



Final Report

SunWater

Irrigation Price Review: 2012-17

Volume 2

Theodore Distribution System

April 2012

Level 19, 12 Creek Street Brisbane Queensland 4000
GPO Box 2257 Brisbane Qld 4001
Telephone (07) 3222 0555
Facsimile (07) 3222 0599

general.enquiries@qca.org.au
www.qca.org.au

© Queensland Competition Authority 2012

The Queensland Competition Authority supports and encourages the dissemination and exchange of information. However, copyright protects this document. The Queensland Competition Authority has no objection to this material being reproduced, made available online or electronically but only if it is recognised as the owner of the copyright and this material remains unaltered.

TABLE OF CONTENTS

	PAGE
GLOSSARY	III
EXECUTIVE SUMMARY	IV
1. THEODORE DISTRIBUTION SYSTEM	1
1.1 System Description	1
1.2 Distribution System Infrastructure	1
1.3 Network Service Plan	2
1.4 Consultation	2
2. REGULATORY FRAMEWORK	4
2.1 Introduction	4
2.2 Draft Report	4
2.3 Submissions Received from Stakeholders on the Draft Report	6
2.4 Authority's Response to Submissions Received on the Draft Report	6
3. PRICING FRAMEWORK	7
3.1 Tariff Structure	7
3.2 Termination (Exit) Fees	8
3.3 Water Use Forecasts	11
3.4 Tariff Groups	12
3.5 Distribution Losses	13
3.6 Drainage Charges and Drainage Diversion Charges	18
4. RENEWALS ANNUITY	20
4.1 Background	20
4.2 SunWater's Opening ARR Balance (1 July 2006)	21
4.3 Past Renewals Expenditure	22
4.4 Opening ARR Balance (at 1 July 2012)	32
4.5 Forecast Renewals Expenditure	34
4.6 SunWater's Consultation with Customers	48
4.7 Allocation of Distribution Renewals Costs According to WAE Priority	49
4.8 Calculating the Renewals Annuity	51
5. OPERATING COSTS	53
5.1 Background	53
5.2 Total Operating Costs	53
5.3 Non-Direct Costs	58
5.4 Direct Costs	62
5.5 Cost Allocation According to WAE Priority	84
5.6 Summary of Operating Costs	85
6. RECOMMENDED PRICES	89
6.1 Background	89
6.2 Approach to Calculating Prices	90

6.3	Total Costs	90
6.4	Fixed and Variable Costs	92
6.5	Allocation of Costs According to WAE Priority	93
6.6	Cost-Reflective Prices	94
6.7	Queensland Government Pricing Policies	97
6.8	The Authority's Recommended Prices	98
6.9	Impact of Recommended Prices	102
	REFERENCES	103
	APPENDIX A: FUTURE RENEWALS LIST	121

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 Theodore Distribution System for the 2012-17 regulatory period are outlined in Tables 1 to 4, together with actual prices since 1 July 2006. Although prices for bulk costs of the Dawson Valley WSS are presented, the review of the underlying bulk costs is set out in detail as part of a separate report on the Dawson Valley WSS.

Table 1: Recommended Prices for the Theodore Distribution System (\$/ML)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Dawson Valley WSS – River											
Fixed (Part A)	9.16	9.44	9.88	10.20	10.48	10.88	15.17	15.55	15.94	16.34	16.75
Volumetric (Part B)	9.23	9.50	9.96	10.27	10.58	10.96	1.69	1.73	1.78	1.82	1.87
Dawson Channel (Theodore & Gibber Gonyah) (Unbundled)											
Fixed (Part C)	30.56	33.24	36.64	37.76	38.96	42.32	32.78	35.65	38.64	41.76	45.02
Volumetric (Part D)	11.08	12.26	13.72	14.16	14.59	15.11	28.44	29.15	29.88	30.63	31.39
Dawson Channel (Theodore & Gibber Gonyah) (Bundled)											
Fixed (Part A)	39.72	42.68	46.52	47.96	49.44	53.20	47.96	51.21	54.59	58.11	61.77
Volumetric (Part B)	20.31	21.76	23.68	24.43	25.17	26.07	30.13	30.88	31.66	32.45	33.26

Note: Bundled prices are for information only. Prior to 2012-17, channel tariffs were a bundled price for bulk and distribution services. Thus, the fixed Part C tariffs for 2006-12 represent a notional unbundled channel price calculated by deducting Part A River prices from (bundled) Part A Channel prices. Source: Actual Prices (SunWater, 2011a) and Recommended Prices (QCA, 2012).

Table 2: Termination Fees (\$/ML)

	<i>Actual Prices</i>				<i>Recommended Prices</i>				
	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Dawson Channel to Dawson Regulated Section	328.04	323.95	367.64	436.51	721.35	739.38	757.87	776.81	796.23
Dawson Channel to Dawson Regulated Section (Glebe Weir Reservoir)	367.79	339.40	367.64	436.51	721.35	739.38	757.87	776.81	796.23

Source: Actual Prices (SunWater, 2011a) and Recommended Prices (QCA, 2012).

Table 3: Drainage Charges (\$/ha of land)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Drainage Charges	18.75	19.33	20.25	20.85	21.45	22.20	22.76	23.32	23.91	24.50	25.12

Source: *Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2012).*

Table 4: Drainage Diversion Charges (\$/ML)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Drainage Diversion Charges	9.23	9.23	9.23	9.23	9.23	9.23	9.46	9.70	9.94	10.19	10.44

Source: *Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2012).*

Final Report

Volume 1 of this Final 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. Also relevant is the Final Report on Dawson Valley WSS.

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 and issues paper on key issues; and, publication of all relevant documents.

All submissions received on the Draft Report have been taken into account by the Authority in preparing its Final Report.

1. THEODORE DISTRIBUTION SYSTEM

1.1 System Description

The Theodore Distribution System has a total of 43 customers. Medium and high priority water access entitlements (WAE) are outlined in Table 1.1. To deliver water to these customers, SunWater owns WAEs for distribution losses.

Table 1.1: Water Access Entitlements

<i>Customer Group</i>	<i>Irrigation WAE (ML)</i>	<i>Total WAE (ML)</i>
Medium Priority	15,941	15,941
Medium Priority Distribution Losses	3,405	3,405
High Priority	11	11
High Priority Distribution Losses	600	600
Total	19,957	19,957

Note: Theodore Distribution System WAE is included in the total Dawson water supply scheme (WSS) WAE of 61,937 ML. All distribution customers in Theodore are irrigators hence there is no difference between irrigation and total WAEs. Source: SunWater (2011am).

SunWater advised that the 11 ML of high priority WAE for irrigation in Theodore Distribution is for stock and domestic supply. It is covered by the minimum charge arrangements and SunWater have not made a separate Tariff for this group.

1.2 Distribution System Infrastructure

The Theodore Distribution System diverts water from a series of weirs located along the Dawson River and the Moura Offstream Storage¹ to two sub-systems: Gibber Gonyah and Theodore. The system consists of two pump stations, 46 km of channels and 56 km of drains.

Gibber Gonyah Distribution Sub-System

The Gibber Gonyah system, built in the 1950s, consists of a small network of open distribution channels interspaced with drains and levees. The drains discharge into the Dawson River. The Pump Station has three pumps with a combined capacity of 118 ML per day. Channel levels are controlled with manually-operated control structures and one automatic overshot gate which can be controlled from the Theodore depot.

Theodore Distribution Sub-System

The Theodore system is also a small network of open distribution channels, drains and levees. Theodore Pump Station has three pumps with the capacity to supply 102 ML per day. The Pump Station pumps into a rising main which branches through Theodore's built-up area and road reserves and discharges into the channels. The Pump Station also houses the pumps for the Theodore town water supply which are owned and operated by the Banana Shire Council. Channel levels are controlled manually using drop boards.

¹ Descriptions of the Glebe Weir, Gylanda Weir, Orange Creek Weir, Theodore Weir, Moura Offstream Storage, Moura Weir and Neville Hewitt Weir are provided in the Dawson Valley WSS Draft Report.

Drainage Infrastructure

The Theodore drainage system has been provided to remove farm and stormwater run-off with 56 km of surface drainage systems providing services to customers in both channel systems. Customers are required to discharge water from their farm blocks through the drain inlet provided.

The location of the Theodore Distribution System and key infrastructure is shown in Figure 1.1.

1.3 Network Service Plan

The Theodore Distribution System 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 price 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 prior to the Draft Report);
- (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;
- (f) considered all submissions and reports in preparing a Draft Report for comment; and
- (g) in particular, after releasing the Draft Report:
 - (i) considered issues arising from a third round of consultation in November and December 2011 and submissions on the Draft Report;
 - (ii) obtained and reviewed additional information, particularly relating to past and future renewals expenditures, and non-direct and direct costs; and
 - (iii) subjected SunWater's financial, renewals annuity and electricity models and the Authority's pricing module to independent external review.

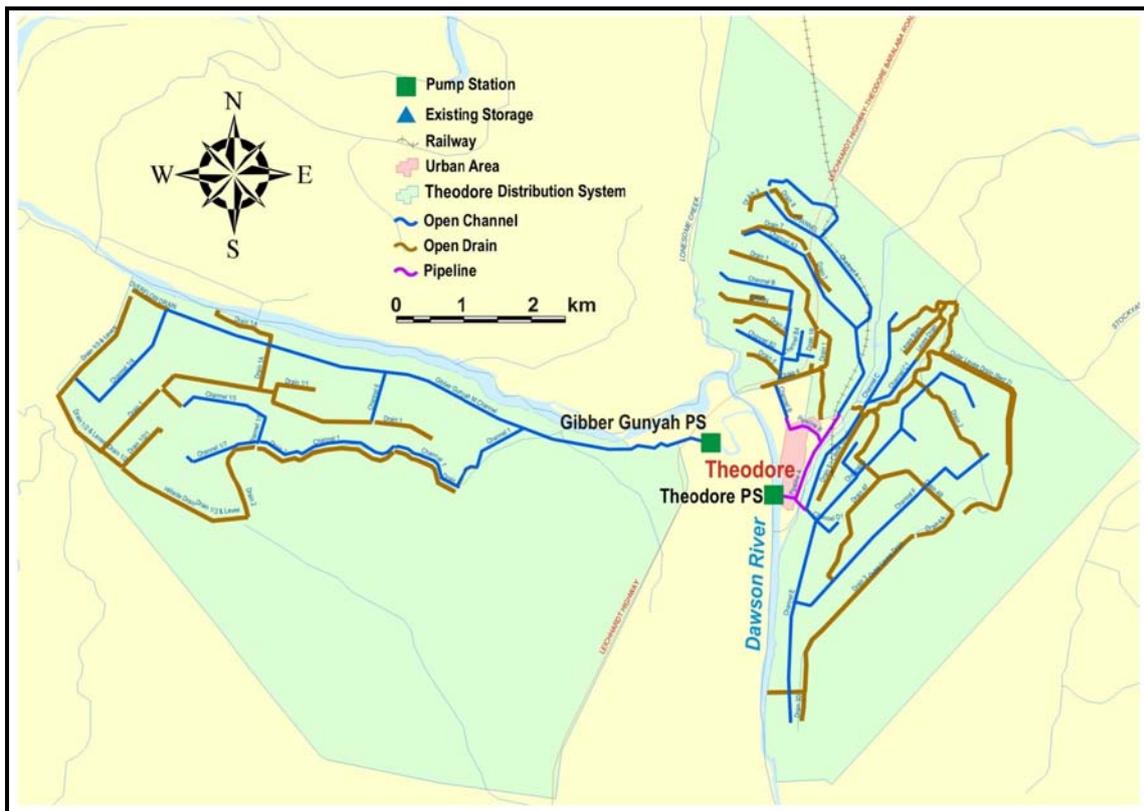
In preparing its Draft Report, the Authority has also received a number of submissions from stakeholders on matters such as capacity to pay, rate of return on existing assets, contributed

assets, nodal pricing, national metering standards and whether or not to recover recreation management costs from SunWater customers.

Following the amendments 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.

The Ministerial Direction forms **Appendix A** to Volume 1.

Figure 1.1: Theodore Distribution System Locality Map



Source: SunWater (2011).

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 paths, the Dawson Valley Tier 2 group (including representatives from the Theodore Distribution System) 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 Draft Report

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 specific risks identified by SunWater in the NSP associated with the Theodore Distribution System:

- (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 reduction of greenhouse gases that may have implications for electricity prices, or energy efficiency regulation that results in a net increase in costs;
- (c) the introduction of water planning and management charges in respect of SunWater's distribution loss entitlements for channel distribution systems;
- (d) damage to SunWater's assets, to the extent that such damage is not recoverable under insurances;
- (e) levies or charges made in relation to the regulation of irrigation prices by the Authority;
- (f) metering costs related to changes in regulatory standards;
- (g) the availability of chemicals to control submerged weeds and algae in channels; and
- (h) outbreak of noxious weeds.

Other Stakeholders

Dawson Valley Irrigators Group (DVIG) (2010) submitted that the Dawson channel irrigator customers should have the option of running the channel systems themselves.

Authority's Analysis

General Risks

The Authority has, in Volume 1 analysed the general nature of the risks confronting SunWater and recommended that an adjusted price cap apply to 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

<i>Risk</i>	<i>Nature of the Risk</i>	<i>Allocation of Risk</i>	<i>Authority's Recommended Response</i>
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), (d), (g) and (h) above will be dealt with as an end-of-period adjustment, or price trigger or cost pass through upon application by SunWater or customers. Any costs of the nature of (c) would be passed through, subject to a consideration of their materiality.

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

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 only if they are materially different to those forecast would there be a case to consider price triggers or cost pass throughs.

In response to DVIG's submission that the Dawson channel irrigator customers should have the option of running the distribution systems, the Authority notes that this is beyond the scope of the Authority's review.

2.3 Submissions Received from Stakeholders on the Draft Report

As outlined in Volume 1, the Authority notes that several submissions regarding the Draft Report's recommendations were received. These submissions primarily referred to how more accurate forecasts of electricity costs could be undertaken and how best to accommodate any variance between actual expenditure and forecast expenditure that occur during the 2012-17 regulatory period through mechanisms such as a cost pass through.

2.4 Authority's Response to Submissions Received on the Draft Report

As noted above, the Authority considers that only if costs are materially different to those forecast would there be a case to consider price triggers or cost pass throughs.

The Authority concluded that no compelling evidence had been put forward to change the approach recommended in the Authority's Draft Report.

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

In the 2006-11 price path, tariffs incorporated bulk and distribution costs into a bundled two-part tariff. During the 2005-06 price negotiations, it was generally agreed to adopt a 70:30 ratio of fixed to variable costs. However, due to the prevailing Government policy that there should be no real price decreases, fixed charges were set at 74% and variable charge at 26% of total revenues in this scheme.

Draft Report

Stakeholder Submissions

For the 2012-17 regulatory period, SunWater proposed to unbundle charges so that the recovery of distribution costs is separated from bulk water costs.

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

Authority's Analysis

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

The Authority considered that, in general, aligning the tariff structure with fixed and variable costs will manage volume risk over the regulatory period and send efficient price signals. To signal the efficient level of water use, the Authority recommended that all, and only, variable costs be recovered through a volumetric charge.

The Authority's analysis of which service delivery costs are fixed, and which are variable, was further addressed in a subsequent chapter of the Draft Report.

The Authority also recognised 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 permanent and temporary water traded for the Dawson Valley WSS are identified in Table 3.1.

Table 3.1: Permanent and Temporary Water Traded in Dawson WSS (ML)

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Permanent	375	0	678	1,385	287	390	340	0
Temporary	2,788	7,950	7,125	7,324	9,925	4,829	6,711	10,493

Note: The trading data above reflects total trading in the bulk and distribution system combined. Source: SunWater Annual Reports (2003-2010g) and Queensland Valuation Services (2010).

Following the release of the Draft Report, no submissions were received on this issue for the Theodore Distribution system.

3.2 Termination (Exit) Fees

Introduction

SunWater charges termination fees when a distribution system WAE is permanently transferred to the river. Without a termination fee, SunWater would have insufficient revenue to cover that customer's share of fixed costs.

Draft Report

Stakeholder Submissions

In 2011-12, SunWater charged the exiting user the present value of 10 year of annual fixed distribution charges or 9.4 times the distribution system fixed charge, which SunWater submitted is consistent with Australian Competition and Consumer Commission (ACCC) guidelines. SunWater treated such fees as revenue offsets for 10 years with any subsequent revenue shortfall recovered from remaining distribution system customers.

Authority's Analysis

In Volume 1, the Authority noted that the purpose of a termination fee is to ensure that a customer's departure does not result in a financial cost to SunWater or, as currently occurs, to remaining customers. Further, in structuring the termination fee there should be an incentive to SunWater to reduce costs following a customer's departure.

As proposed by SunWater, the Authority recommended a planning period of 20 years for the calculation of the renewals annuity and an annual rolling (recalculation of the) annuity (discounted by the Authority's weighted average cost of capital (WACC)). Consistent with this approach, the Authority recommended that the termination fee for each year will reflect 20 years of fixed costs (which include forecast renewals and fixed operating expenditure), although due to the rolling annuity approach over the five-year regulatory period, 24 years of data will be incorporated.

The Authority recommended that costs not recovered via the termination fee are not to be passed on to customers in the form of higher (future) annual water charges. By not recovering all fixed costs, SunWater has an incentive to reduce costs or seek out new customers.

The Authority's approach resulted in a multiple of about 13.8 times the unbundled Part C cost reflective tariff for the distribution system compared with the ACCC's guidance of up to 11 times the fixed charge). SunWater's 2011-12 termination fees (for high and medium priority) reflect 9.4 times the 2011-12 distribution system fixed charge. These multiples all include GST.

SunWater's past termination fees and the Authority's Draft Report recommended termination fees, including annual increases are detailed in Chapter 6. The termination fees for transfers from the distribution system to the two bulk tariff group areas were aligned in 2010-11, when the Part A charges in the two bulk tariff groups was aligned (see Dawson WSS Draft Report for a discussion of this issue).

Table 3.2: Draft Termination Fees for Transfers from Dawson Channel to Dawson River Termination Fees (\$/ML)

	<i>Actual Prices</i>				<i>Recommended Prices</i>				
	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>213-014</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Exit Fee (\$/ML)	328.04	323.95	367.64	399.34	1,080.02	1,107.02	1,134.69	1,163.06	1,192.14
Change from previous year (%)		-1.2%	13.5%	8.6%	270.5%	2.5%	2.5%	2.5%	2.5%

Source: SunWater (2011), QCA (2011).

Table 3.3: Draft Termination Fees for Transfers from Dawson Channel to Dawson River at Glebe Weir (\$/ML)

	<i>Actual Prices</i>				<i>Recommended Prices</i>				
	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>213-014</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Exit Fee (\$/ML)	367.79	339.40	367.64	399.34	1,080.02	1,107.02	1,134.69	1,163.06	1,192.14
Change from previous year (%)		-7.7%	8.3%	8.6%	270.5%	2.5%	2.5%	2.5%	2.5%

Source: SunWater (2011), QCA (2011).

The Authority's recommended termination fees were higher than those charged by SunWater, as the Authority's approach:

- (a) recovered 20 years of fixed costs with SunWater bearing the remaining fixed costs. SunWater's approach recovers 10 years of fixed costs with remaining fixed costs paid for by other users;
- (b) reflected the Authority's estimate of fixed costs in the cost-reflective fixed charge. The Authority's cost-reflective fixed charge recovers all fixed costs. SunWater's fixed charges recovered only a portion of fixed costs. Therefore, some fixed costs are excluded from SunWater's termination fees;
- (c) reflected the Authority's cost-reflective fixed charge and not the Authority's recommended fixed charge; and
- (d) resulted in a multiple of up to 13.8 times the Authority's cost reflective fixed charge. SunWater's multiple is up to 9.4 of its fixed charge.

Submissions Received from Stakeholders on the Draft Report

Cotton Australia (2012b) submitted that:

- (a) the recommended termination fees are up to \$1,080 for every ML shifted back to the river. This will ensure that even if a SunWater customer wishes to stop receiving a service they will have to pay a cost that is over the current value of the WAE.
- (b) this means if all distribution customers were to exit, the total termination fees would exceed \$21,500,000 and at 5% interest SunWater would recover more than the yearly total cost of operating without providing any service. Further noting that with those numbers there is no incentive for SunWater to look after the customers it services.

- (c) the draft recommendation from the Authority allowing SunWater to impose a charge per ML to shift water from the channel which is only at cost recovery, to the river which is above cost by \$4.73/ML/year. All termination fees should be reduced by $\$4.73 \times 20$ years = \$94.60

Cotton Australia (2012b) recommended that there should be a greatly reduced termination fee ensuring SunWater reduces costs in line with demand, promotes its schemes to build demand and stop any risk of profiting by water being transferred to the river.

Authority's Response to Submissions Received on the Draft Report

The Authority's response to general comments in regard to termination fees is provided in Volume 1.

The Draft Report recommended that SunWater's termination fee should recover 20 years of fixed distribution system costs, resulting in a termination fee multiple of 13.8 times fixed costs (incl. GST). Since then, additional matters have been considered including the incorporation of estimates of cost saving (not previously incorporated in estimates of the multiple) and changes in the assumed fixed operating costs over time. As a result a multiple of just under 12 is considered more cost reflective.

