85
Materials	8	6	9	5	9	9	9	9	9	9
Contractors	1	4	4	2	7	7	7	7	8	8
Other	5	2	2	2	2	2	2	2	2	2
Total Direct Costs	**81**	**43**	**66**	**72**	**100**	**102**	**103**	**103**	**103**	**104**
Indirects	164	51	64	52	79	79	91	97	92	86
Overheads	82	36	55	68	82	82	84	85	85	83
Total	**326**	**130**	**184**	**192**	**260**	**263**	**278**	**286**	**281**	**273**
Annual Change	-	(60%)	42%	4%	36%	1%	6%	3%	(2%)	(3%)
Change Since 2007	-	(60%)	(44%)	(41%)	(20%)	(20%)	(15%)	(12%)	(14%)	(16%)

Source: Halcrow (2011). Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Halcrow stated that SunWater is forecasting an increase in preventive maintenance as compared to its historical expenditure. Of the direct expenditure, this is primarily driven by an increase in labour expenditure. SunWater explained that this increase was due to the realignment of expenditure classified as Operations to Preventive Maintenance. It noted that operations surveillance was moved to Preventive Maintenance as a result of the review by PB. A review of the analysis by PB indicated that this accounts for approximately $12,800 per annum ($2010-11 real). Halcrow noted that SunWater's forecast expenditure on Operations has decreased, reflecting this adjustment.

SunWater provided a breakdown of historical expenditure into condition monitoring, servicing and weed control, as shown in Table 5.13 below. While a similar breakdown has not been provided for forecast expenditure, the table shows the historical fluctuations in preventive maintenance activities.

Table 5.13: Preventive Maintenance (Real $'000)

Sub-Activity	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Condition Monitoring	59	69	98	147
Servicing	203	25	35	19
Weed Control	64	35	51	26
Total	**326**	**130**	**184**	**192**

Source: Halcrow (2011). Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Halcrow noted that the expenditure in 2006-07 is significantly greater than the expenditure in 2007-08 to 2009-10. Halcrow understands that the reason for this is the transfer of financial data into SunWater's revised Business Operating Model which came into effect on 1 July 2008. This involved the reclassification of some activities, including some tasks previously coded as refurbishment projects, to preventive maintenance codes.

Halcrow also understands that SunWater's condition monitoring and servicing forecast expenditure is primarily based on forecasts developed by PB, although it also includes allowances for additional servicing activities.

As part of the review undertaken by PB, it forecast expenditure of approximately $55,250 per annum ($2010-11 real) on condition monitoring and servicing for the coming price path period. This is equivalent to approximately $57,100 per annum ($2010-11 real). This excludes overhead and indirect costs.

As part of the review, Halcrow sought to confirm that the maintenance activities costed by PB were consistent with the maintenance activities and frequencies identified in SunWater's facility Operation and Maintenance Manuals. For Kroombit Dam, the costed maintenance activities were generally consistent with the maintenance schedules in the Operations and Maintenance Manual, although the PB review includes maintenance activities additional to those included in the Operation and Maintenance Manual. The Operation and Maintenance Manual for Callide Dam does not list the preventive maintenance schedules and work instructions in such a way as to enable these to be cross-checked against the work instructions costed by PB. However, based on discussions during the site visit to the scheme, Halcrow understands key maintenance activities undertaken in respect of the radial gates fitted to the Callide Dam spillway include maintenance of protective coating, i.e. corrosion protection (note that the gates are faced with stainless steel); the trunnion bearings; the gate seals (along all edges); and wire ropes (that form part of the operating mechanism).

Halcrow is generally satisfied that the expenditure forecast developed by PB is based on appropriate drivers, taking into account both the nature and frequency of the activities to be undertaken. However, Halcrow noted that this estimate is built up from SunWater's existing work instructions and its current approach to maintenance, which is yet to be optimised. Consequently, it there is likely to be scope to achieve efficiency savings in the delivery of servicing and condition monitoring activities. These savings are not currently reflected in the expenditure presented in the NSP. Furthermore, as the breakdown of forecast expenditure provided to this review splits out expenditure into labour, materials, contractors, rather than into condition monitoring, servicing and weed control, it has not been possible to confirm that the forecast expenditure is in fact based on the forecast developed by PB.

Halcrow also noted that the forecast of preventive maintenance expenditure also includes expenditure related to weed control, and "additional servicing, calibration and adjustment of equipment such as pumps, motors, regulator gates, meters and valves". Excluding the cost estimates developed from the PB review, SunWater's forecast expenditure includes an additional allowance for preventive maintenance activities of approximately $43,000 per annum.

During site visits to the Callide Valley Bulk WSS, SunWater noted that weed control is not undertaken in river systems, which comprise the majority of the Callide Valley Scheme. It is, however, necessary to undertake weed control in respect of Callide Dam and the Callide Diversion Channel.

Weed control along the Diversion Channel is undertaken using either mechanical or chemical control methods. Weed control is only required when the channel is running water; minimal maintenance, mainly weed spraying, is required to enable the channel to operate. Weed growth around structures is controlled on an ongoing basis.

SunWater has not provided any detailed information on the forecast expenditure for weed control activities other than to state that it is based on an 'average year,' and that chemical costs typically account for $3,500 per annum. Average expenditure on weed control (including indirects and overheads) over the period 2006-07 to 2009-10 was approximately $44,000 per annum. Excluding overheads and indirect costs, average (direct) expenditure was $14,000 per annum. From the information provided by SunWater, it is not clear how much of the $43,000 per annum preventive maintenance forecast relates to weed control versus "additional servicing, calibration and adjustment of equipment such as pumps, motors, regulator gates, meters and valves".