When considered together with the implications for the competitiveness of the St George scheme relative to other adjacent MDB schemes – where a lower ACCC multiple would apply (11 incl. GST) – and administrative simplicity and consistency, the Authority proposes that a multiple of 11 (incl. GST) be applied by SunWater to cost reflective fixed charges when establishing termination fees for particular schemes.

A lower multiple could be applied at SunWater's discretion should it be consistent with SunWater's commercial interests (for example, by the prospect of early resales or in the interests of more efficient scheme management).

In response to the submission, the Authority considers that:

- (a) this approach recovers up to 60% of SunWater's relevant fixed costs from the departing customer (exiter) and the balance from SunWater. The Authority considers that it is appropriate for exiting customers to contribute towards future fixed costs. Therefore, the Authority has set the multiple in reference to the future fixed costs, rather than the market value of WAE.

The balance of costs is allocated to SunWater, thereby providing SunWater with a further incentive to reduce its fixed distribution system costs and/or attract new customers. Importantly, remaining customers should not pay for any of the costs outstanding upon exit of the scheme by another customer or SunWater.

The Authority's calculations do not support Cotton Australia's conclusion that the interest on the Draft Report termination fees would be greater than the annual cost of the distribution system.

- (b) it is appropriate to recognise above lower bound contributions in the bulk scheme. This has been taken into account in recommending the adoption of the multiple of 11 (incl GST);
- (c) fixed distribution system costs are recovered from distribution customer WAE only. This is consistent with the planning framework as only customers with a distribution system contract are allocated distribution system costs.

The transfer of SunWater's own distribution system WAE out of the distribution system should attract a termination fee (as for all customer transfers) to ensure remaining customers do not bear the costs.

However, it would not be appropriate for SunWater to pay a termination fee when converting distribution loss WAE as no fixed distribution system costs are allocated to distribution loss WAE. Where SunWater holds excess distribution loss WAE, under the Authority's recommendations, it will pay the associated (bulk holding) costs.

In the event that SunWater changes the purpose of such WAE, it will continue to pay associated bulk costs until the WAE is and, once sold, the new owner will pay associated (bulk) costs.

SunWater's past termination fees and the Authority's recommended termination fees are detailed in Chapter 6 – Final Prices.

3.3 Water Use Forecasts

Introduction

During the 2006-11 price paths, water use forecasts played an essential role in the determination of 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 of 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 Theodore Distribution System, SunWater (2006b) assumed a water usage forecast of 70% of the WAE in the channel system. Water usage for high and medium priority irrigation WAE was not separately identified (SunWater, 2011b).

Draft Report

Stakeholder Submissions

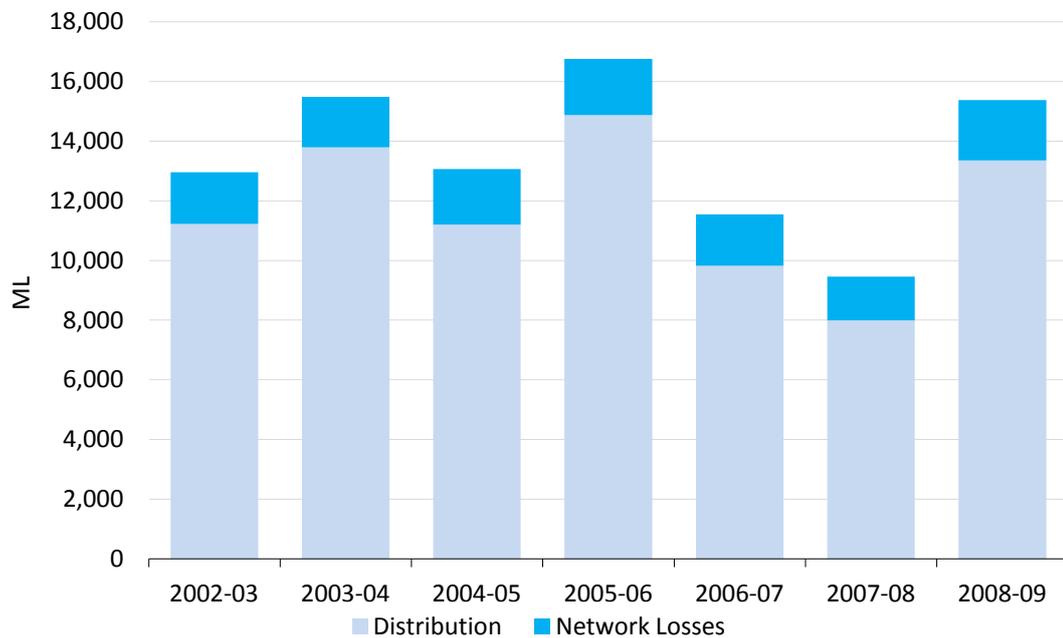
SunWater

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

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

SunWater's usage forecast 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. The forecast use for the distribution system is 70% of current WAE and medium priority distribution losses, plus 100% of high priority losses.

Figure 3.1 shows the historic usage information for the Theodore Distribution System submitted by SunWater (2011). SunWater stated that over the last seven years, total water use in the distribution system has been 73% of current WAE.

Figure 3.1: Water Usage for the Theodore Distribution System (All Sectors)

Source: SunWater (2011).

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

As no submissions on this matter were received in response to the Draft Report and as the Authority has not identified any other grounds for altering its approach, the recommendation outlined in Draft Report is maintained.

3.4 Tariff Groups

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

The previous SunWater Irrigation Price Paths Final Report (SunWater, 2006b) nominated one tariff group for the channel systems of the Theodore Distribution System: Channel.

In accordance with the Ministerial Direction, the Authority will adopt the proposed designated single tariff group.

3.5 Distribution Losses

Introduction

Distribution losses are incurred in the delivery of water to Theodore Distribution System customers. SunWater holds WAEs to account for losses involved in delivering water to customers in the distribution system.

In the previous price path, the costs of distribution losses were allocated to all distribution system users (SunWater, 2006a).

Draft Report

Stakeholder's Submissions

SunWater (2011w) submitted that distribution loss WAE should be assigned bulk water costs (and water charges) due to the need to store these entitlements using headworks like any other types of WAE. They also submitted that these costs should be recovered from customers of the distribution system (by including them in that system's revenue requirement) on the basis that they are needed to provide the distribution service.

The projected usage for distribution losses in the NSP are based on the assumption that 100% of high priority loss WAEs are used each year and that medium priority loss WAEs reflect the same usage percentage as other medium priority entitlement in the distribution system. Therefore, in the case of the Theodore Distribution System, high priority loss entitlement is assumed to be 600 ML per annum and usage against the medium priority loss WAE is estimated at 70% of 3,405 ML or 2,384 ML per annum.

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

- (a) SunWater is holding more distribution loss than needed and should not pass all the costs of distribution losses to irrigators;
- (b) a \$10 per ML bulk cost for distribution water users is too much to pay;
- (c) high priority water users benefit from high priority distribution losses and should pay for it and not irrigators; and
- (d) there are inconsistent methodologies for determining channel/distribution losses.

Authority's Analysis

As noted in the Draft Report Volume 1, the Authority's general view was that distribution customers should pay for all distribution losses as identified in the distribution loss WAEs. Furthermore, that all distribution customers benefit from high priority losses, as these are released to fill the channel for all users and are not (solely) used to deliver high priority water.

In response to the specific issues raised by stakeholders:

- (a) the Authority notes that, historically, SunWater has not used all distribution loss WAE in delivering water to customers. Table 3.4 shows the actual amount of water loss compared with loss WAE.

Table 3.4: Total Medium and High Priority Distribution Loss WAE

	2002-03	2003-04	2004-05	205-006	2006-07	2007-08	2008-09	2009-10
Loss WAE	4,005	4,005	4,005	4,005	4,005	4,005	4,005	4,005
Actual Loss	1,731	1,692	1,862	1,879	1,724	1,462	2,021	na
Actual loss as % of loss WAE	43%	42%	46%	47%	43%	37%	50%	na
Water use as % of WAE*	69%	86%	70%	93%	62%	50%	83%	na

Source: SunWater (2011).

The variation between actual losses water released and loss WAE is due to two factors:

- (i) the management of water releases under a system of announced allocations. Each year, SunWater announces the portion of WAE available to customers (the announced allocation) based on the level of water in the WSS storages. Where there is an announced allocation of 50% for medium priority WAE, it also applies to medium priority loss WAE. So in that year, up to 50% of the loss WAE can only be released. This system explains, in part, why actual losses released cannot always equate to the full loss WAE; and
- (ii) the variation between actual losses and loss WAE may be due to SunWater holding excess loss WAE. The Authority considers that, in principle, distribution system customers should not pay for distribution loss WAEs held by SunWater in excess of that needed to meet actual losses as SunWater could benefit from their sale.

DERM has progressively confirmed the distribution loss volumes through the water resource planning processes. Nevertheless, where it becomes evident that there is a sustained difference between the loss WAE and actual losses, the loss WAE should immediately be reviewed by DERM. Prior to a DERM review, the Authority recommends that distribution prices be calculated on the basis of total loss WAEs (see Volume 1 for further discussion of this issue);

- (b) the bulk charge applicable to the distribution loss is calculated in a subsequent chapter;
- (c) in the Theodore Distribution System there is 11 ML of high priority WAE and 600 ML of high priority loss WAE. Holding high priority loss WAE incurs bulk costs (as for any WAE). In such cases, consideration needs to be given to allocating these costs.

SunWater advised that 100% of high priority loss WAE is currently used each year and that this arrangement will continue. The high priority loss WAE is used to fill the distribution system at the commencement of each irrigation season prior to water delivery recommencing. SunWater also advised that this is necessary because, prior to the irrigation season, any major distribution system maintenance work requires the distribution system to be emptied. However, SunWater does not have the data to support this because its metered data does not distinguish between priorities of actual losses.

If 100% of high priority loss WAE is always required to achieve the required level of service for high priority distribution system customers, with no benefit accruing to medium priority customers, then the Authority would consider it appropriate for high priority distribution customers to incur all the relevant costs and for medium priority customers to pay only for medium priority distribution losses.

However, the Authority notes SunWater's advice that, for example, where there are limited distribution system high priority customers, SunWater recovers the cost of medium and high priority loss WAE from medium (and where relevant high) priority customers without distinguishing the costs according to priority group for loss WAE.

That is, SunWater submits that high priority loss WAE are routinely used to benefit medium priority irrigators and, accordingly, medium priority distribution system customers should pay for their share of that benefit.

It has been confirmed that SunWater's practice of using high priority loss WAEs to supply high and medium priority customers is consistent with the water planning framework.

Accordingly, both high and medium priority will be charged the same cost per ML for distribution system losses. The Authority accepts this approach on the basis of its understanding that the practices referred to are consistent with the intent of the water planning framework; and

- (d) the Authority has not been able to discern any difference in the methodologies for determining channel/distribution losses.

Submissions Received from Stakeholders on the Draft Report

Cotton Australia (2012b) submitted that:

- (a) the current distribution loss WAE are 3,405ML of medium priority and 600ML of high priority. This represents over 25% of the WAE on the channel. The Authority's draft recommendation is for prices to reflect the cost of 100% of distribution loss WAE when less than 45% is being used;
- (b) the allocation of distribution loss WAE bulk costs to distribution has added to the fixed costs for losses above actual use by \$46 000 per year or \$4/ML/year for every ML used. This is in direct contrast to losses in the river/bulk system which are called TOL (transmission and operating losses) not incurring any bulk costs;
- (c) if distribution WAE holders are going to be charged for the total of the distribution loss WAE then they demand the right to use the total loss WAE;
- (d) the use of high priority losses to fill channels has to be questioned. The channels will only get filled with medium priority WAE to supply medium priority WAE. The only time the channels would be filled with high priority loss WAE is if the announced allocation for medium priority WAE was 0. That being the case, all high priority loss WAE should only be paid by high priority WAE holders for the sections of channels that are supplied with high priority allocation; and
- (e) it may have been the regulator that allocated losses allocations but it was SunWater that submitted the amounts required and it is SunWater who is trying to impose a charge on the submitted volume not the used volume. Is this the intent of the regulator?

In light of the above Cotton Australia (2012b) recommend that

- (a) the original intent of the loss WAE be upheld. The intent being they are treated the same as the TOL for the river. If this is not to be upheld then the person paying the cost must be the only beneficiary. The unused proportion of the loss WAE must be made available for usage to those who have paid the cost;
- (b) the average loss WAE used over the last eight years has been only 1,767 ML. SunWater should only be allowed to charge the bulk cost of loss WAE for the average yearly recorded amount of the WAE used in the past eight years. This would be an interim measure until accurate bulk metering is carried out. If carryover of allocation is allowed within the scheme, carry-over of loss WAE should also be allowed, limited by the total amount required within one water year, that being the largest recorded amount over the last eight years or limited by the scheme rules for carryover;
- (c) SunWater must demonstrate the requirement for high priority and medium priority loss WAE before any cost can be allocated. This should be done through historical use data;
- (d) the bulk cost of HP losses WAE must only be passed onto HP customers at a modelled requirement; and
- (e) all loss WAE to be treated as distribution WAE with a spread of distribution costs across the total of distribution allocation including loss allocation.

Authority's Response to Submissions Received on the Draft Report

The Authority has considered the submissions on distribution losses and has recommended a change to the Draft Report.

In the Draft Report, the Authority recommended that prudent and efficient bulk costs associated with distribution loss WAEs should be recovered from distribution system customers and that where it becomes evident that there is a sustained difference between the loss WAEs and actual losses, the loss WAEs should immediately be reviewed by DERM (and SunWater).

While the [current] application of the water planning process does not provide for a review of distribution loss WAEs, the Authority has confirmed that there are three means for doing so under the *Water Act 2000*. Therefore, the Authority considers that DERM should initiate a review without SunWater (necessarily) making an application. Any such review by DERM should be completed by 30 June 2014.

It is also open for SunWater to make application to DERM for this purpose. SunWater would have the incentive to do so wherever it considers that the Authority's estimates of distribution loss WAEs underestimates those required. According to the Minister's advice, the evidence required could be that the reduced distribution loss WAE can still ensure the security of distribution customer WAE.

In response to Cotton Australia's recommendations, the Authority considers that:

- (a) SunWater is not issued WAE for bulk (storage and transmission) losses but is instead required to comply with operating and environmental management rules established by DERM. By contrast, SunWater is issued with distribution system loss WAEs.

While the Authority consider that excess loss entitlements remaining in storages may be generating a benefit for river and distribution customers, the benefit is variable and cannot readily be determined.

The water planning framework does not prescribe a right for distribution customers to access unused distribution loss WAE

- (b) customers should not pay for the excess distribution loss WAE. It is now clear that either DERM or SunWater can initiate a review to determine the appropriate level of loss WAE's. Evidence that the reduced distribution loss WAE can still ensure the security of the WAE held by distribution customers only is required.

SunWater does hold more distribution loss WAE than is required in the Theodore Distribution System. Accordingly, the Authority recommends that the bulk costs of 47% of medium priority distribution loss WAE be allocated to SunWater;

- (c) high priority loss WAEs are routinely used to benefit medium priority customers.

Where there are no high priority customers in a distribution system, the high priority loss WAEs are used exclusively for medium priority distribution customers. The use of high priority water also will be needed to supply medium priority customers when the medium priority announced allocation is low, not just zero

Therefore the Authority considers that medium priority customers derive a benefit from high priority distribution loss WAE and should be allocated costs accordingly.

The Authority maintains its recommendation that the costs associated with high and medium priority distribution loss WAE are to be shared across all distribution customers;

- (d) customers should not pay for the excess distribution loss WAE.

For price setting purposes, the Authority has determined a preliminary estimate of excess distribution loss WAE based upon the maximum that would have been required over the past nine years (up to and including 2010-11 actual water use).

If during 2012-17, SunWater needs more distribution loss WAE than the Authority has estimated, then SunWater should initiate the proposed review (if not already initiated by DERM) and may apply for a cost-pass through or end of period adjustment upon the completion of the proposed review; and

DERM's review of distribution loss WAE should include a review of high priority distribution loss WAE; and

- (e) distribution loss WAE are bulk WAE as they are only allocated bulk costs. Further, the owner (SunWater) does not have a right to extract these WAE from the distribution system. The Authority will continue to treat these WAE as bulk WAE.

Accordingly, the Authority recommends that prudent and efficient bulk costs associated with distribution loss WAEs should be paid for by distribution system customers, excluding the costs associated with distribution loss WAEs held by SunWater in excess of that needed to meet required actual loss releases. SunWater should bear the costs of holding distribution loss WAE greater than is needed to supply distribution customers.

The Authority's preliminary estimate of the excess distribution loss WAE is based on maximum actual distribution loss deliveries, adjusted for the level of water use in that year, based on available water use data from the past nine years up to and including 2010-11.

For the Theodore Distribution System, the Authority has allocated 100% of the costs of high priority distribution losses and 53% of the costs of medium priority distribution losses to

customers. As a result, the remaining 47% of medium priority distribution loss costs are allocated to SunWater.

3.6 Drainage Charges and Drainage Diversion Charges

Introduction

Drainage charges apply in the Theodore Distribution System. SunWater provides the Theodore drainage system to remove water (farm run-off and storm water) from irrigation properties. Customers are required to discharge water from their farm through the drain inlet provided and they are charged for this facility.

Previous Review

In the previous review, drainage charges were calculated on a scheme basis. The Dawson Valley Tier 2 group decided that the drainage rate be retained (for channel irrigators) as a separate charge on the same basis as the existing 2005-06 drainage rate based on hectares. For 2006-11, the drainage charges for the Theodore Distribution System are noted in Table 3.5.

In relation to drainage diversion charges, in the Theodore Distribution System, there are no meters and accordingly customers pay a fixed charge per ML depending on the size of their installation (reflecting pump capacity). For the 2006-11 price path, the drainage diversion charge was set at \$9.23 per ML of capacity, for each year of the price path.

Table 3.5: Drainage and Drainage Diversion Charges

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Drainage Charges (\$/ha)	18.75	19.33	20.25	20.85	21.45	22.20
Drainage Diversion Charges (\$/ML)	9.23	9.23	9.23	9.23	9.23	9.23

Source: SunWater (2011).

Draft Report

Stakeholder Submissions

SunWater

SunWater (2011d) proposed that the existing drainage tariff groups be retained, with Theodore Distribution System being one of the four distribution systems continuing to receive a separate drainage charge.

SunWater proposed to maintain the already established arrangements and charges, whereby revenues from drainage and drainage diversion charges are treated as a revenue offset against all total costs for this service contract. Further, SunWater submitted that this arrangement should be reviewed at the end of the 2012-17 regulatory period, with a view to incorporating drainage costs into a combined fixed charge for the distribution system. SunWater's (2011d) submission on drainage charges is set out in more detail in Volume 1.

Other Stakeholders

DVIG (2010) submitted that all drainage charges be levied separate to the two-part tariff and should be recovered on a per hectare basis.

Authority's Analysis

In Volume 1, the Authority recommended cost-reflective tariffs. Further, the Authority recognised that changes in farm practices have occurred such that some irrigators may not require drainage services to the same degree as previously.

SunWater advised the Authority that it does not separately identify drainage or drainage diversion costs within its accounts, and it would not be possible to generate renewals cost information for the planning period.

In response to DVIG, the Authority was unable to recommend specific cost-reflective tariffs in this review, in the absence of cost-reflective information.

In the circumstances, the Authority recommended that the current drainage and drainage diversion charges be maintained in real terms and that all revenue collected be treated as a revenue offset for distribution costs.

The Authority also recommended that SunWater collect detailed information on drainage (and drainage diversion) costs over the course of the 2012-17 regulatory period to inform cost-reflective charges prior to the next pricing review.

Submissions Received from Stakeholders on the Draft Report

SunWater (2011as) accepted the Authority's draft recommendations to set a separate drainage fee, based on the associated costs of the service, and that there should be a review of drainage charges, initiated at the completion of the current price investigation.

Authority's Response to Submissions Received on the Draft Report

In the absence of any submissions on this point, and as the Authority has not identified any new information or other grounds for altering its approach, the recommendation outlined in Draft Report is maintained.

4. RENEWALS ANNUITY

4.1 Background

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 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 prudence 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 prudence 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 in the Draft Report.

An additional six past renewals items across the schemes were reviewed for the Final Report, bringing the share of past renewals expenditures reviewed from 29% in the Draft Report to 34% by value. A further 14 forecast renewals items were reviewed, increasing the share reviewed from 13% in the Draft Report to 29% by value. The size of the sample is sufficiently large to determine and apply separate cost savings to past (and forecast) non-sampled items.

The Authority's assessment of the prudence 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 Theodore Distribution System at 1 July 2006 (including the Dawson Valley WSS) was \$2,920,000. Excluding the Dawson Valley WSS, SunWater submitted that the opening balance for Theodore Distribution System at 1 July 2006 was \$1,834,000.