This indicated that SunWater's forecast of preventive maintenance expenditure also includes approximately $29,000 per annum of expenditure related to "additional servicing, calibration and adjustment of equipment such as pumps, motors, regulator gates, meters and valve". No information has been provided on the nature of this expenditure, or the method by which SunWater has forecast preventive maintenance activities for the coming price path. Consequently, Halcrow is unable to make an assessment of its prudency and efficiency and proposes that the forecast preventive maintenance expenditure is adjusted by this amount.

With the exception of this additional expenditure, Halcrow is generally satisfied that SunWater's forecast (direct) expenditure on preventive maintenance expenditure is prudent. However, as indicated above, there is likely to be scope for SunWater to achieve efficiency savings in the delivery of servicing and condition monitoring activities.

SunWater's Response

SunWater noted Halcrow's comments that it was unable to account for $43,000 of preventive maintenance costs. However, some $29,000 appears to be for weed control.

In response, SunWater submitted that, in reviewing its preventive maintenance activity costs, Halcrow tried to evaluate the costs by sub-activity. This has occurred because there is information about two of the three preventive maintenance sub-activities cost, condition monitoring and servicing, which were recently reviewed and quantified by PB. SunWater noted that Halcrow took the PB costs and concluded that the residual relates to weed control.

Halcrow then looked to understand the basis of this residual and evaluate whether it was prudent and efficient. In some cases, Halcrow compared the residual to past labour costs for weed control, and used historic figures as proxy for weed control labour costs to recommend adjustments to the preventive maintenance activity costs.

SunWater stated that it is understandable that Halcrow would follow this logic given the information provided, and its frustration about the lack of data to support this residual is apparent.

SunWater submitted that its expenditure forecasts, particularly labour costs, are not intended to be viewed at the sub-activity level, and indeed examining labour costs even at the activity level should be done with some caution. This is because labour is shared between activities and schemes, and any examination of the costs will tend to be more about the assumptions about how the existing workforce will spend its time, rather than an overall assessment of efficiency.

SunWater accepted that discrepancies exist when comparing the 'residual' labour costs for weed control against historic costs for weed control. However, SunWater did not recommend examining costs at the sub activity level, given:

(a) historic costs are heavily dependent on how employees have recorded their time, and there scope for error in these entries; and

(b) forecasts were developed at the activity, not sub-activity level. Attempts to recreate a labour or other cost at the sub activity level will be fraught and misleading.

SunWater suggested that a better approach, which more closely aligns with its workforce arrangements, is to examine the labour costs for each WSS at the scheme level, and assess whether the total labour dedicated to that scheme is efficient for a given level of workload.

SunWater did not agree with recommendations made in relation to preventive maintenance costs which are made on the basis of examining labour costs at the sub activity level.

Conclusion

In Volume 1, the Authority accepted the basis of Halcrow's adjustments to condition monitoring and services. Further, the Authority noted that most of its consultants considered that that there is scope for SunWater to achieve further efficiencies once the balance of preventive and corrective maintenance is optimised. The Authority considered that this potential for efficiency could be addressed via the broad efficiency measures imposed on SunWater schemes (noted further below).

In Volume 1, the Authority also recommended that SunWater implement PB's earlier recommendations that:

(a) SunWater's maintenance plans and work instructions; and associated labour inputs and unit costs should be audited, including a review of sub-contracted maintenance activities;

(b) maintenance practices and costs need to be examined to identify the optimum mix of preventive and corrective maintenance activities for each scheme; and

(c) a Reliability Centred Maintenance (RCM) approach to formulating maintenance activity requirements should be adopted.

Notwithstanding SunWater's response, the Authority considers that the approach adopted by Halcrow is reasonable as efficiency at the activity level can only be determined by assessing efficiency at the sub-activity level. The Authority recognises that efficiencies can be gained by sharing labour between activities and schemes. However, an estimate of the costs of conducting an activity necessarily requires an assessment of the costs of the component sub-activities.

The Authority accepts Halcrow's recommendation to remove $29,000 of unjustified preventive maintenance expenditure. SunWater has not established the efficiency of this expenditure at the sub or activity level.

In response to stakeholder submissions, the Authority notes that SunWater has statutory obligations to manage weeds (and pests) on its land. Therefore, the Authority considers that weed control costs are justified. SunWater noted in its NSP that weed and pest management is conducted by local operations staff as part of their routine activities.

Item 4: Corrective Maintenance

Stakeholder Submissions

SunWater

SunWater submitted that even with sound preventive maintenance practices, unexpected failures can occur or other incidents can arise that require reactive corrective maintenance. While these are difficult to forecast with accuracy, history has shown that such events can be expected and need to be factored into expenditure forecasts.

There are two types of corrective maintenance activities:

(a) emergency breakdown maintenance which refers to maintenance that has to be carried out immediately to restore normal operation or supply to customers or to meet a regulatory obligation (e.g. rectify a safety hazard); and

(b) non-emergency maintenance which refers to maintenance that does not have to be carried out immediately to restore normal operations, but needs to be scheduled in advance of the planned maintenance cycle.

SunWater also stated that a provision has been made for corrective maintenance based on past experience. This provision includes a portion of labour costs in the scheme for such events, as well as additional materials and plant hire.

The corrective maintenance forecast does not include any costs of damage arising from events covered by SunWater's insurance.

SunWater's proposed corrective maintenance costs are set out in Table 5.6 above.

Other Stakeholders

No other stakeholders commented on this item.

Authority's Analysis

Consultant's Review

A breakdown of historical and forecast expenditure on corrective maintenance is provided in Table 5.14 below.