In creating its opening ARR balances for 2006-11, SunWater sought to identify if any of the unbundled balances appeared to be spurious. SunWater considered that the Theodore Distribution System unbundled ARR as at 30 June 2006 to be inappropriate and subjectively adjusted the balance by \$800,000.

SunWater transferred \$800,000 from the distribution system to the bulk service contract on the basis that not doing so would result in excess accrued funds in the distribution system ARR.

Indec (2011c) considered that the adjustments should be rejected on the grounds that they were not consistent with the general methodology adopted by SunWater for unbundling bulk and distribution tariffs and introduced an unacceptable degree of subjectivity.

In the Draft Report, the Authority noted that SunWater has sought to transfer funds not required for foreseeable future renewals expenditures in distribution systems to bulk schemes. The Authority considered that such a transfer is inappropriate. Rather, such surplus funds should be returned to the contributing customers unless they wish to maintain those funds in the ARR for future contingencies.

In the Draft Report, the Authority recommended an unbundled opening ARR balance for Theodore Distribution System (excluding the Dawson Valley WSS) of \$1,034,000 compared to SunWater's \$1,834,000. The Authority indicated that in October 2011 Indec had uncovered actual renewals expenditure for 2000-06. The Authority was not able to review this information or quality assure it for the purposes of the Draft Report, but stated its intention to do so for the Final Report.

For the Final Report, the Authority has used the actual renewals expenditure for bulk and distribution assets over the period to revise the opening 1 July 2006 balances accordingly (see Volume 1).

The 1 July 2006 opening ARR balance for the Theodore Distribution System is revised to \$1,304,000 (an increase on the Draft Report). The opening ARR balance for the Dawson bulk scheme has fallen by the same amount.

4.3 Past Renewals Expenditure

Draft Report

As noted in Volume 1, the Authority has reviewed the prudence and efficiency of selected renewals expenditures over the 2006-11 price path. The Authority 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 Theodore Distribution System 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
Renewals Expenditure	0	64	145	571	1,204

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

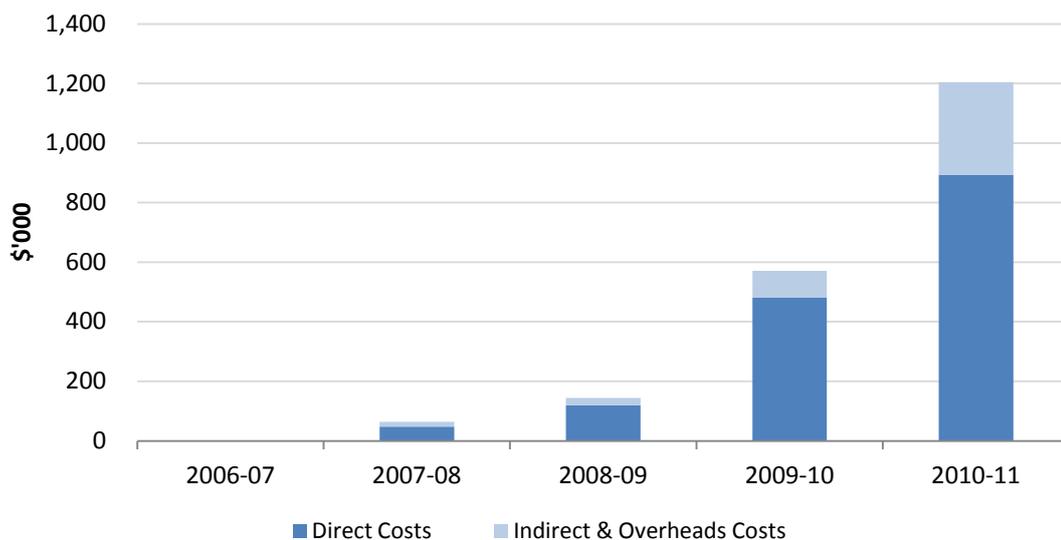
Other Stakeholders

No other stakeholders have commented on these items.

Authority's Analysis

Total Renewals Expenditure

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

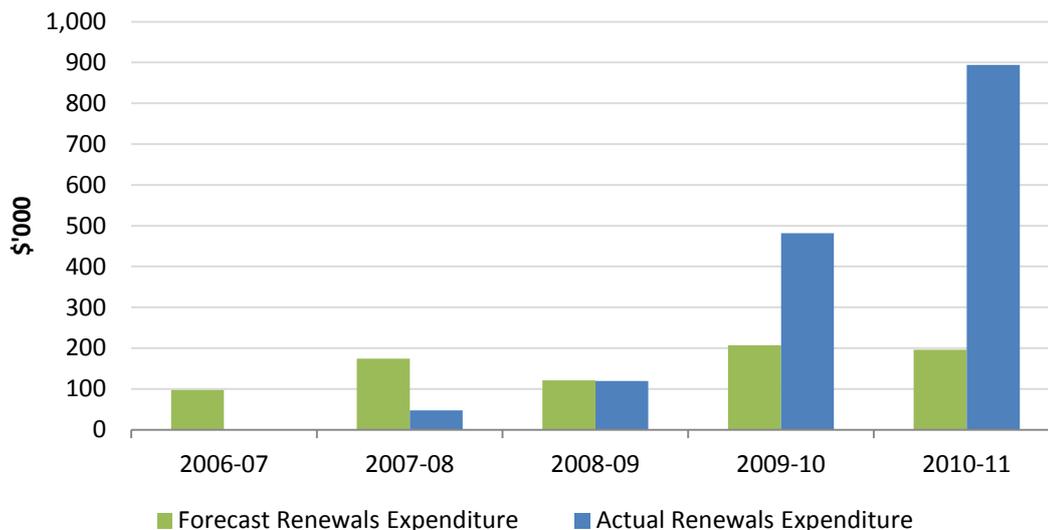
Figure 4.1: Past (Actual) Renewals Expenditure 2006-11 (Real \$'000)

*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 direct renewals expenditure in the Theodore Distribution System 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: Forecast Indic (2011), Actual SunWater (2011k).*

Actual renewals expenditure was \$746,483 (direct costs) above that forecast over the period, which is attributable to:

- (a) unplanned expenditure on Intersafe of \$145,845 (nominal, total cost, including indirect and overhead costs) in 2010-11; and
- (b) unplanned expenditure on Public Safety Strategy (Fencing) of \$67,249 (nominal, total including indirect costs) in 2008-09.

Review of Past Renewal Items

Draft Report

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

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 annually budgeted and actual expenditure for certain items.

Halcrow stated that most items were delivered at or below budget, although a number of items were not included in the original Board approved budget. Halcrow also commented on selected expenditure items. On the basis of available item descriptions, the following selected items were considered generally of a nature and order of cost that would be expected for irrigation system infrastructure.

- (a) Theodore Drain 4B - Refurbish eroded earthworks (actual expenditure of \$38,242 compared to a budget of \$33,312 in 2007-08);
- (b) 05/06 Group 4 Theodore Channel A after Highway (Theodore New Start) (\$27,802 in 2007-08);

- (c) install fencing as per Policy - Theodore Irrigation (\$67,249 in 2008-09. The Board approved a budget of \$30,747 which increased to \$75,064);
- (d) install signs as per Manual - Theodore Irrigation (\$28,811 in 2008-09. The Board approved a budget \$14,961 which increased to \$30,342);
- (e) repair erosion - Drain 4B (Theodore) (\$41,194 in 2009-10; not included in Board budget, but in line with approved budget);
- (f) investigate and design Channel D Modernisation Options (\$62,530 in 2009-10; Not in original board budget. Approved budget \$75,000); and
- (g) 05/06 Group 4 Theodore Channel A after Highway (Theodore New Start) (\$39,815 in 2009-10. The Board approved a budget of \$261,400).

Halcrow and SKM made some general comments about the Intersafe program, which are provided below as there was expenditure in this scheme.

Item 1: Intersafe

Draft Report

SunWater submitted that the Intersafe Gated - Theodore – CBB (\$468,820 budgeted, the actual expenditure was \$112,949, total including indirect costs), Intersafe Gated Gibber Gunyah – CBC (\$91,650 budgeted, the actual expenditure was \$13,846, total including indirect costs), and Intersafe Non Gated – Theodore – CBB (\$23,150 budgeted, the actual expenditure was \$19,050, total including indirect costs) were not included in the price path.

However, it decided to undertake the work following a report from Intersafe recommending that SunWater take action to reduce the safety risk to staff. The Intersafe program was budgeted at the SunWater level (\$14.4 million) and costed at the scheme level on implementation. The program is expected to come in on time (30 June 2011) and budget (\$14.4 million).

No other stakeholders have commented on this item.

Consultant's Review

Halcrow

Halcrow (2011) supported SunWater's submission (above) noting 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.

SKM

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 prudent and efficient.

The Authority proposes no change to the Draft Report conclusions.

Item 2 : Public Safety Strategy (Fencing Policy)

Draft Report

SunWater indicated that the Fencing as per Policy - Theodore Irrigation had a revised budget of \$75,064 with works (with an *actual* cost of \$67,249, total including indirect costs) occurring in 2008-09. SunWater indicated that this item was also not included in the 2006-11 price paths.

During Round 2 consultation in April 2011, stakeholders submitted that budget on renewals such as fences are Board-approved, but are a massive overspend and need some justification from SunWater.

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 prudence. 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* (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 has clarified that all channel fencing aimed at protecting the public is part of SunWater's separate Public Safety Strategy (and not the Intersafe Project). 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.

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that the Authority's approach to excluding 50% of past fencing costs was unjustified as SunWater are only entitled to seek 50% of the costs of a standard fence, as opposed to safety fence. SunWater provided evidence that, on average, a safety fence costs approximately three times that of a standards fence. Accordingly, SunWater proposed that the originally submitted \$67,249 be included.

Authority's Response to Submissions Received on the Draft Report

Following SunWater's submission on the Draft Report, the Authority concluded that:

- (a) it is reasonable for neighbours to pay 50% of standard fencing costs (and not 50% of safety fence costs); and
- (b) SunWater cannot recover from customers all prudent and efficient fencing costs where SunWater owns the land on both sides of the fence, because SunWater did not provide an estimate of such costs.

Accordingly, the Authority's cost savings have been adjusted to reflect neighbours paying 50% of standard fencing costs. Therefore, the Authority recommends cost savings of 16.7% of fencing costs rather than 50% as previously recommended.

Item 3: Flood Damage Repairs

Submissions Received from Stakeholders on the Draft Report

In its submission in response to the Draft Report, SunWater (2011as) advised that additional information is now available on required flood damage repairs which need to be taken into account for the renewals annuity calculation. For the Theodore Distribution System, the flood repair costs are \$741,154 (actual) for 2010-11 and \$202,624 (estimated) for 2011-12.

SunWater has advised that the 2010-11 flood damage repair costs are included in its proposed renewals expenditure and the 2011-12 flood damage repair costs are additional to its proposed renewals expenditure.

However, SunWater subsequently submitted that insurance revenue was also expected to be received, which would offset some of the flood repair costs. SunWater sought that this submission remains confidential as the negotiations with the insurer are still ongoing.

Authority's Response to Submissions Received on the Draft Report

As outlined in Volume 1, the Authority reviewed a sample of flood damage repairs across SunWater's schemes. The sampled items accounted for 30% of total flood repairs. SKM found that all sampled items were prudent and efficient. One such item was in the Theodore Distribution System, detailed below.

Gibber Gonyah Repair of Levee banks

This project concerns the repair works of the flood damage to the earthworks between Ch 700m and Ch 1050m of Channel 1, the earthworks for the Levee at six sites along Drain 1/3 in the Gibber Gonyah section of the Dawson Valley Water Supply Scheme at a cost of \$464,987.

Prudency Review

SKM viewed the SunWater's SAP Works Management System (WMS), and asset condition and risk assessment policy and procedures. SKM noted that SunWater's SAP record state that the object type for this asset is EC-Unlined (CHEARTH) with a standard run to failure life of 150 years and a refurbishment period of 25 years. SKM considered that the applied run to failure asset life and refurbishment period to be appropriate for this asset type and in keeping with good industry practice.

SKM sighted the WMS record and confirmed that this asset has been in service since 1927. From our review of the data contained within the WMS. SKM noted that the last asset condition assessment was conducted in January 2001. The frequency of condition assessment for this type asset as per SunWater's Whole of Life maintenance Strategy is 10 years and hence the 2001 review fell within this review period at that the time of the development of the 2010 NSPs and at the time that flooding occurred.

The highest rated score recorded at the last asset condition assessment was a 1 (perfect as new condition) for the infrastructure. SKM questioned the validity of a rated asset condition score of 1 since the asset has been in service for about 75 years (half life), unless any recent major refurbishments was carried out before the assessment.

The flooding that occurred in December 2010 and January 2011 has severely damaged sections and components of the Gibber Gonyah channel. The damage was caused to the earthworks between Ch 700 m and Ch 1050 m of channel 1, the earthworks for the Levee at 6 sites along Drain 1/3, the access crossing at Ch 370 m on Channel 1/5 including the three metered off takes and one channel footbridge along Channel 1. The wash outs at these locations were 6 – 8 m in depth as stated in –the Repair Flood Damaged Infrastructure in Gibber Gonyah Section - DVWSS report as referenced above. The report further states that the repair was vital “for the delivery of 6925 megalitres of irrigation water to the Gibber Gonyah Scheme and for the protection of approximately 2500 hectares of agricultural land from future flood waters”. From the photographs and above referenced documents, SKM considered that the asset hence required to be replaced or refurbished to ensure that water was delivered to the end customer.

SKM considered that SunWater has followed its policies and procedures that it has in place for asset replacement/ refurbishment date determination.

SKM found that in accordance with SunWater's Policies and Procedures, the flood damaged Channel in Gibber Gonyah section was due for immediate repair. The scope of work included the repair of the washed out sections of the canal and levee banks to restore it to the original layout and condition. SunWater repaired the canal with a “like for like” approach. SKM considered the approach taken by SunWater to be appropriate to ensure the continued operation of the infrastructure.

SKM found that the timing of the repair work was driven by the negotiation between SunWater and its customers to ensure that the channel was able to supply irrigation water for the watering of the cotton crop in October 2011. The timing was also driven by SunWater's contractual obligation to provide 6925ML of irrigation water to the Gibber Gonyah Scheme and it was also crucial to protect 2500 hectares of agricultural land from future flood events. SKM therefore considered the timing of this refurbishment to be prudent.

SKM concluded that the repair of the flood damaged Channel 1 of Gibber Guynah Section of Dawson Irrigation System to be prudent in terms of both restoration of the condition of the asset and timing of the repair work.

Efficiency Evaluation

SKM found that in its submission to the Authority, SunWater indicated that \$464,987 has been spent to date to repair and reinstate the flood damaged section of Channel 1 of Gibber Gunyah section. However, SKM noted that SunWater's SAP record shows that a total of \$456,785 has been spent to date on this project a cost discrepancy of \$8,202 between the annuity value submitted to Authority and the cost breakdown recorded in SAP.

In reviewing SunWater's documents SKM found that the delivery strategy for this project was that SunWater would act as the principal contractor making use of sub-contractors to undertake various components such as earthworks, labour supply and survey. SunWater documents state that the reasons for choosing this method were:

- (a) the site specific nature of construction works;
- (b) the risk of interruption of the works due to additional rainfall (work was suspended several times during the project lifecycle due to wet and dangerous conditions); and
- (c) the complex nature of the work to rebuild SunWater infrastructure back to original specifications.

If the construction work had been fully contracted out, the risks outlined above would have been priced into the contractors costing. SunWater was assessed at being well placed to deliver the desired outcome.

In determining the efficiency of the cost spent, SKM prepared a bottom up cost estimate. Table 4.2 below summarises a comparison of the SunWater actual expenses with the bottom up cost estimate prepared by SKM.

Table 4.2: SKM Cost Estimates

<i>No.</i>	<i>Description</i>	<i>SunWater Total Expenditure (\$)</i>	<i>SKM Bottom Up Cost estimate (\$)</i>
1	Construction Cost		398,585
1.1	Materials	1,966	
1.2	Construction labour	42,000	
1.3	Plant & Equipment	313,118	
1.4	Commercial Contractors (Sub-Contractors)	3735	
1.5	Contractors' profit (10%)		
1.6	Contractors' Overhead (10%)		
1.7	Contractors' Preliminary item (10%)		
	Subtotal ¹	360,819	398,585 ¹
2	SunWater Indirect Cost Component (36.98 % of Construction Cost)		147,396 ²
2.1	Overhead	93,860	
2.2	Other indirect costs	2,105	
	Subtotal ²	95965	
3	Total	456,785	545,981

Notes: ¹ SKM estimate is based on the quantities as defined in project scope and rates based on Rawlinsons Australian Construction Handbook 201.1 ² 36.98% of the direct cost was taken as SunWater indirect cost as recorded within SAP BOM to cover design, administration, and locational costs Source : SKM (2012).

Based on Table 4.2 above and found subsequent discussions about the approach and costs incurred, SKM considered that the SunWater's delivery strategy to act as the principal contractor for flood damage repair of Channel 1 of Gibber Gunyah Section of the Dawson Valley Water Supply System to be appropriate and efficient..

SKM considered that the total cost incurred to complete this project to be efficient and the procurement process followed to repair the channel complies with SunWater's Procurement processes and with the State purchasing policy.

Authority's Analysis

The Authority accepts SKM's conclusion that SunWater's expenditure on this flood repair item was prudent and efficient.

However, the Authority notes that if flood damage repair costs are to be included then so should any offsetting insurance revenues. As insurance revenues are yet to be determined, the Authority has not included flood damage repairs costs in prices.

Therefore, once the insurance matter is settled, SunWater may apply for an adjustment to prices to account for the flood damage expenditure and revenue, or the ARR balances will be adjusted during the next regulatory review.

Summary and Conclusions

SKM considered that the Repair of Channel 1 Levee Bank in Gibber Gunyah Section of Dawson Irrigation System to be prudent both in terms of need and timing (with the works being carried out in 2010/11).

SKM considered that the overall cost of the repair of the Channel 1 Levee Banks in Gibber Gunyah Section of Dawson Irrigation System to be efficient based on the information to our disposal at a cost of \$465,785 including overheads.

The Authority has accepted SKM finding that this project is both prudent and efficient.

Conclusion

Draft Report

In the Draft Report, two items for the Theodore Distribution System were sampled. On the basis of the consultants review, the Authority considered that:

- (a) one item was prudent and efficient and was retained as past expenditure; and
- (b) one item was prudent but insufficient information was provided to determine efficiency, requiring adjustment to forecast expenditure.

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

In total, the Authority's Draft Report recommended the expenditure be adjusted as shown in Table 4.3.

Final Report

After review of submissions in response to the Draft Report, the Authority's conclusions regarding the Draft Report sampled items remain unchanged.

For the Final Report, the Authority reviewed flood damage repair costs as proposed by SunWater in its submission. A detailed review of some of these costs, repair of Gibber Gunyah channel levee bank, was found to be prudent and efficient. However, the Authority recommends these costs be excluded pending settlement of an insurance assessment.

The Authority adjusted the saving applied to public safety fencing for the cost of standard (not safety) fencing.

As outlined above and in Volume 1, the Authority undertook further sampling of past renewals expenditures across SunWater's schemes. The larger sample of items reviewed indicated that a lower average level of savings for past renewals expenditures could have been achieved. (A separate level of savings was calculated for forecast renewals expenditures – see further below).

After consideration of this further work, the Authority recommended that a 4% saving be applied to all non-sampled and sampled items for which there was insufficient information.

Table 4.3: Review of Selected Past Renewals Expenditure 2006-11

<i>Item</i>	<i>Date</i>	<i>SunWater</i>	<i>Authority's Draft Report Findings</i>	<i>Draft Report Recommended</i>	<i>Authority's Final Report Findings</i>	<i>Final Recommended</i>
Sampled Items						
1. Intersafe program	2009-10	\$145,845	Prudent and efficient	\$145,845	Prudent and efficient	\$145,845
2. Public Safety Strategy (Fencing Policy)	2008-09	\$67,249	Prudent but only 50% efficient	\$33,624	Prudent but not efficient	\$56,000
3. Flood damage repairs	2010-11 and 2011-12	\$741,154 in 2011-11, \$202,624 in 2011-12	Not sampled	2011-11 reduced by 10%, 2011-12 costs not included	Excluded pending insurance claim	0
Non-Sampled Items				10% saving applied		4% saving applied

Note: SunWater (2011), Halcrow (2011), SKM (2011), and QCA (2011, 2012).

4.4 Opening ARR Balance (at 1 July 2012)

Draft Report

Stakeholder Submissions

SunWater indicated that the renewals opening ARR balance as at 1 July 2011 was \$2,689,000 for the Theodore Distribution System. This estimate reflects the most recent information provided by SunWater to the Authority in September 2011 and may differ from the NSP.

Authority's Analysis

Based on the Authority's assessment of the prudence and efficiency of past renewals expenditure in the Draft Report, and the proposed methodology for unbundling ARR balances, the recommended opening ARR balance for 1 July 2011 for Theodore Distribution System was \$1,015,000.

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.

For the Draft Report, to establish the closing ARR balance as at 30 June 2012 of \$1,024,000, 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.