Table 5.14: Corrective Maintenance Expenditure (Real $'000)

Type	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Labour	12	16	3	9	10	10	10	10	10	10
Material	7	8	10	1	3	3	3	3	3	3
Contractors	4	-	-	1	1	1	1	1	1	1
Other	-	3	2	-	1	1	1	1	1	1
Total Direct Cost	**24**	**27**	**15**	**11**	**15**	**15**	**15**	**15**	**15**	**15**
Indirects	29	25	4	7	9	9	11	11	11	10
Overheads	13	18	4	10	10	10	10	10	10	10
Total	**66**	**69**	**23**	**28**	**34**	**34**	**36**	**37**	**36**	**35**
Annual Change	-	6%	67%	20%	22%	1%	5%	3%	(2%)	(2%)
Change Since 2007	-	6%	65%	58%	(49%)	48%	45%	44%	45%	46%

Source: Halcrow (2011). Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Annual expenditure on corrective maintenance fell during the period 2006-07 to 2009-10. SunWater's 2010-11 budget includes a slight increase in expenditure over 2009-10 levels, after which time it is forecast to remain approximately steady.

Halcrow noted that SunWater's forecast expenditure is based on an average of the past four years (including 2011), excluding outliers. SunWater has not provided Halcrow with the calculations in support of its forecast of corrective maintenance. However, a breakdown of the expenditure indicates labour charges of $10,000 relate to staff from the SunWater's Central region. The materials expenditure includes $1,000 for plant usage.

As part of the review, Halcrow obtained a breakdown of corrective maintenance work orders for the period 2008-09 to 2010-11 for Callide Valley. The expenditure associated with the work orders is different to that that identified in Table 5.14, however, Halcrow understands this is because some work orders run over multiple years. The corrective maintenance activities undertaken are typical of what might be reasonably expected from the operation of the scheme, and include repairs to switchboards and pumps, and maintenance on houses at Callide Dam. The work orders also include maintenance activities on the public amenities at Callide Dam.

Based on discussions during the site visit to Callide Valley Bulk WSS, Halcrow understands that corrective maintenance activities undertaken in respect of the Callide Diversion Channel include repair of channel washouts, i.e. where surface water washes out the channel bank; maintenance of catch drains and berm drains; cleaning of screens at syphons (in excess of 20No); maintenance of channel structures; and maintenance (repair/replacement) of fences along the length of the channel.

Supply point meters are maintained (repaired) by SunWater staff. Due to aging meters and the unavailability of spare parts, meters are being maintained using parts reclaimed from old meters.

The cost of a new meter is in the order of $3,500 per unit. Introduction of the proposed National Metering Standards will result in significant replacement costs (which are not allowed for in the expenditure forecasts).

Halcrow noted that it is difficult to accurately forecast corrective maintenance expenditure. SunWater's approach, which uses historical expenditure to forecast expenditure, is considered appropriate.

Table 5.15 below shows historical and proposed direct expenditure on corrective and preventive maintenance.

Table 5.15: Maintenance Expenditure (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Preventive Maintenance	81	43	66	72	100	102	103	103	103	104
Corrective Maintenance	24	27	15	11	15	15	15	15	15	15
Total Maintenance	**104**	**70**	**81**	**83**	**115**	**116**	**118**	**118**	**119**	**119**
Annual Change	-	(33%)	16%	2%	39%	1%	1%	-	-	-
Change since 2007	-	(33%)	(22%)	(21%)	10%	12%	13%	14%	14%	14%
Preventive Maintenance	77%	62%	81%	87%	87%	87%	87%	87%	87%	87%
Corrective Maintenance	23%	38%	19%	13%	13%	13%	13%	13%	13%	13%

Source: Halcrow (2011). Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Halcrow noted that SunWater is yet to undertake a review of the current mix of preventive and corrective maintenance to assess whether they are appropriately optimised. Consequently, there may be some scope to optimise the proposed expenditure on maintenance.

SunWater's Response

SunWater noted that Halcrow stated corrective maintenance has not been optimised to take account of the changes to preventive maintenance.

In response, SunWater submitted that the PB review focussed on costing the preventive maintenance program as it exists. The PB review did not result in major changes to the historic preventive maintenance program.

Where the PB review resulted in changes to preventive maintenance costs from the past, this was due to more accurate and updated costing, rather than a change to the preventive maintenance program itself.

In some cases, additional condition monitoring is carried out (e.g. on storages after floods / pumping equipment if minor faults occur during the peak season). In some cases, an additional

allowance was included as this condition monitoring was not in the scope of the work instructions reviewed by PB.

SunWater is progressively introducing condition-based maintenance rather than the previous time-based maintenance approach. The RCM process has started but will take some time to implement due to the number of assets involves. It would not be prudent to reduce the corrective maintenance costs at this time.

Any reductions to corrective maintenance as a result of this shift will also take some time to materialise, and any savings will be difficult to predict.

Conclusion

As noted above, in Volume 1, the Authority recommended an optimal mix of preventive and corrective maintenance should be pursued by SunWater. Further, for corrective maintenance, the Authority recommended that SunWater formally document its processes for the development of correct maintenance expenditure forecasts.

The Authority notes Halcrow's finding (not disputed by SunWater) that there may be scope to achieve efficiency in the optimisation of these programs but these efficiencies are yet to be quantified.

In the absence of any measure of the impact of the optimisation process, the Authority does not propose to apply any specific adjustments to this measure but intends to take this into account when considering the application of a general efficiency target (as outlined below).

Item 5: Electricity

Stakeholder Submissions

SunWater

SunWater submitted that the electricity costs for the scheme relate mainly to outlet works and spillway gates actuations and site lighting for access and security.

SunWater initially proposed that electricity costs increase in line with inflation with prices adjusted annually (cost pass through) to reflect the actual change in electricity costs (2011h).

SunWater subsequently proposed to escalate electricity prices by 10.5% per annum over the regulatory period reflecting the average in the Benchmark Retail Cost Index (BRCI) between 2007-08 and 2011-12, together with further adjustments in 2012-13 and 2015-16 to reflect expected increases from the introduction of the carbon tax and carbon trading scheme (2011ak).

SunWater's proposed electricity costs are set out in Table 5.6 above.

Other Stakeholders

During Round 2 consultation in April 2011, stakeholders submitted that electricity costs are too high because of the presence of the Power Station.

Authority Analysis

Consultant's Review

Halcrow stated that expenditure on electricity in the Callide Valley Bulk WSS is immaterial, accounting for 0.3% to 0.6% of operating expenditure. As evident in Table 5.16 below

SunWater adopted consistent expenditure on electricity at $5,000 for the 2010-11 budget and forecast price period until 2015-16.

The 2010-11 budget ($5,472) for the Callide Valley WSS is based on actual electricity expenditure in 2009-10 ($4,830 nominal), inflated by 13.29% to account for the increase in franchise tariffs. Halcrow considered that the method adopted to forecast electricity costs for the scheme was appropriate.

Table 5.16: Electricity Expenditure (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Electricity	5	2	3	5	5	5	5	5	5	5
Annual Change	-	(60%)	50%	66.7%	-	-	-	-	-	-
Change Since 2007	-	(60%)	(40%)	-	-	-	-	-	-	-

Source: Halcrow (2011). Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Halcrow noted that electricity use is typically stable year on year, and not material when compared to other elements of operating expenditure.

SunWater indicated that Franchise Tariffs are reviewed on an annual basis to ensure that individual sites are on the most appropriate tariff. In addition, in the Background paper QCA review of irrigation prices – electricity costs, SunWater has noted that it periodically assesses the merits of moving from the franchise tariffs to the contestable electricity market to ensure the costs of electricity are minimised. SunWater has argued that the variable nature of power usage associated with the supply of irrigation water means that it is not feasible to purchase electricity from the contestable market. While Halcrow accepted that this is likely to be the case, these periodic assessments do not appear to be documented.

In terms of reducing electricity usage, SunWater noted that its ability to control pumping during peak and off-peak periods is limited. This is primarily due to limited storage volumes, and the requirement to provide water to irrigators irrespective of whether it is during peak or off-peak periods.

Conclusion

In Volume 1, the Authority recommended that SunWater review the cost differential between franchise and contestable electricity contracts on an annual basis. Further, that SunWater report back to stakeholders on the success (or otherwise) of its energy savings measures, and quantify the savings that have been achieved.

As noted in Volume 1, the Authority proposes electricity be escalated at 7.41% per annum, based on expected growth in the four key components of electricity prices – network costs, energy costs, retail operating costs and retail margin.

At this stage, the Authority does not accept an escalation rate that makes an explicit allowance for carbon price impacts prior to them becoming enacted legislation.

The Authority notes Halcrow's conclusion that SunWater's forecast electricity expenditure appears appropriate. However, the Authority has conducted a more detailed review of

SunWater's electricity expenditure. The Authority's recommended electricity costs are set out below.

In response to stakeholder submissions, the Authority notes that SunWater's electricity costs in the Callide Valley WSS is immaterial, accounting for 0.3% to 0.6% of operating expenditure.

Item 6: Escalation

As noted in Volume 1, the Authority's consultants were required to examine the appropriateness of SunWater's proposed cost escalation methods (electricity has been dealt with above).

Direct Labour

The consultants generally agreed that SunWater's labour escalation forecast using the general inflation rate (2.5%) underestimated the likely actual movement in the cost of labour.

Evidence cited included the growth in both the Labour Price Index for the Electricity, Gas, Water and Waste Services Industry and the Labour Price Index for Queensland, which have averaged around 4% per annum in recent years, and recent forecasts by Deloitte suggesting an average increase in the labour costs facing Queensland's utilities sector of 4.3% per annum between 2011-12 and 2017-18.

The Authority recommends that labour costs be escalated at 4% per annum.

Direct Materials and Contractors

Most consultants agreed that SunWater's proposed escalation factor of 4% per annum for this component of cost was appropriate. Evidence in support included the historical analysis of Australian Bureau of Statistics (ABS) construction cost data and forecasts of industry trends. However, both Halcrow and GHD considered that SunWater had not provided sufficient rationale for its proposed escalation factor of 4% per annum for direct materials and contractor services, and that these costs should be escalated at the general rate of inflation.

The Authority recommends that direct materials and contractor costs be escalated at 4% per annum.

Other Costs

The Authority accepts SunWater's proposal to escalate other direct costs and all non-direct costs by the general inflation rate as these costs are primarily administrative and management functions.

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Callide Valley WSS is set out in Table 5.17.

The Authority's proposed costs include all specific adjustments and the Authority's proposed cost escalations as noted above. As noted in Volume 1, the Authority has applied a minimum 2.43% saving to direct operating costs (excluding electricity) in 2012-13. A further 0.75% saving arising from labour productivity is also applied, compounding annually.

Table 5.17: Direct Operating Costs (Real $'000)

	SunWater					*Authority*				
	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	338	338	338	338	338	324	323	323	322	321
Electricity	7	7	8	9	9	6	6	6	7	7
Preventive Maintenance	103	103	103	104	104	99	99	100	101	101
Corrective Maintenance	15	15	15	15	15	14	15	15	15	15
Total	**463**	**463**	**464**	**466**	**466**	**443**	**443**	**444**	**444**	**444**

Note: Totals vary from NSP due to SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter), and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source: SunWater (2011ap) and SunWater (2011ao).

5.5 Cost Allocation According to WAE Priority

It is necessary to establish a methodology to allocate operating costs to the differing priority groups of WAE.

Previous Review

For the 2006-11 price paths, all costs were apportioned between medium and high priority customers according to WPCFs in both bulk and distribution systems.

Stakeholder Submissions

SunWater

SunWater (2011j) has proposed to assign operating costs to users on the basis of their current WAE, except for non-direct costs allocated to renewals (on the basis of DLC) which are to be allocated to priority groups using HUFs.

Other Stakeholders

During Round 2 Consultation, stakeholders stated that electricity costs are too high because of the presence of the Power Station.

Irrigators also required clarification as to whether CS Energy costs are excluded.