Submissions Received from Stakeholders on the Draft Report

Cotton Australia (2012b) submitted that:

- (a) SunWater's large overspend on renewals over the last 5 years has been passed directly onto irrigators with the recommended prices, but the \$15,000,000 over budgeted requirement for electricity and the above budget recovery for revenue offsets of \$10,500,000 has not. Cotton Australia suggest that cannot allow cost blow outs above budget to be brought forward without allowing above budget revenue to be brought forward as well;
- (b) that the renewals for distribution in the recommended costs is 600% above the submitted renewals cost from SunWater with the Authority saying it reduced the renewals costs submitted by SunWater by 10% across non sampled items and with large sampled items removed all together; and
- (c) SunWater has submitted to have \$800,000 removed from the distribution renewals annuity and put into the bulk. Both Indec and the Authority have recommended that this doesn't happen but it has still flowed through to recommended prices.

Cotton Australia (2012b), recommended that if the Authority is going to allow over spends on cost items in the last price path to be transferred through to new price path then all revenue above budget also needs to be brought forward.

It must ensure the renewals annuity funds are returned to their correct amounts and yearly renewals costs corrected.

Authority's Response to Submissions Received on the Draft Report

In regard to over-budgeting in other cost areas, the Authority is not in a position to review performance against the previously forecast operating costs and revenue offsets. The Authority's scope does not extend to reviewing the efficacy of previous operating cost estimates. SunWater's past overspends in operating expenditure are to its own account.

The Authority has revised its Draft Report estimate of the 30 June 2012 ARR to take account of the key changes since the Draft Report as outlined above including:

- (a) a change in the 1 July 2006 opening ARR balance from the use of actual renewals data. The 2006 opening balance is higher than in the Draft Report;
- (b) the application of a 4% saving to non-sampled items and sampled items for which there was insufficient information, rather than 10% in the Draft Report; and
- (c) removal of the previously included flood damage repair costs for 2010-11 and adjustment of fencing costs.

The effect of the above changes is to substantially increase the ARR balances compared to the Draft Report, the main impact arising from exclusion of large expenditure on flood repair costs.

The resulting revised ARR balance as at 30 June 2011 is \$2,305,000. The revised ARR balance as at 30 June 2012 is \$2,281,000.

4.5 Forecast Renewals Expenditure

Draft Report

Planning Methodology

The Authority reviewed SunWater's Asset Management Planning Methodology in Volume 1 and recommended improvements to their 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 material renewals expenditure being defined as one which accounts for 10% or more in present value terms of total forecast renewals expenditure;
- (b) detailed options analysis (which also takes 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; and
- (c) SunWater to adopt the Authority's consultants' suggested improvements for forecasting renewals expenditure.

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that:

- (a) the costs of undertaking options analysis (and associated activities) are excessive (\$445,000 annually for all schemes);
- (b) these costs are to be allocated exclusively to the irrigation sector; and
- (c) although some of the Authority's consultants' suggested improvements have merit, they all involve additional cost. SunWater sought to implement only those that demonstrate a net-benefit.

Authority's Response to Submissions Received on the Draft Report

In response to SunWater, and as outlined in Volume 1, the Authority considers that:

- (a) the cost of the options analyses is acceptable when compared to savings identified by the Authority. In addition, SunWater's estimated \$445,000 does not include the savings associated with options analyses;
- (b) the cost of carrying out options analyses should be met by all water users (including irrigators and non-irrigators where they exist) in the relevant service contract; and
- (c) SunWater should review its renewals planning process (taking into account the Authority's consultants' suggested improvements) and provide a copy of the review to Government and the Authority by 30 June 2014.

As noted in Volume 1, the Authority has not, therefore, amended its draft recommendations regarding SunWater undertaking high-level and detailed options analyses. The Authority has, however, modified its draft recommendation as noted in (c) above.

Prudence and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's proposed renewals expenditure for the Theodore Distribution System 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 2011-16 (\$'000)

<i>Facility</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>
Gibber Gonyah Drainage	10	-	-	-	-
Gibber Gonyah Irrigation Distribution	-	-	-	-	14
Gibber Gonyah Pump Station	31	73	266	172	51
Theodore Drainage	8	-	17	-	-
Theodore Irrigation Distribution	148	-	-	-	11
Theodore Pump Station	74	-	188	57	34
Total	271	73	471	229	110

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

The major items incorporated in the above estimates are:

- (a) Gibber Gonyah Pump Station – involves replacing or refurbishing the pump station at an estimated cost of \$593,000 from 2011-12 to 2015-16;
- (b) Theodore Distribution Network – involves replacing siphon at an estimated cost of \$148,000 in 2011-12; and
- (c) Theodore Pump Station – involves refurbishing pumps, motor, control systems and valves at an estimated cost of \$353,000 from 2011-12 to 2015-16.

The major expenditure items from 2016-17 are:

- (a) replace submersible pump at Gibber Gonyah Pump Station at an estimated cost of \$485,000 in 2018-19;
- (b) replace access crossings and structure in Theodore drainage system at an estimated cost of \$577,000 in 2032-33; and
- (c) replace cross drains and access crossings in Theodore drainage system at an estimated cost of \$266,000 in 2033-34.

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

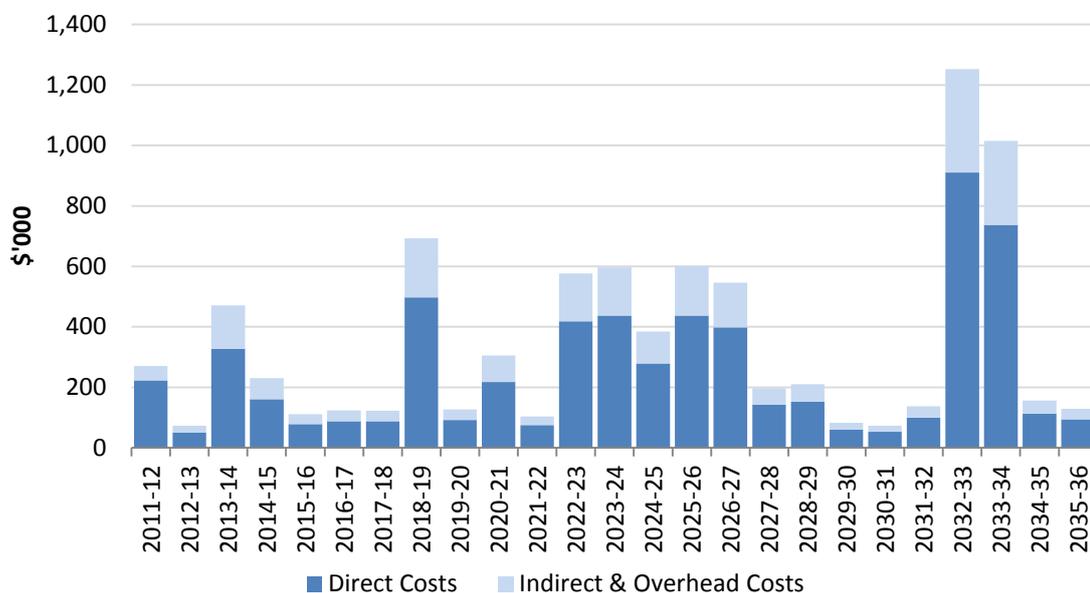
Stakeholder submissions that raised general concerns in relation to future renewals expenditure are provided in the Dawson Valley WSS Draft Report.

Authority's Analysis

Total Costs

SunWater's proposed renewals expenditure for 2011-36 for the Theodore Distribution System 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 reviewed 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).

Review of Forecast Renewals Items

Halcrow reviewed the prudence and efficiency of a sample of items. Each of the assessed future renewals items are discussed below.

Item 1: LIT/1 - Gibber Gonyah Pump Station – Replace Suction Pipe in Pump Number 2

Draft Report

SunWater submitted that this renewals item is planned to occur in 2013-14 at the Gibber Gonyah Pump Station. Expenditure of \$152,000 (\$106,000 direct cost) is forecast in relation to pump number 2.

Each pump at the Gibber Gonyah Pump Station has a dedicated suction pipe. SunWater stated that the suction pipe number 2 has been in operation since June 1957 and has an asset life of 80 years.

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that replacement of this asset should occur in 2036-37. However, replacement is scheduled for 2013-14.

Halcrow noted that condition assessments undertaken in 2006 indicated that major deterioration has occurred such that the asset is virtually inoperable. The condition assessment also revealed extensive cracking and failures on the majority of the pipe lining.

Halcrow stated that whilst the condition assessment ratings indicated that suction pipe number 2 is virtually inoperable, there is no indication in the scheme submissions or from issues arising during stakeholder consultation² that supply has been limited.

Further, Halcrow noted that the risk assessment undertaken in 2005 noted that wall/joint failure would have insignificant consequences related to WHS, environment, finance and minor consequences related to production/operations. Overall, a low risk was determined across all categories.

Halcrow noted the potential supply limitations to the 57 metered customers should failure of two of three suction pipes occur, and considered it prudent that pipe No2 be refurbished or replaced. Halcrow also stated that it may, however, be prudent to assess alternative approaches to renewal, including re-lining or the use of alternative materials.

Given the condition of the assets, Halcrow stated that it may more cost-efficient to replace suction pipe 2 and 3 (discussed below) at the same time, rather than staggered over years 2013-14 and 2014-15. However, Halcrow also noted that the timing may be proposed to limit the impact on operations.

SunWater is yet to prepare a detailed cost estimate for this project. In the absence of further details, including pipe size and length, it has not been possible to assess the efficiency of the proposed expenditure.

Authority's Analysis

For the Draft Report the Authority accepted Halcrow's recommendation that this 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.

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Item 2: LIT/2 - Gibber Gonyah Pump Station – Replace Suction Pipe in Pump Number 3

Draft Report

SunWater submitted that this renewals item is planned to occur in 2014-15 at the Gibber Gonyah Pump Station. Expenditure of \$138,000 (\$96,000 direct cost) is forecast in relation to pump number 3.

² QCA, *Dawson Valley, First Round Consultation – Issues Arising*, 12 May 2010.

Each pump at the Gibber Gunyah Pump Station has a dedicated suction pipe. SunWater stated that the suction pipe number 3 has been in operation since June 1957 and has an asset life of 80 years.

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that replacement of this asset should occur in 2036-37. However, replacement is scheduled for 2014-15.

As noted above, given the condition of the assets, Halcrow stated that it may be more cost efficient to replace suction pipe number 2 (discussed above) and number 3 at the same time, rather than staggered over years 2013-14 and 2014-15. Halcrow also noted that the timing may be proposed to limit the impact on operations.

SunWater is yet to prepare a detailed cost estimate for this project. In the absence of further details, including pipe size and length, it has not been possible to assess the efficiency of the proposed expenditure.

Authority's Analysis

For the Draft Report, the Authority accepts Halcrow's recommendation that this 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.

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Item 3: LIT/1 - Gibber Gunyah Pump Station – Replace Submersible Pump, Flygt³

Draft Report

SunWater submitted that the Flygt Submersible Pump is located at the Gibber Gunyah Pump Station and has been in operation since June 1989. The pump is to be replaced in 2018-19, at an estimated cost of \$360,000 (\$258,000 direct cost).

No other stakeholders have commented on this item.

Halcrow's Review

Halcrow noted that the condition assessment results were not provided, however, the pump failure is rated as a low risk due to the availability of other pumps at the site. In addition, SunWater's mechanical assets guide recommended the maximum assessment frequency for submersible pumps to be two years.

Further, Halcrow noted that the historical renewals budget in 2006-07 allowed a budget of \$20,000 (nominal) to overhaul the Flygt pump. Halcrow also noted that in the forecast renewals program, an allowance of \$44,000 (\$32,000 direct) has been included for refurbishment of the Flygt pump every six years.

Halcrow concluded that given the pump will reach the end of its asset life in 2018-19, the expenditure is prudent.

³ ITT Flygt is a water and wastewater company.

However, due to insufficient information Halcrow stated that it was unable to assess the efficiency of the expenditure.

Assuming that the pump is to be replaced in 2018-19, Halcrow recommends that the timing of subsequent refurbishments be deferred such that the six-year frequency is maintained. In other words, refurbishment scheduled for 2021-22 is deferred to 2024-25 and so on.

Authority's Analysis

For the Draft Report, the Authority accepted Halcrow's recommendation that this 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.

Final Report

SKM's Review

(a) Prudency Review

SKM considered that SunWater largely followed the policies and procedures that it has in place to determine annuity item replacement/ dates and costs for such. SKM found that the standard object type (asset type) for this infrastructure is PUSUBM – submersible pump, for this asset SunWater has allocated a standard run to failure asset life of 30 years and a condition inspection frequency of two years. SKM considered the standard run to failure asset life and the condition assessment frequency applied to this asset type to be reasonable and in keeping with good industry practice.

In addition SKM viewed the WMS record for this asset and were able to confirm from the 'frozen' WMS created at the time of preparation of the 2010 Network Service Plans (NSPs) that the asset has been in service since 1989. SunWater applied its risk evaluation method to this asset and determined the risk, during the most recent risk assessment in 2001. The business related risk assessment for this asset was been assessed by SunWater as having a production/operations risk criterion consequence rank of 3 (insignificant) and a probability (likelihood of occurrence) score of 3 resulting in an overall risk score of 9 which places this asset in a low risk category.

For this asset type, an overall risk category of Low and with a consequence score of less than or equal to 8, does not result in a risk related adjustment to the standard run to failure replacement age. However the asset has been scored a risk of Moderate on WH&S grounds due to a trip hazard. A review of the risk assessment for pump 3 in the Gibber Gunyah pump station also yields a WH&S score of Moderate but on this occasion due to unguarded rotating parts.

According to SunWater's Asset Management Methodology, for plant items that have a WH&S or Environment related risk score of Low to Medium and with a consequence score of >8, the issue creating that risk score should be addressed as a priority 'C' item if the rectification cost is less than \$100,000 (to be used as a guide only). SKM considered that it should cost less than \$100,000 to address the WH&S risk identified and that this should not impact on the planned replacement date for the asset.

SunWater's method for determining asset replacement/refurbishment timing is to modify 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. As mentioned, under SunWater's asset planning system, assets with a business risk score of low to medium and with a

concomitant consequence score of less than or equal to 8 do not have their standard asset life adjusted below a run to failure life.

According to the version of SAP extant at the time of development of the 2010 NSPs, the last condition assessment was undertaken in 2001 which is outside SunWater's stated maximum condition inspection periods for this asset type. This condition assessment indicates that the highest condition score allocated was a 1 (Perfect as new condition). This was a high level assessment converted for the SAP system and hence does not represent a visual inspection.

SKM evaluated the projected run to failure asset life using SunWater's modelling tool. Inputting a Low business risk and worst case condition score in 2001 of 1 for this asset with a standard run to failure life of 30 years into SunWater's planning tool results in a projected required replacement year of 2029. SKM concluded that the modelling tool is more reliable in projecting life reduction due to condition than life extension, particularly where the condition score in early years is better than the curve would predict, as it tends to exaggerate run to failure life extension potential, and SKM therefore ignored this analysis in this case.

SKM noted that at the time of submission of the NSPs SunWater had planned to replace this asset at the end of its standard run to failure asset life i.e. in 2019, however SKM was advised that as a result of a more recent condition assessment which has taken place post the development of the 2010 NSPs, SunWater has re-evaluated the required replacement date and moved this out to 2029.

SKM considered this later replacement date to be in keeping with SunWater's systems and that the asset should be captured in the current price setting annuity period as the more recent condition assessed replacement date is within the annuity period (i.e. prior to 2035).

SKM considered the applied run to failure asset life period for this asset to be reasonable and largely in keeping with good industry practice. In addition SKM found that the proposed replacement programme for the Gibber Gunyah pumping station pump number 1 is appropriate for this asset and no options evaluation is required.

The replacement of the pump is currently scheduled for 2029, which constitutes a 10 year extension to the standard run to failure asset life for this asset based on condition. SKM considered this planned replacement date to be appropriate.

SKM concluded that the need for refurbishment of this annuity asset was demonstrated at or around the time selected, and certainly within the 25-year annuity period under consideration. As such the inclusion of this annuity item in the annuity value is prudent.

(b) Efficiency Evaluation

SKM found that SunWater's planning team applies a unit rate against bill of materials quantities for the asset in question should the replacement be scheduled more than five years hence from the planning date. Given the volume of annuity items that SunWater's Planning Team are engaged with at any point in time, this approach was considered reasonable by SKM and is in accordance with good industry practice, where the management of a large portfolio of assets is concerned.

SKM reviewed SunWater's calculation for determining a replacement cost and noted that the replacement cost of \$359,000 is not in keeping with the cost for replacement that SKM has developed using SunWater's bill of materials (BOM) and replacement cost determination method.

The 1987 cost in BOM for the pump is \$200,957 comprising an equipment cost of \$141,706, an installation cost of \$5,000 and an indirect cost (locational uplift) of 36.9%. SKM reviewed the

location of Gibber Gonyah pump station and considered that the indirect cost multiplier (location cost uplift) to be reasonable.

SKM calculated a 2008 replacement value for this asset based on the standard 1997 to 2008 multiplier of 1.5 for pump assets as determined by Cardno which yields a replacement value of approximately \$301,435, which is some \$57,564 lower than the annuity item value submitted by SunWater to the Authority. No explanation has been provided for this difference in SunWater's report to SKM. However, SKM noted from that report that SunWater has stated that the replacement cost for this item has been reviewed since the 2010 NSP submission and that a value of \$150,000 has since been determined as the replacement cost. SKM was able to confirm, from a screen image provided by SunWater that this is the replacement cost for Gibber Gonyah pump station pump number 1 identified in the current version of SAP WMS.

SKM benchmarked the annuity item replacement costs proposed by SunWater as submitted to the Authority against its database costs for a modern equivalent electrical asset. SKM's estimate is based on our modern equivalent asset unit rate database as a class 4 estimate, having an accuracy of +30%/-20%. SKM compared its cost estimate against SunWater's cost estimate in the Table below:

Table 4.5: Gibber Gonyah Pump Station Pump number 1 replacement - Comparison of SunWater and SKM Cost Estimates

<i>SunWater Estimate</i>	<i>\$2010 – 2010 NSP SunWater Estimate</i>	<i>\$2010 – 2012 SAP WMS SKM Estimate</i>	<i>\$2010 Variance against 2010 NSP</i>
359,000	150,000	\$141,000	-61%

Source: SKM (2012)

SKMs cost estimate breakdown is shown below based on a modern equivalent pump.

Table 4.6: Gibber Gonyah Pump Station Pump number 1 replacement - SKM Cost Estimate

<i>Item</i>	<i>Cost (\$2010)</i>	<i>Comment</i>
Pump and Motor	\$104,474	Based on supplier budget price adjusted to 2010 money terms (assumed inflation rate 3%)
Installation	\$8,325	Based on SunWater's 1997 costs adjusted for wage inflation to 2010 costs (assumed 4% p.a.)
Design, project management and administration	\$28,200	Estimated at 25% of direct costs
Total	\$141,000	

Source: SKM (2012)

The annuity value submitted by SunWater for the replacement of this item is outside the estimating range of estimated costs for a modern equivalent replacement asset. As such SKM considered the SunWater proposed annuity item value of \$359,000 not to be efficient and recommended that the replacement value be changed to \$150,000 in keeping with SunWater's current SAP WMS estimate.

With regards to efficiency SKM concluded that the value submitted for this annuity item is not efficient, based on available information. SKM recommended that it be adjusted to \$150,000 in keeping with SunWater's current SAP WMS estimate as being within 30% of SKM's estimate

In conclusion SKM was satisfied that SunWater's procedures for determining the timing of replacement of this annuity item have been followed and hence that the timing and need for replacement of this annuity item was prudent but note that, since submission of the NSPs, SunWater had adjusted the replacement date, based on asset condition, to 2029.

SKM considered the cost of the replacement not to be efficient and recommended that the replacement cost for the annuity item be changed to \$150,000 in keeping with SunWater's current SAP WMS estimate.

The Authority has accepted SKM finding and has reduced the renewals expenditure for the Gibber Gunyah Pump Station Pump number 1 replacement to \$150,000.

Item 4: LIT/4 – Theodore Drainage – Replace Structure

Draft Report

SunWater submitted that this renewals item is planned for 2032-33, at a cost of \$277,000 (\$201,000 direct costs). This structure is a road bridge located at chainage 1,608m along Drain 4B. The asset has been in operation since 1953 and has an asset life of 80 years. SunWater stated that the structure has WHS issues due to no guard-rails being present, which will be installed in 2013-14.

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that a condition assessment was undertaken in 2009 which demonstrated minor defects related to structural integrity, structural movement, foundations and function. There is no comment regarding whether the asset life could be effectively extended by refurbishment rather than replacement.

Given the structure is in reasonable working order (at 70% of its estimated life span) and a WHS upgrade is scheduled in 2013-14, Halcrow stated it is difficult to confirm that expenditure to replace the structure is prudent.

Halcrow also noted that there may well be scope to defer this project. Furthermore, given the absence of information regarding the size (span and width) of the bridge, Halcrow is unable to confirm that the cost is efficient.

Authority's Analysis

For the Draft Report, the Authority noted Halcrow's conclusion that it is difficult to confirm the expenditure is prudent. Further, 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. The Authority proposes no change to its Draft Report conclusion.

Item 5: LIT/5 – Theodore Irrigation Distribution – 11DVAXX DVAXX Replace Siphon CHD TH

Draft Report

SunWater submitted that this renewals item is planned for 2011-12. The siphon is located on Channel D and has been in operation since July 1953. It also has an asset life of 80 years.

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that a condition assessment undertaken in January 2001 rated the structure as Condition 5, which indicates that the asset exhibits major deterioration and is virtually inoperable.

Halcrow also stated that SunWater provided a Draft Business Case for the Channel D Rationalisation Project, which relates to a capacity upgrade of Channel D to 100 ML/day, to supply two new 50ML/day outlets. Halcrow noted that a request for the two new outlets is in response to a farm rearrangement.

The results of SunWater's scenario analysis concluded the net present value for the rationalisation project was negative. Further, SunWater concluded there would be little benefit in pursuing the rationalisation project further. SunWater also considered that relationship with the affected irrigators is likely to be tarnished if the proposed works do not proceed.

Halcrow stated that from the information provided, it is not clear whether the channel D rationalisation project will proceed. Should the project proceed, then it would be expected that the required new upsized siphon would be funded by a combination of renewals and new capital works.

SunWater has forecast that replacement of the siphon will cost \$148,000 (\$140,000 direct cost). Halcrow noted that the historical renewals expenditure originally scheduled the siphon replacement project to be completed in 2010-11. After querying why no expenditure had occurred in 2010-11, SunWater confirmed the work has been deferred until 2011-12.

Given that a new upsized siphon may in fact need to be installed in combination with other channel works, Halcrow stated it was not possible to conclude that the expenditure is prudent or efficient.

Authority's Analysis

For the Draft Report, the Authority noted Halcrow's recommendation that it was not possible to conclude that the expenditure is prudent. Further, Halcrow was unable to conclude that the expenditure is efficient. The Authority has applied a 10% saving to sampled items for which there was insufficient information. The Authority proposes no change to its Draft Report conclusion.

Item 6: LIT/6 Theodore Pump Station – Refurbish Control – Replace PLC, components etc; obsolescence, reliability

Draft Report

SunWater submitted that the Theodore pump station control equipment has been in operation since 1994 and has an asset life of 15 years. This item relates to the refurbishment of control equipment, which is scheduled for 2013-14 at a total cost of \$85,000 (\$59,000 direct cost).

No other stakeholders have commented on this item.

Consultant's Review

Halcrow noted that SunWater's System, Applications and Project (SAP) asset hierarchy guide estimates the life of Programmable Logic Controller (PLC) and other electronics to be 10 years, which is five years less than the asset life entered into SAP Works Management System (WMS). Further, the extract from SAP-WMS provided to Halcrow indicated the control equipment should have been replaced in June 2009.

SunWater confirmed that the control equipment was replaced in conjunction with the replacement of the Main and Distribution Switchboards. SunWater also confirmed that following Halcrow's query, the refurbishment proposed in 2013-14 at a cost of \$85,000 (\$59,000 direct cost) was deleted from the SAP-WMS system on 23 March 2011.

Given the information presented, Halcrow recommended that the proposed refurbishment is rescheduled for 2018-19 (approximately 7.5 years after installation) and replacement for 2025-26 (15 years after installation) to coincide with the adopted refurbishment/replacement intervals.

Halcrow also deemed the forecast cost of refurbishment (\$59,000 direct cost) to be efficient.

Authority's Analysis

For the Draft Report the Authority accepted Halcrow's recommendation that the refurbishment of the renewals item is both prudent and efficient. The Authority also notes Halcrow's recommendation that the proposed refurbishment be scheduled for 2018-19 (as opposed to SunWater's submitted date of 2013-14).

The Authority proposes no change to its Draft Report conclusion.

Item 7: LIT/7 – Theodore Pump Station – Replace Concrete Structure

Draft Report

SunWater submitted that this item involved the replacement of a pump station well structure. The structure has been in operation since June 1927 and has an asset life of 80 years.

No other stakeholders have commented on this item.

Consultant's Review

Halcrow stated that based on the estimated asset life, this structure should have been replaced in 2006-07 however, the first scheduled replacement is in 2025-26.

Halcrow noted that the dimensions of the well structure and site layout are unknown.

Further, Halcrow noted that no condition assessment details were provided. A risk assessment was undertaken in 2005 which has a comment entered in SAP-WMS well condemned major refurbishment required. Halcrow stated that this comment appears to contradict the risk assessment undertaken for structural failure which for all categories states there is low risk.

Halcrow stated that given the asset life has been exhausted and that the well has been condemned, replacement of the well is considered prudent.

However, Halcrow also stated that it was not possible to determine whether replacement of the pump well structure at direct cost of \$146,000 is efficient, as SunWater has not provided any site specific information.

Authority's Analysis

For the Draft Report, the Authority accepted Halcrow's recommendation that this item is prudent. However, Halcrow had insufficient information available to determine the efficiency of this renewals item. The Authority has applied a 10% saving to sampled items for which there was insufficient information. The Authority proposes no change to its Draft Report conclusion.

Item 8: LIT/8 – Theodore Pump Station – Replace Control Equipment

Draft Report

SunWater submitted that the Theodore pump station control equipment has been in operation since 1994 and has an asset life of 15 years. This item relates to the replacement of control equipment, which is scheduled for 2026-27 at a total cost of \$195,000 (\$142,000 direct cost).

No other stakeholders have commented on this item.

Consultant's Review

As noted above, given the information presented, Halcrow recommended that the proposed refurbishment is rescheduled for 2018-19 (approximately 7.5 years after installation) and replacement for 2025-26 (15 years after installation) to coincide with the adopted refurbishment/replacement intervals.

Halcrow also deemed the forecast cost of replacement (\$142,000 direct cost) to be efficient.

Authority's Analysis

For the Draft Report, the Authority accepts Halcrow's recommendation that the renewals item is both prudent and efficient. The Authority also notes Halcrow's recommendation that the proposed replacement be scheduled for 2025-26 (as opposed to SunWater's submitted date of 2026-27).

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Conclusion

Draft Report

In the Draft Report summary, eight items for the Theodore Distribution System were sampled. Of these:

- (a) two items were prudent and efficient and were retained as forecast expenditure;
- (b) four items were prudent but insufficient information was provided to determine efficiency, requiring adjustment to forecast expenditure; and
- (c) for two items it was not possible to conclude on prudence or efficiency.

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

Final Report

For the Final Report, the Authority re-examined one item, the Gibber Gonyah Pump Station – Replacement of the Submersible Pump, and on the basis of advice from SKM, concluded that the prudent and efficient cost of this project should be reduced to \$150,000.

In addition, as outlined in Volume 1, the Authority undertook further sampling of forecast renewals expenditures across SunWater's schemes. For the Final Report, the Authority recommended that a 20% saving be applied to the direct costs of 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 .

Table 4.7: Review of Forecast (Direct) Renewals Expenditure 2011-36 (\$'000)

<i>Item</i>	<i>Year</i>	<i>SunWater ('000)</i>	<i>Authority's Draft Report Findings</i>	<i>Draft Recommended (\$'000)</i>	<i>Authority's Final Report Findings</i>	<i>Final Recommended (\$'000)</i>
Sampled Items						
1. Gibber Gonyah Pump Station - Replace Suction Pipe Pump Number 2	2013-14	106	Prudent but insufficient information to assess the efficiency	10% saving applied.	Prudent but insufficient information to assess the efficiency	20% saving applied
2. Gibber Gonyah Pump Station - Replace Suction Pipe Pump Number 3	2014-15	96	Prudent but insufficient information to assess the efficiency	10% saving applied.	Prudent but insufficient information to assess the efficiency	20% saving applied
3. Gibber Gonyah Pump Station - Replace Submersible Pump, Flygt	2018-19	359	Prudent but insufficient information to assess the efficiency	10% saving applied.	Prudent but not efficient	150
4. Theodore Drainage – Replace Structure	2032-33	201	Unable to determine prudence and insufficient information to assess the efficiency	10% saving applied.	Unable to determine prudence and insufficient information to assess the efficiency	20% saving applied
5. Theodore Irrigation Distribution – 11DVAXX DVAXX Replace Siphon CHD TH	2011-12	140	Unable to determine the prudence and efficiency	10% saving applied.	Unable to determine the prudence and efficiency	20% saving applied
6. Theodore Pump Station – Refurbish control: replace PLC,	2013-14	59	Prudent and efficient but deferred to 2019	59	Prudent and efficient but deferred to 2019	59
7. Theodore Pump Station – Replace Control Equipment	2026-27	142	Prudent and efficient but brought forward to 2026	142	Prudent and efficient but brought forward to 2026	142
8. Theodore Pump Station – Replace Concrete Structure	2025-26	146	Prudent but insufficient information to assess the efficiency	10% saving applied.	Prudent but insufficient information to assess the efficiency	20% saving applied
Non-Sampled Items				10% saving applied.		20% saving applied

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

4.6 SunWater's Consultation with Customers

Draft Report

Submissions

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.

Stakeholder submissions that were received in relation to SunWater's consultation with customers are provided in the Dawson Valley WSS Draft Report.

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.

Submissions Received from Stakeholders on the Draft Report

Cotton Australia (2012c) submitted that consultation between SunWater and customers has failed to exist during the current price path and has left irrigators bewildered at the cost blow outs above the budgeted costs agreed to by SunWater at the end of the last pricing process.

Cotton Australia submitted that renewals costs items pose a large risk of costs blow outs to this scheme if left without a strong consultation process in place with customers who have to pay the cost. It suggested that any new cost item that has not been identified and costed as part of this review will require consultation with customers before the item is costed against the scheme.

Authority's Response to Submissions Received on the Draft Report

The Authority agrees with Cotton Australia that consultation with irrigators is necessary, particularly in regard to cost blow-outs or new renewals items not previously identified. The Authority proposes no change to its recommendations.

In response to SunWater's concerns that excessive costs will be incurred undertaking consultation, the Authority considers that SunWater's estimated cost should be compared to the savings from doing so, as noted previously. The benefits of greater consultation are likely to outweigh the costs, as noted in Volume 1.

In addition, the Authority agrees that SunWater maintain ultimate control over its renewals annuity program. However, the Authority considers that customer consultation has not been adequate under current legislation (despite recommendations of the past price review) and, as a consequence, SunWater should be more formally obliged to undertake consultation.

4.7 Allocation of Distribution Renewals Costs According to WAE Priority

Previous Review

For the 2006-11 price path, the renewals costs for the Theodore Distribution System infrastructure were apportioned between priority groups using converted nominal water allocations.

Draft Report

Stakeholder Submissions

SunWater

SunWater (2011i) submitted that the allocation of the renewals annuity is a matter for tariff setting by the Authority, but that the Headworks Utilisation Factor (HUF) methodology should not be used because the HUF is not relevant to the allocation of fixed renewals costs in distribution systems which do not provide storage.

In determining a basis for allocating fixed distribution system costs to customers in general (rather than specifically between customer priority groups), SunWater submitted that current WAEs should be adopted. SunWater stated that current WAEs represent the best available means of determining customers' current share of distribution system capacity.

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

As noted in Volume 1, the Authority considers that distribution system costs should be allocated according to the relevant cost drivers. The Authority does not consider the HUF methodology to be an appropriate cost driver for distribution system costs.

In principle, the Authority considers that distribution system capacity is the relevant cost driver for fixed renewals expenditure. In general, the best measure of capacity share is the instantaneous or peak flow rate. However, neither DERM's regulatory framework nor SunWater's contracts currently specify a peak flow rate or share of system capacity.

As discussed in Volume 1, the Authority recommends that nominal WAEs be used for the allocation of fixed distribution system costs between priority groups. That is, on the basis of current WAE held, irrespective of priority type, with no conversion. Under this approach, high and medium priority WAE are allocated the same costs per ML. This reflects the view that medium and high priority users have the same share of distribution system capacity per ML of nominal WAE, as submitted by SunWater.

The Authority also recommends that, at the conclusion of this review, SunWater commence a review of more appropriate means for allocating fixed renewals costs in distribution systems.

Submissions Received from Stakeholders on the Draft Report

During Round 3 Consultation (December 2011), stakeholders noted that in regards to the Moura Off-stream Storage as bulk asset:

- (a) the renewals expenditure for the next five years is forecast to be \$750,000. However, \$350,000 specifically relates to the off-stream storage. The majority of the WAE from the off-stream storage are high priority. Therefore, all renewal costs associated with this asset should be allocated to high priority customers only.

This change in allocation method would reduce the cost-reflective price which is currently too high. Lowering the bulk charge will reduce the cost reflective price payable in the channel;

- (b) that the authority should really look at reapportioning these costs prior to the Final Report, to reduce the channel cost reflective price; and
- (c) the Authority should examine the HUF for this asset and look at cost allocation and a recalculation of prices as a result. This asset does not increase medium or medium priority system yields so irrigators should not contribute.

Stakeholders also noted that:

- (a) at the start of the water year (October, November, and December) the announced allocation is always or often zero for the first month at least. The end of year water availability data overstates the amount of water that is available as it is only available at the end of the year, when irrigation is complete. When the water is needed, water availability is less than the end of year figure suggests. The HUF should be calculated on water availability at the start of the period, not the end; and
- (b) that high priority users seem to use more than 30% of the storage [the HUF allocates 30% of costs to high priority]. When the weir is full the medium Priority user still does not necessarily receive 100% announced allocation but the high priority customer does. This means that the HUF must overstate the benefit to Medium Priority and Medium Priority A customers. Irrigators are strongly of the view that the HUF needs to be reviewed

Mr Ron Heywood, (2011) submitted that irrigators must plan on the basis of water availability at the beginning of a quarter, not the end. Comparative profitability of various cropping options in the Dawson Valley means that crops must be established early in the first quarter of the water year (October). Consequently the relative value (and therefore the Capital Cost Allocation) of high priority water is most accurately reflected by the ratio of announced allocations for high priority to the announced allocations for other priorities at the commencement of the water year.

Authority's Response to Submissions Received on the Draft Report

In relation to issues raised, the Authority notes that:

- (a) the proposal to allocate the renewals costs of specific assets (such as Moura off-stream storage) on a different basis between medium and high priority users would require more information on individual asset costs than was available to the Authority. For example, separate operating costs for specific assets and separate costs for other weirs which are mainly for the benefit of medium priority users would be required. The preferred approach remains to treat all bulk assets as a combined asset grouping and allocate renewals costs on the basis of HUF; and

- (b) the HUF approach takes into account water availability throughout the water year to allocate costs between high and medium priority. High priority WAE makes up 9% of total WAE, but is allocated 30% of costs.

The Authority proposes no change to its Draft Report recommendations.

4.8 Calculating the Renewals Annuity

Draft Report

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

For the Theodore Distribution System the draft recommended renewals annuity for the 2012-17 regulatory period is shown in Final Report

For the Final Report, there have been a number of changes to the Authority's recommended forecast renewals annuity including:

- (a) a change in the 1 July 2006 opening ARR balance from the use of actual renewals data. The 2006 opening balance is higher than in the Draft Report;
- (b) the application of a 4% saving to non-sampled items and sampled items for which there was insufficient information, rather than 10% in the Draft Report;
- (c) removal of the previously included flood damage repair costs for 2010-11 and adjustment of fencing costs;
- (d) application of a 20% saving to non-sampled items and sampled forecast renewals items for which there was insufficient information (instead of 10% in the Draft Report); and
- (e) adjustment of the allowance for Gibber Gunyah submersible pump to \$150,000.

The revised renewals annuities are compared to the Draft Report recommendations in Table 4.8. The combined effect of the above adjustments results in a significantly lower renewals annuity for the Theodore Distribution System.

Table .

The table shows the total renewals annuity recommended by the Authority and the component amounts for high and medium priority customers. Also presented for comparison is SunWater's total renewals annuity for 2006-11 and SunWater's proposed total annuity for 2011-16. SunWater did not submit a disaggregation between high and medium priority customers.

Final Report

For the Final Report, there have been a number of changes to the Authority's recommended forecast renewals annuity including:

- (f) a change in the 1 July 2006 opening ARR balance from the use of actual renewals data. The 2006 opening balance is higher than in the Draft Report;
- (g) the application of a 4% saving to non-sampled items and sampled items for which there was insufficient information, rather than 10% in the Draft Report;

- (h) removal of the previously included flood damage repair costs for 2010-11 and adjustment of fencing costs;
- (i) application of a 20% saving to non-sampled items and sampled forecast renewals items for which there was insufficient information (instead of 10% in the Draft Report); and
- (j) adjustment of the allowance for Gibber Gonyah submersible pump to \$150,000.

The revised renewals annuities are compared to the Draft Report recommendations in Table 4.8. The combined effect of the above adjustments results in a significantly lower renewals annuity for the Theodore Distribution System.

Table 4.8: Theodore Distribution System 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
Total SunWater	140	91	99	108	144	4	6	27	44	45	45
Draft Report											
Total Authority	-	-	-	-	-	-	174	200	219	217	213
High Priority	-	-	-	-	-	-	0	0	0	0	0
Medium Priority	-	-	-	-	-	-	174	200	219	216	213
Final Report											
Total Authority							48	76	97	98	98
High Priority							0	0	0	0	0
Medium Priority							48	76	97	98	98

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 Theodore Distribution System;
- (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 prudence 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 contracts⁴ 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 in this system to include service provision, compliance, insurance, 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;

⁴ 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 – receiving and collating water orders, scheduling the diversion of bulk water into the distribution system, monitoring channel flows and operating regulating structures and quarterly meter reading;
 - (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 distribution service include those relating to
 - (i) the ROP – water accounting and managing and reporting to DERM on the distribution loss WAE;
 - (ii) environmental management to comply with the ROP and *Environmental Protection Act 1994* which require SunWater to deal with risks such as fish deaths, chemical usage, pollution, contamination and the discharge of water from channels and drains into the environment;
 - (iii) 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 workplace health and safety, financial reporting and taxation and irrigation pricing;
- (d) insurance is obtained on a portfolio basis and allocated to the scheme; and
- (e) 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.

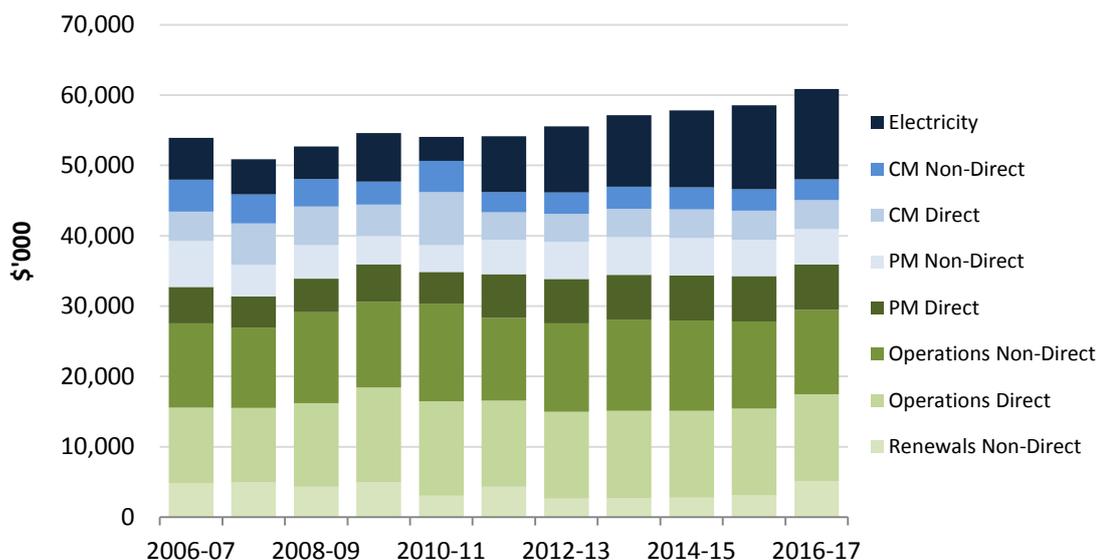
Draft Report

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.