Authority's Analysis

In Volume 1, the Authority has summarised the views of its consultants and has recommended that, in relation to bulk schemes:

(a) variable costs be allocated to medium and high priority WAE on the basis of water use;

(b) fixed preventive and corrective maintenance costs be allocated to medium and high priority WAE using HUFs; and

(c) for fixed operations costs 50% be allocated using HUFs and 50% using current nominal WAEs.

The Authority recommends that within bulk service contracts, insurance premiums are allocated between medium and high priority customers on the basis of HUFs.

The effect for the Callide Valley WSS is detailed in the following chapter (as it takes into account other factors relevant to establishing total costs).

In response to stakeholder comments, CS Energy's share of operating costs reflect its share of high priority WAE in the scheme as detailed above. In the Callide WSS, electricity costs are treated as essentially a fixed operating cost (as the electricity costs do not relate to water usage) and are therefore allocated between high and medium priority on the basis of HUF.

5.6 Summary of Operating Costs

SunWater's proposed operating costs by activity and type are set out in Table 5.18. The Authority's recommended operating costs are set out in Table 5.19.

Table 5.18: SunWater's Proposed Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operation					
Labour	127	127	127	127	127
Materials	2	2	2	2	2
Contractors	6	6	6	7	7
Other	202	202	202	202	202
Non-Direct	272	283	275	264	259
Preventive Maintenance					
Labour	85	85	85	85	85
Materials	9	9	9	9	9
Contractors	7	7	8	8	8
Other	2	2	2	2	2
Non-Direct	175	182	177	169	166
Corrective Maintenance					
Labour	10	10	10	10	10
Materials	3	3	3	3	3
Contractors	1	1	1	1	1
Other	1	1	1	1	1
Non-Direct	21	22	21	20	20
Electricity	7	7	8	9	9
Total	**930**	**951**	**938**	**919**	**912**

Note: Totals vary from NSP due to SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter), and rounding. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source: SunWater (2011ap) and SunWater (2011ao).

Table 5.19: The Authority's Recommended Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operation					
Labour	122	123	124	125	126
Materials	1	1	2	2	1
Contractors	6	6	6	6	6
Other	194	193	191	190	188
Non-Direct	265	272	260	245	237
Preventive Maintenance					
Labour	81	82	82	83	84
Materials	8	9	9	9	9
Contractors	7	7	7	7	7
Other	2	2	2	2	2
Non-Direct	170	175	167	157	152
Corrective Maintenance					
Labour	10	10	10	10	10
Materials	3	3	3	3	3
Contractors	1	1	1	1	1
Other	1	1	1	1	1
Non-Direct	20	21	20	19	18
Electricity	6	6	6	7	7
Total	**898**	**911**	**891**	**865**	**851**

Source: QCA (2011).

6. DRAFT PRICES

6.1 Background

Ministerial Direction

The Ministerial Direction requires the Authority to recommend SunWater's irrigation prices for water delivered from 22 SunWater bulk water schemes and eight distribution systems and, for relevant schemes, for drainage, drainage diversion and water harvesting.

Prices are to apply from 1 July 2012 to 30 June 2017.

Recommended prices and tariff structures are to provide a revenue stream that allows SunWater to recover

(a) prudent and efficient expenditure on renewing and rehabilitating existing assets through a renewals annuity; and

(b) efficient operational, maintenance and administrative costs to ensure the continuing delivery of water services.

In considering the tariff structures, the Authority is to have regard to the fixed and variable nature of the underlying costs. The Authority is to adopt tariff groups as proposed in SunWater's network service plans and not to investigate additional nodal pricing arrangements.

The Ministerial Direction also requires that:

(a) where current prices are above the level required to recover prudent and efficient costs, current prices are to be maintained in real terms;

(b) where cost-reflective prices are above current prices, the Authority must consider recommending price paths to moderate price impacts on irrigators, whilst having regard to SunWater's commercial interests; and

(c) for certain schemes or segments of schemes [hardship schemes], prices should increase in real terms at a pace consistent with 2006-11 price paths, until such time as the scheme reaches the level required to recover prudent and efficient costs.

Price paths may extend beyond 2012-17, provided the Authority gives its reasons. The Authority must also give its reasons if it does not recommend a price path, where real price increases are recommended by the Authority.

Previous Review

In the 2006-11 price paths, real price increases over the five years were capped at $10/ML for relevant schemes (including for the Callide Valley WSS). The cap applied to the sum of Part A and Part B real prices. In each year of the price path, the prices were indexed by CPI. Interim prices in 2011-12 were increased by $2/ML plus CPI.

6.2 Approach to Calculating Prices

In order to calculate SunWater's irrigation prices in accordance with the Ministerial Direction, the Authority has:

(a) identified the total prudent and efficient costs of the scheme;

(b) identified the fixed and variable components of total costs;

(c) allocated the fixed and variable costs to each priority group;

(d) calculated cost-reflective irrigation prices;

(e) compared the cost-reflective irrigation prices with current irrigation prices; and

(f) implemented the Government's pricing policies in recommended irrigation prices.

6.3 Total Costs

The Authority's estimate of prudent and efficient total costs for the Callide Valley WSS for the 2012-17 regulatory period is outlined in Table 6.1. Total costs since 2006-07 are also provided. Total costs reflect the costs for the service contract (all sectors) and do not include any adjustments for the Queensland Government's pricing policies.