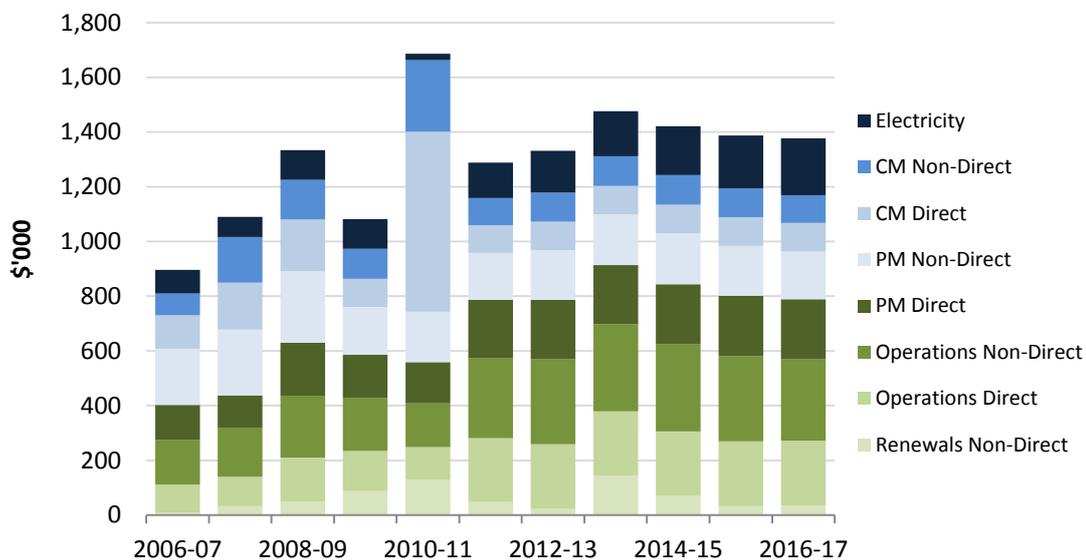
Figure 5.1: SunWater’s Total Operating Costs (Real \$’000) – All Service Contracts



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 Theodore Distribution System (all sectors) is shown in Figure 5.2 and Table 5.1 and Table 5.2.

Figure 5.2: Total Operating Costs – Theodore Distribution System (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 5.1: 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	267	284	388	341	279	527	549	554	556	549	534
Electricity	87	73	109	109	24	129	153	165	178	194	209
Preventive Maintenance	332	361	455	332	336	384	398	402	405	402	394
Corrective Maintenance	201	339	333	212	919	201	209	212	213	211	206
Renewals Non-Direct	9	33	49	87	129	47	22	143	69	33	35
Total	896	1,090	1,334	1,082	1,686	1,288	1,331	1,477	1,421	1,388	1,378

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 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	243	239	276	271	305	386	392	392	392	392	392
Electricity	87	73	109	109	24	129	153	165	178	194	209
Contractors	55	67	70	44	81	60	61	62	63	63	63
Materials	49	58	75	47	508	73	74	75	76	77	77
Other	6	35	121	44	34	29	29	29	29	29	29
Non-Direct	456	617	682	566	735	611	623	754	683	633	607
Total	896	1,090	1,334	1,082	1,686	1,288	1,331	1,477	1,421	1,388	1,378

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 channel distribution system averaged \$1.036 million per 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 the new five-year period, is \$1.216 million per annum (in real terms).

Other Stakeholders

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

- (a) the labour force has been the same in Theodore whether water is available or not; and
- (b) millions of dollars are being spend on distribution to make it more efficient but the area is not being managed properly.

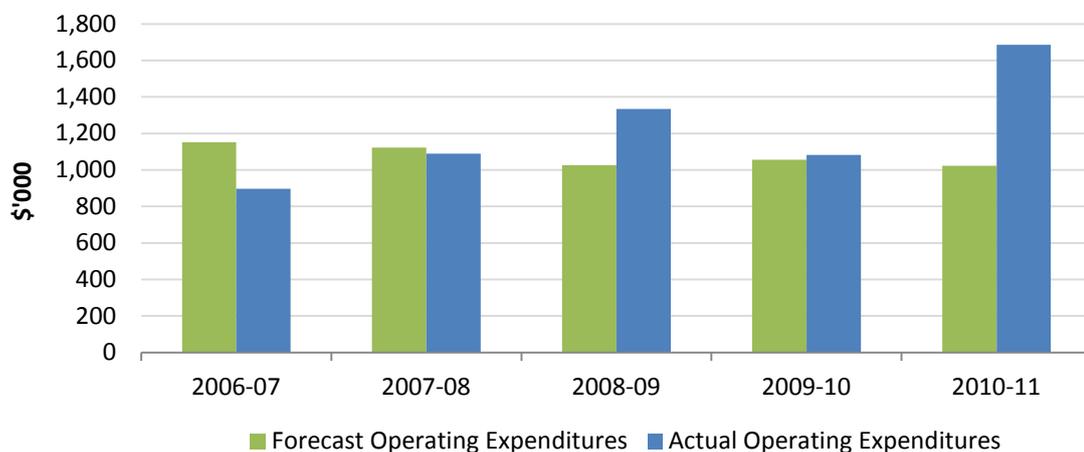
Authority's Analysis

The Authority 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 total actual operating costs for the Theodore Distribution System is shown in Figure below. For this scheme, SunWater's actual operating costs were greater than Indec's forecast efficient operating costs by approximately \$709,000 over the period. Indec noted that anomalies could arise for the service contracts from linked bulk and distribution systems and the solution was to combine them into bundled schemes. See Volume 1.

Figure 5.1: 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.

Following the Draft Report, further information was received from SunWater about how savings from SLFI are taken into account in its operating cost estimates. This information is set out in Volume 1.

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.

Draft Report

Stakeholder Submissions

SunWater

As noted in Volume 1, SunWater submitted that it will incur \$23.5 million in total non-direct costs in 2012-13 (Table 5.3). 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 Theodore Distribution System are in Table 5.3 below.

Table 5.3: 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
Theodore Distribution System	456	617	682	566	735	611	623	754	683	633	607

Source: SunWater (2011ap).

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

Stakeholder submissions that were received in relation to indirect costs are provided in the Dawson Valley WSS Draft Report.

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 prudence 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.⁵

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 recommended 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).

⁵ 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.

The Authority 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.

On this basis, the Authority 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 ensured that schemes are paying for the overhead costs from those resource centres that are most directly related to their schemes and not, for example, for Infrastructure Management overhead costs from the other three regions.

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

Submissions Received from Stakeholders on the Draft Report

Irrigators at Round 3 consultation (December 2011) questioned whether sponsorship was included as a non-direct cost and commented that they considered that SunWater has need to advertise due to their monopoly status. Heywood (Heywood R, 2011) also noted that SunWater's program of sponsorship is excessive. There is no commercial justification for this unendorsed expenditure of irrigators' funds.

Stakeholders also note that 65%+ of total costs being non-directs is unacceptable. Total bulk and channel costs combined are \$2.2 million and of this \$1.2 million are central office costs.

Ron Heywood (Heywood R, 2011) noted that irrigators have not only paid the operating costs for an antiquated system but the costs of repeated unsuccessful attempts by SunWater to remedy the antiquated system. Suggesting that only when the direct costs of "operating D.V. Channels" and "fixing D.V. Channels" are discovered and unbundled; the former allocated to irrigators, the latter to SunWater, it will be possible to reach a valid allocation of non-direct costs and hence of fixed charges.

H. & P. Anderson (2011) and G. & C. Austin (2011) suggested that 67% of total costs are stemming from head office (non-direct costs) is excessive, unjustified and should be further investigated by Authority.

Irrigators do not see this level of head office input. The inefficiency of SunWater staff or consultants visiting this area is evident. Yet irrigators are charged without any consultation or results.

Cotton Australia (2012b) noted that there are large differences in the indirect and overhead data presented in the documents used in developing draft prices. Suggesting that the Dawson Bulk

has an indirect and overhead cost of over 57% and the Distribution System is over 47%. Both of these are well above any of the data presented in the Deloitte report.

Cotton Australia submitted that by using all the data from the Deloitte and the Authority's reports it can be established:

- (a) SunWater's total indirect and overheads percentage of total costs is 34%;
- (b) irrigation service contracts' indirect and overheads % of total costs are 49%; and
- (c) other service contracts excluding irrigation service contracts have indirect and overheads % of total costs at 24%.

In addition Cotton Australia (2012b) noted that data presented in the Deloitte's benchmarking of administration costs to compare SunWater's costs with PVWater is vastly different to the data in volume 1 draft prices table 7.3.

Cotton Australia (2012b) recommended the Authority accept the Deloitte report recommendations that the cost of indirect and overheads to all service contracts to be set at 34% of total costs.

Authority's Response to Submissions Received on the Draft Report

The Authority notes the comments irrigators at Round 3 consultation and confirms that all costs associated with sponsorship are considered non-direct costs. SunWater (2010i) reports that each year approximately \$70,000 is invested in community events as part of SunWater's ongoing sponsorship program and in 2010-11 this figure was \$64,101.

Given SunWater's status as a Government Owned Corporation, the extent of sponsorship is ultimately at the discretion of the Shareholding Ministers. The Authority notes that costs associated with sponsorship in 2010-11 represent approximately 0.03% of total costs incurred in that year (all sectors opex and capex). Therefore, the Authority concludes that SunWater's budgeted sponsorship costs are immaterial and has not adjusted these costs.

Allocation of Non-directs to Service Contracts

In regard to the allocation of non-direct costs to irrigation service contracts, the Draft Report recommended a change to SunWater's approach to allocating non-direct costs for Infrastructure Management (IM) and Infrastructure Development (ID). The Authority recommended (regionally) targeted DLC. SunWater recommended state-wide DLC, consistent with SunWater's general approach to the allocation of other non-direct costs.

However, as set out in Volume 1, in the light of new information submitted by SunWater, the Authority now considers that the benefit of using targeted DLC is unlikely to outweigh the additional complexity and cost of implementing and maintaining this alternative approach. It is proposed to adopt the approach initially proposed by SunWater.

Accordingly, the Authority has amended its recommendation (removing the recommendation to adopt targeted DLC for these cost centres).

For the Final Report, the cost of options analyses and consultation with customers on renewals items (\$445,000 for SunWater as a whole) has also been allocated to schemes on the basis of direct labour.

Proportion of Non-direct to Total Costs

The Authority also notes that in many schemes (including Theodore Distribution system), irrigators considered that the non-direct costs allocated to their schemes appeared to be high, and in some cases much higher than the SunWater-wide average ratio of non-direct to total costs. The reason for the wide variation of non-direct to total cost ratios across service contracts is because non-direct costs are allocated on the basis of DLC. It follows that if a service contract has a relatively high proportion of labour costs it will attract a relatively high proportion of non-direct costs.

In addition, the greater the indirect resources absorbed by a particular scheme, the higher will be the ratio of non-direct costs to direct labour costs. Together, these factors result in a relatively high non-direct to total cost ratio for irrigation service contracts.

Differences between the percentage of non-direct costs to total costs reflects the distribution of direct labour costs across the business. A lower percentage allocation of non-direct costs may reflect a lower proportion of non-direct costs, as suggested by Cotton Australia, or it may also represent a higher proportion of non-direct labour costs in non-irrigation service contracts.

The Authority's draft and final recommended level of non-direct costs to be recovered from the Theodore Distribution System (from all customers) is set out below in Table 5.4. The allocation of these costs between high and medium priority customers is discussed below.

Table 5.4: 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	456	617	682	566	735	611	623	754	683	633	607
Authority							605	701	644	587	555
Authority Final							616	703	650	596	563

Source: SunWater (2011ap), QCA (2011, 2012).

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.

Draft Report

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 5.5 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 5.5: 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
Operations	103	107	161	147	119	234	237	237	237	237	237
Electricity	87	73	109	109	24	129	153	165	178	194	209
Preventive Maintenance	127	121	193	157	151	212	215	217	218	220	220
Corrective Maintenance	123	172	189	103	657	102	103	104	104	105	105
Total	441	473	652	516	951	677	709	723	738	755	770

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

Table 5.6 presents the same operating costs developed by SunWater on a functional basis.

Table 5.6: 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	243	239	276	271	305	386	392	392	392	392	392
Electricity	87	73	109	109	24	129	153	165	178	194	209
Contractors	55	67	70	44	81	60	61	62	63	63	63
Materials	49	58	75	47	508	73	74	75	76	77	77
Other	6	35	121	44	34	29	29	29	29	29	29
Total	441	473	652	516	951	677	709	723	738	755	770

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 prudence 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 prudence 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 prudence and efficiency of the proposed expenditure.

In Volume 1, the Authority recommended that SunWater undertake a review of its planning policies, processes and procedures to better achieve its strategic objectives. The Authority also recommended 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.

Final Report

As noted in Volume 1, to achieve greater transparency, the Authority has also recommended that SunWater's Statement of Corporate Intent (and relevant legislation) require SunWater to consult with customers in relation to forecast and actual operating expenditure and publish on its website, annually updated NSPs (containing this and renewals information) commencing by 30 June 2014. The NSPs should be enhanced to present details of SunWater's proposed operating expenditure and to account for significant variances between previously forecast and actual material operating expenditure.

In this manner, greater transparency will be achieved over time.

Review of Direct Operating Expenditure

Item 1: Operations

Draft Report

Stakeholder Submissions

SunWater noted that operations relate to the day-to-day costs of delivering water and meeting compliance obligations. These include:

- (a) collating water orders, scheduling releases and delivering water;
- (b) operating pump stations and 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 5.5 above.

Stakeholder submissions that were received in relation to operations are provided in the Dawson Valley WSS Draft Report.

Authority's Analysis

Halcrow noted that the key operational activities include scheduling and delivery of water, and maintaining supply at the required flow rates.

A breakdown of historical expenditure into key operations sub-activities is shown in Table 5.7. A similar breakdown for forecast expenditure has not been provided.

SunWater indicated that the historical data contains some incorrect codings to sub-activities and that 2006-07 has the majority of anomalies because many expenses were retrospectively re-categorised to fit into the Business Operating Model structure and this was not a completely precise process. Therefore, Table 5.7 provides a general outline of the expenditure associated with sub-activities.

Table 5.7: Historical Operations Expenditure (Real \$'000)

<i>Sub-Activities</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>
Customer Management	-	-	-	27
Workplace H&S	-	1	1	-
Environmental Management	-	-	-	2
Water Management	-	-	-	5
Scheme Management	6	36	166	124
Dam Safety	-	-	-	-
Schedule/Driver	239	247	221	184
Metering	-	-	-	-
Facility Management	-	-	-	-
Other	21	-	-	-
Total	267	284	388	341

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

As evident from Table 5.7, the historical operations expenditure primarily relates to scheme management and scheduling and delivery of water. There appears to have been some variation in scheme management expenditure over the period, however, this may be due to incorrect allocation of expenditure to sub activities.

Table 5.8 below provides a breakdown of historical and forecast expenditure on operations at the Theodore Distribution System.

Table 5.8: 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	95	72	100	110	200	203	206	206	206	206
Materials	2	6	2	1	2	2	2	2	2	2
Contactors	1	-	18	6	-	-	-	-	-	-
Other	5	29	41	30	27	27	27	27	27	27
Total Direct Costs	103	107	161	147	229	232	235	235	235	235
Indirects	51	94	117	74	106	94	109	112	113	111
Overheads	112	83	109	120	197	199	203	205	206	200
Total	267	284	388	341	532	525	547	553	554	547
Annual Change	-	7%	36%	(12%)	56%	(1%)	4%	1%	-	(1%)
Change Since 2007	-	7%	45%	28%	99%	97%	105%	107%	108%	105%

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

Halcrow also noted that 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, it has not provided the results of its review of work instructions. It has, however, provided some explanations for key movements in the expenditure.

There was a significant increase in expenditure on labour between 2009-10 and 2010-11 (from \$110,000 to \$200,000). SunWater indicated that the 2010-11 forecast is based on the assumption that costs associated with Water Management, Scheme Management and scheduling and delivery of water will increase as a result of the Dawson Valley headworks being filled. It noted that the water level has been very low for the past four to five years, which contributed to lower than average expenditure.

SunWater provided an extract of its resource planning tool used to develop labour forecasts for 2011-12. Halcrow has been able to confirm 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 indicates that the direct labour charge for operations in the Theodore Distribution System in 2011-12 is based on approximately 3,216 hours per annum for operations staff from the Central resource centre and the Asset Management resource centre. This accounts for approximately \$144,000 per annum of the labour expenditure. This is equivalent to approximately 2.1 FTE staff working on operations.

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 \$56,000 per annum of direct labour expenditure. SunWater has not provided any explanation of how this expenditure has been forecast.

As a comparable breakdown of historical labour expenditure has not been provided, it is not clear what operational activities have driven the significant increase in labour expenditure. Halcrow notes that SunWater has recently completed an organisational review to identify savings which resulted in the centralisation of services, and reductions to staff numbers. However, given the significant increase in labour, the savings from the review are not readily apparent in relation to the Theodore Distribution System.

SunWater forecast a marginal reduction in other expenditure, to \$27,000 in 2010-11; expenditure is forecast to remain steady thereafter. Of this expenditure, \$21,000 relates to insurance costs, which are excluded from the scope of this review. Local Authority rates account for the remaining \$6,000 per annum. SunWater is required by law to pay Local Authority Rates and this expenditure is therefore deemed both prudent and efficient.

In the Draft Report the Authority recommended that SunWater staff continue to conduct all quarterly meter reads.

The Authority accepted Halcrow's conclusion that the \$6,000 per annum required by law to pay Local Authority Rates is both prudent and efficient. The Authority also notes that Halcrow was unable to draw definitive conclusions on the prudence and efficiency of proposed expenditures due to the insufficient information provided by SunWater. Further, the Authority notes that Halcrow did not recommend any adjustments to SunWater's operations costs.

In addition, the Authority noted 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.

On the basis of the consultants' reviews, the Authority did not specifically adjust SunWater's operations cost forecast.

Submissions Received from Stakeholders on the Draft Report

During Round 3 consultation (December 2011) stakeholder's submitted labour allocated to this scheme is far too high. The number of hours forecast for this scheme must be reviewed and lowered. The remoteness of the scheme necessitates the use of local contractors to lower these forecast labour hours.

Authority's Response to Submissions Received on the Draft Report

The Authority reviewed whether activities in Dawson WSS and Theodore Distribution System could be undertaken more cost effectively by local contractors rather than SunWater staff. It was found that, while tasks could be undertaken by local contractors, it would require extensive training to ensure compliance with SunWater's health and safety processes. However, there was an insufficient value of works orders in these schemes to justify SunWater vetting, training and commissioning local contractors.

The Authority concluded that it was unlikely to be cost effective for SunWater to employ local contractors in these service contracts, when taking into account the associated size, number, complexity, range of skills and training required.

The Authority has not identified any grounds to alter its approach. No changes are therefore proposed for the Final Report....

Item 2: Preventive Maintenance

Draft Report

Stakeholder Submissions

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; and
- (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. Typical examples are:

- (a) mechanical and chemical weed control including Acrolein injections;
- (b) desilting of channels and drains;
- (c) electrical and mechanical servicing of regulating gates, valves, meters and water level sensors; and
- (d) mechanical and electrical serving of pumps, motors and filter systems.

SunWater's proposed preventive maintenance costs are set out in Table 5.5 above.

No other stakeholders have commented on this matter.

Authority's Analysis

Halcrow noted that in SunWater's reporting system, preventive maintenance consists of three activity types; namely condition monitoring, servicing, and weed control.

Table 5.9 provides a breakdown of historical and forecast expenditure on preventive maintenance by item. The disaggregated cost data provided to Halcrow does not separately identify expenditure associated with condition monitoring, servicing and weed control.

As evident from Table 5.9, there was a notable increase in expenditure on materials between 2009-10 and 2010-11. SunWater indicated that the 2010-11 forecast represents the return to normal water availability (water levels in storages have increased substantially from the last four to five years).

SunWater is forecasting an increase in direct costs associated with preventive maintenance when compared to its historical expenditure. This is driven by increases in labour, materials and contractors.

Table 5.9: Historical and Forecast Expenditure - Preventive Maintenance (Real \$'000)

<i>Type</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>
Labour	105	99	115	100	114	116	117	117	117	117
Materials	22	22	26	22	39	40	40	41	42	42
Contractors	-	-	51	35	56	57	58	58	59	60
Other	-	-	-	-	-	-	-	-	-	-
Total Direct Costs	127	121	193	157	209	212	215	217	218	220
Indirects	65	128	134	67	60	54	62	64	65	64
Overheads	140	112	128	108	116	117	120	121	122	119
Total	332	361	455	332	386	384	398	402	405	402
Annual Change	-	8%	26%	(27%)	16%	(1%)	4%	1%	1%	(1%)
Change Since 2007	-	8%	37%	-	16%	15%	20%	21%	22%	21%

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

Halcrow provided a review of the historical and forecast preventive maintenance expenditure including weed control, and condition monitoring and servicing.

(a) Weed Control

SunWater uses three approaches to weed control; these include:

- (a) Acrolein chemical dosing of the water held in the channel system;
- (b) Chemical Weed Control – i.e. chemical spraying of weeds using “Round-up” or similar products; and
- (c) Mechanical Weed Control – i.e. slashing or burning of weeds.

Chemical spraying and mechanical weed control activities are typically undertaken along channel batters, roads and in drains.

Acrolein is applied to the channel system by SunWater staff rather than being contracted out. Halcrow understands that Acrolein dosing is undertaken using a slug dosing process; in this case, the system is completely closed and drained, and a slug dose of Acrolein is applied as the channel is refilled.

SunWater provided a breakdown of historical expenditure on weed control, as shown in Table 5.10. A similar breakdown of forecast expenditure has not been provided.

Table 5.10: Preventive Maintenance – Weed Control (Real \$'000)

<i>Type</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>
Labour	87	85	102	84
Materials	17	21	25	21
Contractors	-	-	51	34
Other	-	-	-	-
Total Direct Costs	104	105	178	139
Indirects	54	110	119	56
Overheads	120	96	114	91
Total	278	311	410	286

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

The breakdown of forecast expenditure provided by SunWater does not separately identify all of the expenditure associated with weed control, although it does identify contract slashing and spraying costs, and materials (Acrolein).