Table 6.1: Total Costs for the Callide Valley WSS (Real $'000)

	Actual Costs						*Future Costs*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
SunWater's Submitted Costs	1,110	803	1,147	1,234	1,292	1,325	1,359	1,373	1,354	1,330	1,323
Renewals Annuity	272	253	235	232	229	445	438	431	425	420	420
Operating Costs	840	634	933	1,020	1,078	889	930	951	938	919	912
Revenue Offsets	-1	-84	-21	-18	-14	-9	-9	-9	-9	-9	-9
Authority's Total Costs	-	-	-	-	-	-	1,255	1,258	1,229	1,199	1,183
Renewals	-	-	-	-	-	-	364	355	347	342	340
Operating Costs	-	-	-	-	-	-	898	911	891	865	851
Revenue Offsets	-	-	-	-	-	-	-9	-9	-9	-9	-9
Return on Working Capital	-	-	-	-	-	-	1	1	1	1	1

Note: Costs are presented for the total service contract (all sectors). Costs reflect SunWater's latest data provided to the Authority in October 2011 and may differ from the NSP. Source: SunWater (2011ap) and QCA (2011).

6.4 Fixed and Variable Costs

The Ministerial Direction requires the Authority to have regard to the fixed and variable nature of SunWater's costs in recommending tariff structures for each of the irrigation schemes.

SunWater submitted that all of its operating costs are fixed in the Callide Valley WSS.

As noted in Volume 1, the Authority engaged Indec to determine which of SunWater's costs are most likely to vary with water use. Indec identified:

(a) costs that would be *expected* to vary with water use. Indec expected that electricity pumping costs would generally be variable and non-direct costs would be fixed;

(b) all other activities and expenditure types (costs) would be expected to be semi-variable, including: labour, material, contractor and other direct costs, maintenance, operations and renewals expenditures;

(c) costs that *actually* varied with water use in 2006-11, by activity and by type:

(i) by activity, Indec found that operations, preventive and corrective maintenance and renewals were semi-variable. Electricity was generally highly variable with water use in five distribution systems and two bulk schemes. In three distribution systems electricity pumping costs were semi-variable due to gravity feed;

(ii) by type, Indec found that labour, materials, contractors and other direct costs were semi-variable. Non-direct costs were fixed; and

(d) costs that *should* vary with water use under Indec's proposed optimal (prudent and efficient) management approach (as outlined in Volume 1). On average across all SunWater's WSS, Indec considered 93% of costs would be fixed and 7% variable. However Indec proposed that scheme-specific tariff structures should be applied to reflect the relevant scheme costs.

For Callide Valley WSS, Indec recommended 92% of costs should be fixed and 8% variable under optimal management. The Authority notes that this ratio differs from the current tariff structure which reflects the recovery of 32% of costs in the fixed charge and 68% of costs in the volumetric charge.

In general, the Authority accepts Indec's recommended tariff structure, for the reasons outlined in Volume 1.

6.5 Allocation of Costs According to WAE Priority

Fixed Costs

The method of allocating fixed costs to priority groups is outlined in Chapter 4 – Renewals Annuity and Chapter 5 – Operating Costs. The outcome is summarised in Table 6.2.

Table 6.2: Allocation of Fixed Costs According to WAE Priority (Real $'000)

	2012-13	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Net Fixed Costs	1,154	1,156	1,130	1,102	1,087
High Priority	845	846	827	806	796
Medium Priority	308	310	304	296	291

Note: Net fixed costs is net of revenue offsets and return on working capital. Source: SunWater (2011ap) and QCA (2011).

These costs are translated into the fixed charge using the relevant WAE for each priority group.

Variable Costs

Variable costs are allocated to all users on the basis of water use. Volumetric tariffs are calculated based on SunWater's eight-year historical water usage data for all sectors. However, consistent with SunWater's assumed typical year for operating cost forecasts, the Authority has removed from the eight years of data, the three lowest water-use years for each service contract.

Accordingly, to determine the volumetric charge, the Authority has assumed historical total water use for all sectors to be 52.0% of WAE.

6.6 Cost Reflective Prices

Cost reflective prices reflect the Authority's estimates of prudent and efficient costs, recommended tariff structures, and the allocation of costs to different priority groups.

Table 6.3: Cost Reflective Prices for the Callide Valley WSS ($/ML)

	Actual Prices						*Cost Reflective Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Surface Water (Callide and Kroombit Creek)											
Fixed (Part A)	1.12	2.24	3.44	4.68	5.88	8.12	15.46	15.85	16.24	16.65	17.06
Volumetric (Part B)	15.64	17.68	20.20	22.55	24.83	25.72	8.00	8.20	8.40	8.61	8.83
Callide Benefited Groundwater Area											
Fixed (Part A)	1.12	2.24	3.44	4.68	5.88	8.12	15.46	15.85	16.24	16.65	17.06
Volumetric (Part B)	15.64	17.68	20.20	22.55	24.83	25.72	8.00	8.20	8.40	8.61	8.83

Source: Actual Prices (SunWater, 2011al) and Cost Reflective Prices (QCA, 2011).

6.7 Queensland Government Pricing Policies

As noted above, the Queensland Government has directed that:

(a) where current prices are above the level required to recover prudent and efficient costs, current prices are to be maintained in real terms;

(b) where cost-reflective prices are above current prices, the Authority must consider recommending price paths to moderate price impacts on irrigators, whilst having regard to SunWater's commercial interests; and

(c) for certain schemes or segments of schemes [hardship schemes], prices should increase in real terms at a pace consistent with 2006-11 price paths, until such time as the scheme reaches the level required to recover prudent and efficient costs.

Price paths may extend beyond 2012-17, provided the Authority gives its reasons. The Authority must also give its reasons if it does not recommend a price path, where real price increases are recommended by the Authority.

Authority's Analysis

To identify the relevant price path (if any), the Authority must first identify whether current prices recover prudent and efficient costs. To do so, given changes to tariff structure, the Authority has compared current revenues with revenues that would arise under the cost-reflective tariffs, if implemented (see Volume 1).

The Authority has calculated these current revenues using the relevant 2010-11 prices, current irrigation WAE and the five-year average (irrigation only) water use during 2006-11 (Table 6.4).

For this scheme, current revenues are below the level required to recover prudent and efficient costs (Table 6.4). As the Callide Valley WSS is a hardship scheme, irrigation prices can only increase in real terms at a pace consistent with 2006-11 price paths, until cost recovery is achieved. The pace of increase in the 2006-11 price paths was capped at $10/ML over the five years.

In Volume 1, the Authority recommended that fixed charges in hardship schemes should increase by $2/ML per annum in real terms until cost recovery is achieved. This is consistent with the pace of increase in 2006-11 prices. Volumetric charges are to reflect variable costs from 2012-13.

Therefore, and as the Callide Valley WSS is a hardship scheme, the Authority recommends fixed charges should increase by $2/ML in real terms until cost reflective charges are achieved in 2014-15, and remain constant in real terms thereafter.

Table 6.4: Comparison of Current Prices and Cost-Reflective Prices (Real $ 2012-13)

Tariff and Priority Group	*2010-11 Prices $/ML (indexed to 2012-13)*		*Irrigation WAE (ML)*	*Irrigation Water Use (ML)*	*Current Revenue*	*Revenue from Cost-Reflective Tariffs*	*Difference*
	Fixed	*Variable*					
Callide	6.18	26.09	18,295	4,882	240,376	321,863	-81,486

Source: Source: SunWater (2011al), SunWater (2011ao) and QCA (2011).

6.8 The Authority's Recommended Prices

The Authority's recommended prices to apply to the Callide Valley WSS for 2012-17 are outlined in Table 6.5, together with actual prices since 2006-07. In calculating the recommended prices, a 10-year average irrigation water use has been adopted (see Volume 1). After tariff restructuring, the revenue-neutral tariff for both tariff groups is a Part A charge of $9.93 per WAE and Part B of $8.00 per ML of usage, and the $2/ML real increase is applied to the fixed Part A charge.

Table 6.5: Draft Prices for the Callide Valley WSS ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Surface Water (Callide and Kroombit Creek)											
Fixed (Part A)	1.12	2.24	3.44	4.68	5.88	8.12	11.93	14.28	16.24	16.65	17.06
Volumetric (Part B)	15.64	17.68	20.20	22.55	24.83	25.72	8.00	8.20	8.40	8.61	8.83
Callide Benefited Groundwater Area											
Fixed (Part A)	1.12	2.24	3.44	4.68	5.88	8.12	11.93	14.28	16.24	16.65	17.06
Volumetric (Part B)	15.64	17.68	20.20	22.55	24.83	25.72	8.00	8.20	8.40	8.61	8.83

Source: Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2011).

6.9 Impact of Recommended Prices

The impact of any change in prices on the total cost of water to a particular irrigator, can only be accurately assessed by taking into account the individual irrigator's water usage and nominal WAE (see Volume 1).

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APPENDIX A: FUTURE RENEWALS LIST

Below are listed SunWater's forecast renewal expenditure items greater than $10,000 in value, for the years 2011-12 to 2035-36 in 2010-11 dollar terms.

Asset	*Year*	***Description***	***Value ($'000)***
Callide Creek Weir	2012-13	Refurbish galvanised inlet screens at mid-life	12
	2018-19	Refurbish galvanised inlet screens at mid-life	12
	2021-22	Refurbish: Mid life overhaul	62
	2022-23	Regalvanise steel wales ($15k) and replace bolts ($30k) at half life	55
	2024-25	Refurbish galvanised inlet screens at mid-life	12
	2030-31	Refurbish galvanised inlet screens at mid-life	12
Callide Dam	2011-12	12CVA-REFURBISH VENTILATION SYSTEM	13
	2012-13	Replace Switchboard - Dist Board Valve House	62
		Replace Switchboard - Bldg Serv Elec Serv Bldg	62
		Replace Switchboard - Inlet Tower	62
		12CVA-REFURBISH ELECTRICAL RETIC	45
		Repair Concrete	31
		13CVA-REFURBISH CONDUIT WALKWAY	12
	2013-14	INVESTIGATION CONTAMINATED LAND SITES	28
		14CVA-REPLACE TWS PUMP	12
		14CVA-REFURBISH SPILLWAY GATE 3	12
		14CVA-REFURBISH SPILLWAY GATE 2	12
		14CVA-REFURBISH SPILLWAY GATE 6	12
		14CVA-REFURBISH SPILLWAY GATE 1	12
		14CVA-REFURBISH SPILLWAY GATE 4	12
		14CVA-REFURBISH SPILLWAY GATE 5	12
	2014-15	12CVA-REPLACE INLET SCREENS	134
		10CVA01-UNDERTAKE 5YR DAM SAFETY CALLIDE	91
		Replace Ladders, Platforms, Handrails & Safety	88
		Refurbish: 'Denso' wrap outlet conduits - continuation of project started in 04 (Bi368).	50
		Options analsys to consider replacement refurbishment of the standby diesel alternator	13
	2015-16	Replace Standby Diesel Alternator	275
		Replace Winches (Hydraulic)	62
		Replace Power Poles And Aerials	37
		Study: 5yr Dam Comprehensive Inspection (Review of EAP, O&M and SOPs)	25
	2016-17	14CVA-REFURBISH ELECTRICAL INSTALLATION	942
		Replace Switchboard - Main Hydraulic Building	70
		Replace Switchboard - Bldg Serv Hydraulic Bldg	62
		Replace Switchboard - Control Diesel Generator	62
		Refurbish: 'Denso' wrap outlet conduits - continuation of project started in 04 (Bi368).	50
		Replace Automatic Weather Station	27
		Replace Load Bank	25
		Major overhaul (new seal, repaint etc.) every 30 yrs.	22
		Refurbish Valve - Major overhaul (new seal, repaint etc.)	22
		Replace Lighting And Power	15