Forecast weed control expenditure - contractors (slashing and spraying)

As noted above, slashing and spraying are typically outsourced to contractors. SunWater's forecast expenditure includes an allowance for 'Contractors - weed control' of \$56,000 per annum for Theodore Distribution System. SunWater did not incur any expenditure on contractors at Theodore in 2006-07 and 2007-08. In 2008-09 the expenditure was \$51,000 and in 2009-10 expenditure was \$34,000.

During interviews with SunWater, it was noted that expenditure forecasts of 'Contractors - weed control' are based on existing slashing contracts. SunWater indicated that contracts typically run for three years, and that they are market tested when due for renewal. As part of this review, Halcrow reviewed a copy of the weed control contract for the Theodore Distribution System. The current contract is dated 16 July 2009, and runs for a period of three years. The contract includes slashing and blanket spraying of the Fork Section, the Gibber Gunnyah Section and the Theodore Section, and is based on a schedule of rates. The contract rate for three slashings and three sprayings is approximately \$73,700, which indicates that SunWater's forecast expenditure (\$56,000 per annum) is based on two to three slashings and sprayings per year. On the basis of the available information, Halcrow is satisfied that the allowance for 'Contractors - weed control' is both prudent and efficient.

SunWater also applied an escalation of approximately 1.5% in real terms to expenditure on contractors. From the information provided by SunWater, it is difficult to conclude that an escalation factor of greater than the consumer price index (CPI) (assumed at 2.5%) should be applied.

Materials - Weed control (Acrolein)

As noted above, Acrolein is applied to the channel system by SunWater staff. SunWater provided a copy of an Internal Position Paper - Acrolein, dated 30 July 2010, which details its approach to forecasting Acrolein usage in the coming price path period.

SunWater stated that current volumes have been treated as the base line for future consumption. SunWater's historical and forecast use of Acrolein is shown in Table 5.11.

Table 5.11: Number of Acrolein Cylinders (200L) per year

	2007-08	2008-09	2009-10	2010-11	Projected Annual Usage	Annual Cost
Theodore Distribution System	0.5	1	1	1	2	\$12,228

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

SunWater forecast that it will require two cylinders of Acrolein per year to maintain customer standards of service and minimise the fouling of water meters by weeds. It has not provided an explanation of why it has forecast an increase in usage over historical levels. While Halcrow noted the inherent uncertainty in forecasting Acrolein usage, influences that would be expected to increase weed growth have been experienced within the past couple of years without any recorded increase in Acrolein use. On this basis, Halcrow is not satisfied that an increase of usage to two cylinders has been justified.

SunWater's forecast expenditure assumes the cost of a 200L cylinder is approximately \$6,150 (\$2010-11 real). Halcrow understands that this is based on its last order of Acrolein in 2010. In an attachment to its Internal Position Paper – Acrolein, SunWater provided documentation from its US supplier which indicated that the cost of the product is to reduce by approximately 15%. However, this reduction does not appear to be reflected in SunWater's forecast of expenditure. Taking into account the reduction in the unit rate of Acrolein, expenditure would be \$5,200 per annum (\$2010-11 real).

In its Internal Position Paper - Acrolein, SunWater also noted that the cost of Acrolein has been volatile over the period 2004-05 to 2008-09, and that while it expects variation in the price of the chemical to be considerable, in the absence of justification, only CPI should be used to inflate the cost of Acrolein. Halcrow supports this approach but noted that in its NSP, SunWater has proposed that materials should be escalated by four % per annum in nominal terms.

From the information provided to this review, it is not possible to identify the forecast labour expenditure associated with Acrolein dosing. Consequently, it has not been possible to review this expenditure.

(b) Condition Monitoring and Servicing

The main maintenance issues in the Theodore Distribution system include channel maintenance; pumping station structures; and the Gibber Gonyah sub system, which is impounded by levee banks (SunWater owned).

SunWater provided a breakdown of historical expenditure on condition monitoring and servicing, shown in Table 5.12. A similar breakdown of forecast expenditure has not been provided.

Table 5.12: Preventive Maintenance – Condition Monitoring and Servicing (Real \$'000)

<i>Type</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>
Labour	18	14	13	16
Materials	5	1	1	2
Contractors	-	-	1	1
Other	-	-	-	-
Total Direct Costs	23	15	15	18
Indirects	11	18	15	11
Overheads	20	16	14	17
Total	54	50	45	46

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

Halcrow 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 \$28,500 per annum (\$2010-11 real); it excludes overhead and indirect costs. This compares to direct expenditure of between \$18,000 and \$23,000 in the years 2006-07 to 2009-10.

The condition monitoring and servicing activities costed by PB include servicing of cranes, condition monitoring and inspection of the Gibber Gonyah and Theodore pump stations. While Halcrow has not been provided with facility O&M manuals for the Dawson Valley Bulk WSS, SunWater provided a list of preventive maintenance work orders raised in the Dawson Valley Bulk WSS (including the Distribution System) over the period 2007-08 to 2009-10. Halcrow reviewed the listing and is satisfied that preventive maintenance activities costed PB are consistent with the nature and required frequency of activities undertaken on the scheme.

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, there is likely to be scope to achieve efficiency savings in the delivery of servicing and condition monitoring activities.

Accounting for the forecast expenditure developed by PB, and expenditure for weed control, the remaining expenditure on preventive maintenance is approximately \$112,200 per annum. This includes labour associated with dosing of Acrolein, which cannot be separately identified from the disaggregated cost data provided to this review. It is noted, however, that total labour costs associated with weed control over the period 2006-07 to 2009-10 averaged \$59,500 (\$2010-11 real). In absence of more robust information, this provides an indication of likely labour costs, although it covers all weed control activities undertaken by SunWater operators.

The forecast of preventive maintenance expenditure also included expenditure related to "additional servicing, calibration and adjustment of equipment such as pumps, motors, regulator gates, meters and valves". SunWater indicated that the forecast is based on the average of

previous years' expenditure, although no additional information on the nature or make up of this expenditure has been provided. Consequently, Halcrow is unable to make an assessment of whether this element of preventive maintenance is prudent or efficient.

In the absence of justification for the remaining \$52,700 per annum, an adjustment of the forecast preventive maintenance expenditure by this amount is proposed.

SunWater's Response

SunWater noted Halcrow's comments that it was unable to account for \$112,000 of preventive maintenance costs, however some \$60,000 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.

In the Draft Report, 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 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 that:

- (a) in relation to weed control:
 - (i) on the basis of the available information, allowance for 'Contractors - weed control' is both prudent and efficient;
 - (ii) Acrolein costs be adjusted by approximately \$7,028; and
- (b) in relation to condition monitoring and servicing, in the absence of justification for the remaining \$52,700 per annum, an adjustment of the forecast preventive maintenance expenditure by this amount.

Submissions Received from Stakeholders on the Draft Report

During Round 3 consultation (December 2011) stakeholders submitted that Acrolein does not reduce weeds in this channel, which makes the \$100,000 forecast on this chemical inefficient. The drains are still clogged and are not maintained.

Additionally, stakeholders noted that assets are inspected by SunWater employees from 2-6 hours away (say Mackay or Bundaberg), and that this means overnight accommodation and another 2-6 hours drive to return. This is highly inefficient. Stakeholders suggested that local contractors / electricians could do the jobs far cheaper and should be engaged not SunWater staff, who cost a lot more.

Authority's Response to Submissions Received on the Draft Report

With regards to the use of Acrolein the Authority notes that in its detailed review of weed control cost Halcrow did not make any adverse findings as to the effectiveness of Acrolein. This issue is a service quality issue that should be a matter for further consultation between SunWater and irrigators. No changes are therefore proposed for the Final Report.

With regard to the increased use of local contractors, the Authority recommends that SunWater should seek to use local contractors where it is cost effective to do so. No further changes to SunWater's preventative maintenance costs are proposed for the Final Report.

Item 3: Corrective Maintenance

Draft Report

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.

Typical corrective maintenance examples on drains and channels are:

- (a) erosion repairs;
- (b) flow meter repairs and replacements;
- (c) removing weed blockages;
- (d) repairing regulating gates, pumps and control systems; and
- (e) repairing pipe leaks and seals on offtake gates.

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 5.5 above.

No other stakeholders commented on this item.

Authority's Analysis

Table 5.13 shows a breakdown of historical and forecast expenditure on corrective maintenance. Indirects and overheads account for a significant element of the expenditure. SunWater forecast a reduction in expenditure on corrective maintenance in the coming price path.

Table 5.13: 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	43	68	61	62	67	68	69	69	69	69
Material	25	31	47	24	31	31	31	32	32	33
Contractors	53	67	-	3	3	3	3	3	3	3
Other	1	7	80	14	-	-	-	-	-	-
Total Direct Cost	123	172	189	103	101	102	103	104	104	105
Indirects	26	88	72	41	35	32	37	38	38	37
Overheads	52	79	73	68	67	68	69	70	70	69
Total	201	339	333	212	203	201	209	212	213	211
Annual Change	-	69%	(2%)	(36%)	(4%)	(1%)	4%	1%	1%	(1%)
Change Since 2007	-	69%	65%	5%	1%	-	4%	5%	6%	5%

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

SunWater stated that its forecast expenditure is based on an average of the past four years (including 2010-11), excluding the impact of outliers. SunWater has not provided the calculations in support of its forecast of corrective maintenance, however, Halcrow noted that forecast expenditure for labour and materials is approximately in line with the four year average (calculated from 2007-08 to 2010-11), while the expenditure on contractors and others is significantly lower than the four year average.

SunWater provided a breakdown of its corrective maintenance forecast expenditure which indicates labour charges of \$67,000 for SunWater's Central region. The materials expenditure includes \$15,000 for heavy plant, and \$16,000 for materials. No details have been provided in relation to this expenditure.

As part of the review, Halcrow obtained a breakdown of corrective maintenance work orders for the period 2008-09 to 2010-11 for Dawson Valley Bulk WSS (including the Theodore Distribution System). The work orders include activities relating to the replacement of Dethridge Wheel bearings, repairs of erosion on channel banks, investigations of leakage and repairs to pumps. The activities undertaken are what might be reasonably expected from the mix of assets within the Distribution System.

Increases in SunWater's preventive maintenance program should ultimately result in a reduction in corrective maintenance as asset reliability increases. However, as shown in Table 5.14, the mix of expenditure between preventive and corrective maintenance is not forecast to change over the period 2011-12 to 2015-16.

Table 5.14: 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	127	121	193	157	209	212	215	217	218	220
Corrective Maintenance	123	172	189	103	101	102	103	104	104	105
Total Maintenance	250	293	381	260	310	314	319	321	323	325
Annual Change	-	17%	30%	(32%)	19%	1%	1%	1%	1%	1%
Change since 2007	-	17%	52%	4%	24%	26%	27%	28%	29%	30%
Preventive Maintenance	51%	41%	51%	61%	68%	68%	68%	68%	68%	68%
Corrective Maintenance	49%	59%	49%	39%	32%	32%	32%	32%	32%	32%

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

Halcrow understands that SunWater is yet to review its current mix of preventive maintenance and corrective maintenance to determine whether its current approach is optimised. While it is understood that SunWater intends to implement RCM over the coming two to three-year period, Halcrow notes that the forecast expenditure in the NSPs do not reflect any savings that might be achieved as a result of its proposed implementation.

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 involved. 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.

In the Draft Report, 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 noted 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 did propose to apply any specific adjustments to this measure but intended to take this into account when considering the application of a general efficiency target (as outlined below).

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Item 4: Electricity

Draft Report

Stakeholder Submissions

SunWater submitted that the electricity costs for the distribution system mostly relate to the operation of the Gibber Gonyah and the Theodore Pump Stations. There are no re-lift areas in the distribution system.

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 5.5 above.

No other stakeholders commented on this item prior to the Draft Report..

Authority Analysis

Halcrow noted that electricity costs for the Theodore Distribution System relate to operation of the Theodore, Fork Farmers and Gibber Gonyah pump stations. These pump stations have no balancing storages, so their pump run times are controlled by channel levels and demand for water.

As evident in Table 5.15, expenditure on electricity in the Theodore Distribution System has been in the order of \$73,000 to \$109,000 per annum over the current price path. SunWater forecast that expenditure will increase to approximately \$119,000 in 2010-11, and remain steady in real terms thereafter.

Table 5.15: 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	87	73	109	109	119	119	119	119	119	119
Annual Change	-	(15.8%)	48.6%	0.1%	9.2%	-	-	-	-	-
Change Since 2007	-	(69.9%)	(55.2%)	(55.2%)	(51%)	(51%)	(51%)	(51%)	(51%)	(51%)

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

Halcrow noted that forecasts of electricity have been estimated from historical data, using an average cost per volume of water delivered to customers. The average cost is derived from historical electricity costs (taken from electricity invoices) for all pumping stations in the scheme divided by historical metered deliveries (sourced from SunWater's SWIMS billing database). The period over which historical data has been used to develop an average cost varies depending on the scheme. The average cost has been inflated by 13.29%, which is the increase in Franchise Tariffs between 2009-10 and 2010-11. SunWater has not included any increases in tariffs above inflation beyond 2011-12.

Based on the information provided to this review, Halcrow is satisfied that the use of a flow driver to forecast electricity expenditure in distribution schemes is appropriate where electricity usage is driven by the requirement to pump when delivering water. Using volume of water delivered to customers (as opposed to pumped volume) automatically takes into account the impact of losses within distribution channels, pumping efficiency, and flow and electricity metering accuracy, thereby eliminating the need to make assumptions about these into the future.

SunWater indicated that its forecast has been developed using 2009-10 as a basis, as it considers that 2009-10 represents an 'average' year. Halcrow noted that there is a lack of clarity surrounding SunWater's interpretation of an 'average' year, particularly given that the basis for calculating an 'average' year varies across the different expenditure items, activities and schemes. The varying interpretations of what constitutes an average year, particularly where there are varying definitions for expenditure associated with a particular scheme, means that it is very difficult to gain assurance that SunWater's adopted approach in developing forecasts is reasonable.

As shown in Table 5.16, the average cost of pumping in 2009-10 was \$9.40/ML. This has been inflated by 13.29%, which is the increase in Franchise Tariffs between 2009-10 and 2010-11, to give an average cost of pumping of \$10.65/ML.

SunWater's electricity forecast is based on an assumed usage of 11,166ML/annum. This volume assumes that seventy percent of the distribution entitlement (specified in the ROP) is used each year. SunWater noted that this usage (seventy percent) is based on eight years of historical data usage data. The resulting forecast of expenditure on electricity is approximately \$119,000 per annum.

Table 5.16 provides a breakdown of electricity usage over the period from 2005-06 to 2009-10.

Table 5.16: Historical Electricity Usage (Real \$'000)

	2005-06	2006-07	2007-08	2008-09	2009-10
kWh	871,881	902,107	516,468	658,033	798,503
ML Pumped	-	13,086	10,186	12,070	16,756
ML Delivered	13,460	11,383	8,648	10,074	11,242
Pumping Costs ⁶	92,888	89,853	65,793	100,788	105,716
\$/ML	6.90	7.89	7.61	10.00	9.40
\$/kWh	0.11	0.10	0.13	0.15	0.13

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

While the use of a flow driver to forecast electricity expenditure appears reasonable, Halcrow notes that a forecast based on electricity consumption (kWh) would eliminate the impact of the movement in historical expenditure resulting from tariff increases.

As part of the review, Halcrow sought to test the sensitivity of SunWater's forecast by comparing it against average electricity usage over the period since 2005-06. The average electricity consumption for the years 2005-06 to 2009-10 is 749,398 kWh. Applying the relevant franchise tariffs for Theodore and Gibber Gunyah, and assuming the same proportion of peak to off-peak usage as in 2009-10 (the only years for which peak and off-peak data has been provided), results in an average electricity usage of approximately \$112,400 per annum. This is approximately five percent lower than SunWater's forecast. Given the potential variability in electricity use, the usage based forecast is deemed appropriate.

In the Draft Report 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.

The Authority proposed 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.

In the Draft Report the Authority did not accept an escalation rate that made an explicit allowance for carbon price impacts prior to them becoming enacted legislation.

The Authority noted Halcrow's conclusion that SunWater's forecast electricity usage appears appropriate. However, the Authority conducted a more detailed review of SunWater's electricity expenditure. The Authority's recommended electricity costs are set out below.

Submissions Received from Stakeholders on the Draft Report

During Round 3 consultation (December 2011) Irrigators queried whether they were paying the \$30,000 per annum electricity cost for a major industrial customer.

⁶ These costs are extracted from electricity bills. Differences between these costs and those reported in Table 8 11 (which are extracted from SAP) are due to timing differences, credit notes etc.

Cotton Australia (2012b) noted that electricity is a big cost component to variable costs for distribution, with Authority recommending a cost jump of 50% from the biggest use year in 2009/10 to 2012/13 and a 200% increase in 2016-17. The current model being used for forecasting electricity costs is incorrect.

Cotton Australia (2012b) recommended that electricity costs must be based on actual costs paid in arrears not forecasts and ensuring water users under this pricing process are not paying for the cost of other service contract users.

Authority's Response to Submissions Received on the Draft Report

As noted in Volume 1, the Authority has retained the use of forecast electricity costs and has further reviewed SunWater's electricity forecasting model and found it to be appropriate. Under this approach electricity pumping costs have been calculated on a per ML basis and are fully recovered through the volumetric charge. Therefore, each customer pays their own electricity costs and are not allocated the electricity costs of other users.

Further information relevant to electricity cost escalation was available following the Draft Report. This included the release of the Authority's Draft Determination regarding the review of regulated (franchise) tariffs, the passing of relevant legislation relating to a carbon tax and the Australian Government's forecast of the impact of carbon trading.

As a result, and as set out in Volume 1, the Authority revised its recommended escalation of electricity costs.

The Authority recommends that electricity should be escalated by 6.6% in 2011-12, 12.5% in 2012-13 and 7% per annum for subsequent years, with the exception of 2015-16 where 8% will apply (reflecting a further 1% increase from the introduction of carbon trading). Proposed electricity costs are set out further below.

Item 5: Cost Escalation

Draft Report

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 recommended 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 Direct 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.

Non-direct Costs

The Authority accepts SunWater's proposal to escalate all non-direct costs by 2.5% per annum for the 2012-17 regulatory period, and for the interim year 2011-12.

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Conclusion

Draft Report

A comparison of SunWater's and the Authority's direct operating costs for the Theodore Distribution System 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.

In the Draft Report, the Authority 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.

Final Report

For the Final Report, the Authority's proposed costs include a change to the escalation of electricity costs to reflect new information.

Further, as noted in Volume 1, in the Draft Report the Authority inadvertently understated cost saving percentage estimates. These have been corrected and as a result, the Authority has now applied a minimum 4.5% saving to direct operating costs (excluding electricity) in 2012-13. A further 0.75% saving arising from labour productivity is also applied annually.

The Authority's final recommended direct costs are shown in Table 5.17 compared to the Draft Report recommendations.

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

	<i>SunWater</i>					<i>Authority</i>				
	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Draft Report										
Operations	237	237	237	237	237	226	227	228	229	230
Electricity	153	165	178	194	209	131	136	141	148	155
Preventive Maintenance	215	217	218	220	220	206	207	209	210	210
Corrective Maintenance	103	104	104	105	105	99	99	100	101	101
Total	709	723	738	755	770	662	670	678	688	696
Final Report										
Operations						209	210	212	213	214
Electricity						149	156	162	171	179
Preventive Maintenance						191	192	193	195	195
Corrective Maintenance						92	92	93	93	94
Total						640	650	660	672	681

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.

Draft Report

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 WAE.

Other Stakeholders

No other stakeholders commented on this item.

Authority's Analysis

In Volume 1, the Authority summarised the views of its consultants and has recommended that, for distribution systems, fixed operating costs be allocated to medium and high priority customers using current WAEs. Variable costs should be allocated to medium and high priority WAE on the basis of water use.

The Authority recommends that for distribution systems insurance premiums are also allocated on the basis of nominal WAEs.

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

Submissions Received from Stakeholders on the Draft Report

During Round 3 consultation (December 2011) stakeholders questioned the use of water allocations and not labour costs to allocate costs. Stakeholders suggested that if direct labour costs remains the allocation method less hours must be booked to this scheme and these must be based on efficient service delivery not the currently wasteful and ineffective work practices. Irrigators submitted that they wished to be consulted on the level hours booked to this scheme.

Authority's Response to Submissions Received on the Draft Report

The Authority has considered the stakeholder comments, and has retained the use of water allocations to allocate fixed operational expenditure on the basis that nominal WAE is the appropriate cost allocation base. Further details are discussed in Volume 1.

The Authority notes that it has considered stakeholder comments with regards to labour booking processes and has not identified any other grounds to alter its approach. The Authority has considered several options and found that direct labour costs are appropriate for allocating non-direct costs. Schemes that have higher labour costs could be expected to warrant a greater level of indirect and overhead costs. No changes are therefore proposed for the Final Report.

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 draft recommended operating costs are set out in Table 5.19 and final recommended operating costs are provided in Table 5.20.