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Battery Charger	12
		Valve house tunnel emergency lighting and upgrade vent fan switch - WH&S	12
		Replace Batteries	12
		Major overhaul (new seal, repaint etc.) every 20 years.	11
	2017-18	Replace 1200D Butterfly Valve R/H Cal B	124
		Replace 1200D Butterfly Valve L/H Cal B	124
	2018-19	Study: 20yr Dam Safety Review (by 1 May 2019)	124
		Replace Motor	12
	2019-20	Replace Logic & Control	161
		10CVA01-UNDERTAKE 5YR DAM SAFETY CALLIDE	88
		Major overhaul (new seal, repaint etc.) every 20 years.	62
		Replace Building	17
		Refurbish guardrail - Operator identified	12
	2020-21	Replace Switchboard - Main Elec Services Bldg	190
		Study: 5yr Dam Comprehensive Inspection (Review of EAP, O&M and SOPs)	25
	2021-22	12CVA-REFURBISH VENTILATION SYSTEM	13
	2022-23	Refurbish: Repaint and reseal every 20 yrs.- actual cost	24
	2023-24	Refurbish Access Bridge	49
	2024-25	10CVA01-UNDERTAKE 5YR DAM SAFETY CALLIDE	86
	2025-26	Refurbish 1200Dia Outlet Pipe Lhs	733
		Replace Conduit Steel Walkway	244
		Replace 300D Discharge Valve Cal Ck	124
		Replace Ventilation System	74
		Study: 5yr Dam Comprehensive Inspection (Review of EAP, O&M and SOPs)	24
	2026-27	Valve house tunnel emergency lighting and upgrade vent fan switch - WH&S	12
	2027-28	13CVA-REFURBISH CONDUIT WALKWAY	12
	2028-29	Major Refurbishment	562
	2029-30	10CVA01-UNDERTAKE 5YR DAM SAFETY CALLIDE	86
		Refurbish Valve - Major overhaul (new seal, repaint etc.)	22
		Major overhaul (new seal, repaint etc.) every 30 yrs.	22
	2030-31	12CVA-REFURBISH ELECTRICAL RETIC	46
		Study: 5yr Dam Comprehensive Inspection (Review of EAP, O&M and SOPs)	25
	2031-32	Replace Automatic Weather Station	27
		12CVA-REFURBISH VENTILATION SYSTEM	13
		Upgrade access to spillway trash screens on right side - WH&S	12
		14CVA-REFURBISH SPILLWAY GATE 1	12
	2032-33	Repair Concrete	31
		Refurbish guardrail - Operator identified	12
	2033-34	14CVA-REFURBISH SPILLWAY GATE 3	12
		14CVA-REFURBISH SPILLWAY GATE 6	12
		14CVA-REFURBISH SPILLWAY GATE 5	12
		14CVA-REFURBISH SPILLWAY GATE 2	12
		14CVA-REFURBISH SPILLWAY GATE 4	12
	2034-35	10CVA01-UNDERTAKE 5YR DAM SAFETY CALLIDE	87
		Major overhaul (new seal, repaint etc.) every 20 years.	11

Asset	*Year*	***Description***	***Value ($'000)***
	2035-36	Study: 5yr Dam Comprehensive Inspection (Review of EAP, O&M and SOPs)	25
Callide Diversion Channel	2011-12	12CVA-REFURBISH CHANNEL EARTHWORKS	42
		09CVA-REPLACE DROPBOARDS-CONTROL GATES	12
	2016-17	Replace Access Crossing 19472M Left	46
		Replace Access Crossing 15661M Left	13
	2017-18	Change Out Safety Screen	80
	2018-19	Replace Pipeline	59
Callide Groundwater Distrib	2020-21	Replace Recorder Building	37
		Replace 130315C Stepanoffs	37
	2026-27	Replace Recorder Building	36
	2027-28	Replace Meter, 100Mm	71
		Replace Meter, 125Mm	18
	2035-36	Replace Control Weir	192
		Replace Recorder Building	36
Kroombit Dam	2011-12	0	27
	2012-13	13CVA-REFURBISH PIPEWORK	12
	2013-14	14CVA-REVISE EAP-KROOMBIT DAM	13
	2014-15	10CVA05-UNDERTAKE 5YR DAM SAFETY-KROOM	55
		Refurbish road by reforming and patching	13
	2015-16	Study: 5yr Dam Comprehensive inspection (review of EAP, O&M, SOPs)	25
	2016-17	Major Refurbishment	31
	2019-20	Study: 20yr Dam Safety Review (by 1 Jun 2020)	124
		10CVA05-UNDERTAKE 5YR DAM SAFETY-KROOM	53
		Refurbish road by reforming and patching	12
	2020-21	Study: 5yr Dam Comprehensive inspection (review of EAP, O&M, SOPs)	25
	2022-23	Replace Settlement Survey Points	14
	2023-24	14CVA-REVISE EAP-KROOMBIT DAM	12
		14CVA-REFURBISH CRANE	12
	2024-25	10CVA05-UNDERTAKE 5YR DAM SAFETY-KROOM	52
		Refurbish road by reforming and patching	12
	2025-26	Study: 5yr Dam Comprehensive inspection (review of EAP, O&M, SOPs)	24
		13CVA-REFURBISH PIPEWORK	12
	2027-28	Replace Switchboard	10
	2029-30	10CVA05-UNDERTAKE 5YR DAM SAFETY-KROOM	52
		Minor Refurbishment	18
		Refurbish road by reforming and patching	12
	2030-31	Study: 5yr Dam Comprehensive inspection (review of EAP, O&M, SOPs)	25
	2033-34	14CVA-REVISE EAP-KROOMBIT DAM	12
	2034-35	10CVA05-UNDERTAKE 5YR DAM SAFETY-KROOM	52
		Major Refurbishment	31
		Refurbish road by reforming and patching	12
	2035-36	Study: 5yr Dam Comprehensive inspection (review of EAP, O&M, SOPs)	25
Service Contract	2011-12	12CVAXX ADDRESS HEIGHT SAFETY RISKS CVA	82