Compared to the Draft Report, the Final Report estimated operating costs take account of:

- (a) an increase in non-direct costs to include the cost of options analyses and consultation with customers on renewals items (\$445,000 for SunWater as a whole) which has been allocated to schemes on the basis of direct labour;
- (b) lower direct operating costs (excluding electricity) reflecting higher efficiency gains; and
- (c) increased electricity costs.

Taken together, total operating costs are slightly lower since the Draft Report.

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

	2012-13	2013-14	2014-15	2015-16	2016-17
Operation					
Labour	206	206	206	206	206
Materials	2	2	2	2	2
Contractors	0	0	0	0	0
Other	29	29	29	29	29
Non-Direct	312	318	319	312	297
Preventive Maintenance					
Labour	117	117	117	117	117
Materials	40	41	42	42	42
Contractors	58	58	59	60	60
Other	0	0	0	0	0
Non-Direct	182	185	186	182	174
Corrective Maintenance					
Labour	69	69	69	69	69
Materials	31	32	32	33	33
Contractors	3	3	3	3	3
Other	0	0	0	0	0
Non-Direct	106	108	108	106	101
Electricity	153	165	178	194	209
Total	1,309	1,333	1,351	1,355	1,342

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 Draft Recommended Operating Costs (Real \$'000)

	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Operation					
Labour	196	198	199	200	202
Materials	2	2	2	2	2
Contractors	0	0	0	0	0
Other	28	28	27	27	27
Non-Direct	304	304	301	289	271
Preventive Maintenance					
Labour	112	113	114	114	115
Materials	39	39	39	39	39
Contractors	55	55	56	56	56
Other	0	0	0	0	0
Non-Direct	177	178	176	169	159
Corrective Maintenance					
Labour	66	66	67	67	68
Materials	30	30	30	31	30
Contractors	3	3	3	3	3
Other	0	0	0	0	0
Non-Direct	103	103	102	98	92
Electricity	131	136	141	148	155
Total	1,246	1,255	1,257	1,245	1,219

Source: QCA (2011)

Table 5.20: The Authority's Recommended Operating Costs (Real \$'000)

	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Operation					
Labour	182	183	184	186	187
Materials	2	2	2	2	2
Contractors	0	0	0	0	0
Other	26	26	25	25	25
Non-Direct	317	320	315	302	284
Preventive Maintenance					
Labour	104	105	105	106	107
Materials	36	36	36	37	36
Contractors	51	51	52	52	52
Other	0	0	0	0	0
Non-Direct	177	178	176	169	159
Corrective Maintenance					
Labour	61	61	62	62	63
Materials	28	28	28	28	28
Contractors	3	3	3	3	3
Other	0	0	0	0	0
Non-Direct	103	103	102	98	92
Electricity	149	156	162	171	179
Total	1,238	1,251	1,253	1,242	1,216

Source: QCA (2012).

6. RECOMMENDED 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. 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 CPI with additional increases in some schemes.

For this scheme, prices over 2006-11 increased by an average of \$1.28/ML per annum plus CPI to achieve lower bound costs in 2010-11. In 2011-12, prices in this scheme were increased by CPI and a further \$2/ML.

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.

For the Draft Report, the Authority adopted a 20 year price model mainly to promote long term price stability. Under this approach, prices are above costs for the first ten years of the 20 year model and below costs for the last ten years. Over the 20 year period, costs are fully recovered.

Some stakeholders raised concerns about estimated cost reflective prices exceeding lower bound costs over the 2012-17 price period.

In the Final Report, the Authority has adopted a five year pricing model for the purpose of developing prices. The Authority has retained the rolling 20 year renewals annuity planning period and used the relevant five years of the smoothed renewals annuity. For non-renewals costs the five year model now incorporates only five years of such costs, rather than 20 years. Such an approach also has the advantage of removing from prices the inaccuracies associated with longer term forecasts in non-capital costs.

6.3 Total Costs

Draft Report

The Authority's estimate of prudent and efficient total costs for the Theodore Distribution System 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 Theodore Distribution System (Real \$'000)

	<i>Actual Costs</i>						<i>Future Costs</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
SunWater's Submitted Costs	973	1,086	1,328	1,045	1,654	1,190	1,260	1,305	1,340	1,345	1,335
Renewals Annuity	140	91	99	108	144	4	6	27	44	45	45
Operating Costs	887	1,057	1,284	994	1,557	1,241	1,309	1,333	1,351	1,355	1,342
Revenue Offsets	-55	-62	-56	-58	-48	-55	-55	-55	-55	-55	-53
Draft Report											
Authority's Total Costs	-	-	-	-	-	-	1,367	1,402	1,423	1,408	1,380
Renewals	-	-	-	-	-	-	174	200	219	217	213
Operating Costs	-	-	-	-	-	-	1,246	1,255	1,257	1,245	1,219
Revenue Offsets	-	-	-	-	-	-	-55	-55	-55	-55	-53
Return on Working Capital	-	-	-	-	-	-	1	1	1	1	1
Final Report											
Authority's Total Costs	-	-	-	-	-	-	1,232	1,273	1,296	1,285	1,261
Renewals	-	-	-	-	-	-	48	76	97	98	98
Operating Costs	-	-	-	-	-	-	1,238	1,251	1,253	1,242	1,216
Revenue Offsets	-	-	-	-	-	-	-55	-55	-55	-55	-53
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 and 2012).

Submissions Received from Stakeholders on the Draft Report

Cotton Australia submitted that a more detailed review of the pricing model is required to establish whether all revenue offsets have flowed through to recommended prices. In particular, Cotton Australia noted that:

- (a) minimum charges need to be included as revenue offsets; and
- (b) the revenue gained from selling water seasonally out of the channel and river to spot purchasers including Main Roads and land developers must be offset against costs.

Authority's Response to Submissions Received on the Draft Report

The Authority reviewed SunWater's calculation of revenue offsets and noted that they include:

- (a) drainage diversion charges (\$5,000);
- (b) drainage levies (\$43,000);
- (c) other fees and charges (\$3,000); and
- (d) termination fees (\$4,000)

These estimates reflected the average of these revenues over the last 5 years. SunWater excluded minimum charge revenues (estimated at \$2,000) and storage rental fees (\$2,000), both of which are to be discontinued.

The Authority accepts SunWater's assessment. Revenue from opportunistic sales to other customers such as Main Roads cannot be readily forecast, and are considered to be covered in the other fees and charges category. The Authority notes that revenue from other fees and charges has varied substantially over 2007-10, ranging from \$1000 to \$9000.

The Authority proposes no change to the Draft Report estimate of revenue offsets.

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.

Draft Report

SunWater submitted that all of its operating costs are fixed in the Theodore Distribution System and that only electricity pumping costs vary with water use.

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. 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;
- (b) 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;
- (c) 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 distribution systems, Indec considered 67% of costs would be fixed and 33% variable. However Indec proposed that scheme-specific tariff structures should be applied to reflect the relevant scheme costs.

For Theodore Distribution System, Indec recommended 78% of costs should be fixed and 22% variable under optimal management. The Authority notes that this ratio differs from the current

tariff structure which reflects the recovery of 74% of costs in the fixed charge and 26% of costs in the volumetric charge.

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

Submissions Received from Stakeholders on the Draft Report

Cotton Australia (2012b) submitted that in this scheme SunWater is a service provider where only 72.2% or 75.8% of the service is utilised. Further they recommend the Authority review water availability compared to water used, and establish what steps SunWater has taken to increase usage and reduce costs to be more reflective of usage. It is only then that Cotton Australia can comment on cost reflective fixed and variable costs.

Authority's Response to Submissions Received on the Draft Report

The Authority retains a view that a 10 year historic average provides the best indication of forecast water use. This averaging period allows smoothing out of seasonal variations while remaining current enough to reflect current industry structure. However, the Authority found that the 10-year average data used in the Draft Report was inappropriately based on some data from the Tier 1 Working Party Report. The Authority has therefore:

- (a) adjusted 2001-02 water use data to correct for definitional changes;
- (b) adopted the NSP water use data for 2002-03 to 2009-10; and
- (c) recently obtained 2010-11 water use data

The revised information provides a more accurate forecast. Details are provided in Volume 1.

6.5 Allocation of Costs According to WAE Priority

Draft Report

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

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

	2012-13	2013-14	2014-15	2015-16	2016-17
Draft Report					
Net Fixed Costs	1,139	1,169	1,186	1,174	1,151
High Priority	1	1	1	1	1
Medium Priority	1,138	1,168	1,186	1,173	1,150
Final Report					
Net Fixed Costs	934	967	983	962	930
High Priority	1	1	1	1	1
Medium Priority	933	966	982	962	930

Note: Net fixed costs are net of revenue offsets and return on working capital. Source: SunWater (2011ap) and QCA (2011 and 2012).

Variable Costs

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.

Submissions Received from Stakeholders on the Draft Report

In Round 3 consultation (December 2011) irrigators submitted that they need a low Part A charge as SunWater needs to have a financial motivation to update the announced allocation (after minor rainfall events / inflow). This is particularly the case because in Dawson WSS as the customers need any amount of water that can be made available.

Authority's Response to Submissions Received on the Draft Report

The triggers for the revision of announced allocations are detailed within the relevant Resource Operating Plan and are the responsibility of DERM. This matter is beyond the Authority's remit. Therefore, the Authority proposes no changes to its Draft Report recommendations.

As previously noted, following the Draft Report, the Authority reviewed SunWater's electricity model, including SunWater's forecasts of water use.

To estimate the variable costs for final prices, therefore, the Authority has now adopted SunWater's water use estimate in the context of forecasting the per ML cost of electricity for this scheme. In addition, the Authority has divided the balance of variable costs for all sectors (excluding electricity) by the Authority's historical total water use for all sectors. This now provides a more accurate estimate of variable costs per ML for this scheme.

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. As noted

in Chapter 3 Pricing Framework, drainage and drainage diversion charges have been rolled forward in real terms.

The cost-reflective prices in the Draft Report are contrasted with its Authority's final cost-reflective prices below.

Draft Report

Table 6.3: Draft Medium Priority Prices for the Theodore Distribution System (\$/ML)

	<i>Actual Prices</i>						<i>Draft Cost Reflective Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Dawson Valley WSS – River											
Fixed (Part A)	9.16	9.44	9.88	10.20	10.48	10.88	11.36	11.64	11.93	12.23	12.53
Volumetric (Part B)	9.23	9.50	9.96	10.27	10.58	10.96	1.63	1.67	1.71	1.75	1.80
Dawson Channel (Theodore & Gibber Gunyah) (Unbundled)											
Fixed (Part C)	30.56	33.24	36.64	37.76	38.96	42.32	78.55	80.51	82.52	84.59	86.70
Volumetric (Part D)	11.08	12.26	13.72	14.16	14.59	15.11	20.13	20.63	21.15	21.68	22.22
Dawson Channel (Theodore & Gibber Gunyah) (Bundled)											
Fixed (Part A)	39.72	42.68	46.52	47.96	49.44	53.20	89.90	92.15	94.45	96.82	99.24
Volumetric (Part B)	20.31	21.76	23.68	24.43	25.17	26.07	21.76	22.30	22.86	23.43	24.02

Note: Channel (Bundled) prices are provided for reference only. Source: Actual Prices (SunWater, 2011a) and Cost Reflective Prices (QCA, 2011).

Table 6.4: Draft Termination Fees (\$/ML)

	<i>Actual Prices</i>				<i>Draft Cost Reflective Prices</i>				
	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Dawson Channel to Dawson Regulated Section	328.04	323.95	367.64	436.51	1,080.02	1,107.02	1,134.69	1,163.06	1,192.14
Dawson Channel to Dawson Regulated Section (Glebe Weir Reservoir)	367.79	339.40	367.64	436.51	1,080.02	1,107.02	1,134.69	1,163.06	1,192.14

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

Table 6.5: Draft Drainage Charges (\$/ha of land)

	<i>Actual Prices</i>						<i>Calculated Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Drainage Charges	18.75	19.33	20.25	20.85	21.45	22.20	22.76	23.32	23.91	24.50	25.12

Source: Actual Prices (SunWater, 2011a) and Calculated Prices (QCA, 2011).

Table 6.6: Draft Drainage Diversion Charges (\$/ML)

	Actual Prices						Calculated Prices				
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Drainage Diversion Charges	9.23	9.23	9.23	9.23	9.23	9.23	9.46	9.70	9.94	10.19	10.44

Source: Actual Prices (SunWater, 2011a) and Calculated Prices (QCA, 2011).

Final Report

Table 6.7: Cost-Reflective Medium Priority Prices for the Theodore Distribution System (\$/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
Dawson Valley WSS – River											
Fixed (Part A)	9.16	9.44	9.88	10.20	10.48	10.88	11.76	12.05	12.35	12.66	12.98
Volumetric (Part B)	9.23	9.50	9.96	10.27	10.58	10.96	1.69	1.73	1.78	1.82	1.87
Dawson Channel (Theodore & Gibber Gunyah) (Unbundled)											
Fixed (Part C)	30.56	33.24	36.64	37.76	38.96	42.32	65.58	67.22	68.90	70.62	72.38
Volumetric (Part D)	11.08	12.26	13.72	14.16	14.59	15.11	28.44	29.15	29.88	30.63	31.39
Dawson Channel (Theodore & Gibber Gunyah) (Bundled)											
Fixed (Part A)	39.72	42.68	46.52	47.96	49.44	53.20	77.33	79.27	81.25	83.28	85.36
Volumetric (Part B)	20.31	21.76	23.68	24.43	25.17	26.07	30.13	30.88	31.66	32.45	33.26

Note: Channel (Bundled) prices are provided for reference only. Source: Actual Prices (SunWater, 2011a) and Cost Reflective Prices (QCA, 2012).

Table 6.8: Termination Fees (\$/ML)

	Actual Prices				Cost Reflective Prices				
	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Dawson Channel to Dawson Regulated Section	328.04	323.95	367.64	436.51	721.35	739.38	757.87	776.81	796.23
Dawson Channel to Dawson Regulated Section (Glebe Weir Reservoir)	367.79	339.40	367.64	436.51	721.35	739.38	757.87	776.81	796.23

Source: Actual Prices (SunWater, 2011a) and Cost Reflective Prices (QCA, 2012).

Table 6.9: Drainage Charges (\$/ha of land)

	<i>Actual Prices</i>						<i>Calculated Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Drainage Charges	18.75	19.33	20.25	20.85	21.45	22.20	22.76	23.32	23.91	24.50	25.12

Source: Actual Prices (SunWater, 2011a) and Calculated Prices (QCA, 2012).

Table 6.10: Drainage Diversion Charges (\$/ML)

	<i>Actual Prices</i>						<i>Calculated Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Drainage Diversion Charges	9.23	9.23	9.23	9.23	9.23	9.23	9.46	9.70	9.94	10.19	10.44

Source: Actual Prices (SunWater, 2011a) and Calculated Prices (QCA, 2012).

6.7 Queensland Government Pricing Policies

As noted above, the Queensland Government has directed that:

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

As noted in the Draft Report, 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. To ensure that distribution customers are not disadvantaged by unbundling, the comparison has included both bulk and distribution system revenues.

On this basis, current revenues are below the level required to recover prudent and efficient costs

Table 6.11: Comparison of Current Prices and Cost-Reflective Prices (\$2012-13)

Tariff and Priority Group	2010-11 Prices (indexed to 2012-13)		Irrigation WAE (ML)	Irrigation Water Use (ML)	Current Revenue	Revenue from Cost-Reflective Tariffs	Difference
	Fixed	Variable					
Draft Report							
Channel Bundled	51.94	26.44	15,941	10,677	1,110,372	1,665,438	-555,066
Final Report							
Channel Bundled	51.94	26.44	15,941	8,552	1,054,173	1,490,462	-436,289

Source: SunWater (2011a), SunWater (2011a), QCA (2011 and 2012).

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

At the rate of increase of \$2/ML per year in real terms, cost reflective charges are not achieved by the end of the 2012-17 regulatory period. The recommended (unbundled) charge is then calculated by deducting the recommended river charge from the bundled charge.

6.8 The Authority's Recommended Prices

The Authority's draft and final recommended prices to apply to the Theodore Distribution System for 2012-17 are outlined in below 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).

The Authority's recommended draft termination fees to apply to the Theodore Distribution System during 2012-17 are outlined in Table 6. together with actual termination fees since 2008-09. The Authority's draft termination fees were higher than those charged by SunWater, as the Authority's approach:

- (a) recovered 20 years of fixed costs with SunWater bearing the remaining fixed costs. SunWater's approach recovers 10 years of fixed costs with remaining fixed costs paid for by other users;
- (b) reflected the Authority's estimate of fixed costs in the cost-reflective fixed charge. The Authority's cost-reflective fixed charge recovers all fixed costs. SunWater's fixed charges recover only a portion of fixed costs. Therefore, some fixed costs are excluded from SunWater's termination fees;
- (c) reflected the Authority's cost-reflective fixed charge and not the Authority's recommended fixed charge;
- (d) resulted in a multiple of up to 13.8 times the Authority's cost reflective fixed charge. SunWater's multiple is up to 9.4 of its fixed charge (Chapter 3).

The Authority's draft recommended drainage and drainage diversion charges to apply to the Theodore Distribution System in 2012-17 are outlined in Table 6.74 and Table 6.15 together with actual drainage and drainage diversion charges since 2006-07.

Draft Report

Table 6.12: Draft Medium Priority Prices for Theodore Distribution System (Real \$/ML)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Dawson Valley WSS – River											
Fixed (Part A)	9.16	9.44	9.88	10.20	10.48	10.88	16.09	16.49	16.90	17.33	17.76
Volumetric (Part B)	9.23	9.50	9.96	10.27	10.58	10.96	1.63	1.67	1.71	1.75	1.80
Dawson Channel (Theodore & Gibber Gunyah) (Unbundled)											
Fixed (Part C)	30.56	33.24	36.64	37.76	38.96	42.32	40.13	43.18	46.36	49.67	53.12
Volumetric (Part D)	11.08	12.26	13.72	14.16	14.59	15.11	20.13	20.63	21.15	21.68	22.22
Dawson Channel (Theodore & Gibber Gunyah) (Bundled)											
Fixed (Part A)	39.72	42.68	46.52	47.96	49.44	53.20	nr	nr	nr	nr	nr
Volumetric (Part B)	20.31	21.76	23.68	24.43	25.17	26.07	nr	nr	nr	nr	nr

Note: nr – not relevant. Source: Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2011).

Table 6.13: Draft Termination Fees (\$/ML)

	<i>Actual Prices</i>				<i>Recommended Prices</i>				
	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Dawson Channel to Dawson Regulated Section	328.04	323.95	367.64	436.51	1,080.02	1,107.02	1,134.69	1,163.06	1,192.14
Dawson Channel to Dawson Regulated Section (Glebe Weir Reservoir)	367.79	339.40	367.64	436.51	1,080.02	1,107.02	1,134.69	1,163.06	1,192.14

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

Table 6.74: Draft Drainage Charges (\$/ha of land)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Drainage Charges	18.75	19.33	20.25	20.85	21.45	22.20	22.76	23.32	23.91	24.50	25.12

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

Table 6.15: Draft Drainage Diversion Charges (\$/ML)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Drainage Diversion Charges	9.23	9.23	9.23	9.23	9.23	9.23	9.46	9.70	9.94	10.19	10.44

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

During round 3 consultation (December 2011) Irrigators stated that the \$16 Part A change and \$1.63 Part B charge has two negative outcomes; it provides no incentive for SunWater to perform, and provides no incentive for farmers to invest in water use efficiency.

Further Stakeholders commented the \$2/ML increase each year is simply unacceptable and at this price farming will become unviable in this area. This \$100/ML is likely to become \$120/ML and irrigators stated that they are concerned they will never get to or be able to afford the cost reflective price of a channel scheme.

Suttle (2011) submitted that river irrigators have been overcharged/subsidizing the system by \$8.85 per ML and will continue to do so because prices can't go down. Suggesting that it would be acceptable to adjust (not reduce) the charges by a one dollar lowering of the River Part A at the same time as increasing the channel Part A by three dollars or more annually as you have recommended until the cost reflective price (or a little more) is achieved.

Additionally Suttle submitted that if on the other hand, a profit margin is required, it would be more justly applied to the Part B charge which reflects the water which we have available to use in an effort to make a profit for ourselves.

G. & C. Austin (2011) submitted that the proposed termination fees of over \$1,000 will reduce business equity considerably putting farmers in jeopardy with banks. Irrigation becomes unviable and they would have to operate as dry land farmers. They indicate they would wish to sell WAE at a reasonable price to facilitate this exit.

H. & P. Anderson (2011) submitted that the Authority's recommendation to lift termination fees in excess of a \$1,000 considerably reduces their equity. Given the two floods in two seasons they suggest that this would impact on their lending position even further. Noting that if this decision proceeds instead of a asset they would be left with a liability

Final Recommended Prices

The Authority is cognisant of the impact of rising prices of irrigator and Authority notes that its recommended prices include a transition to full cost recovery in accordance with the Ministerial Direction. However irrigator's capacity to pay is outside the Authority's remit.

Therefore, the Authority applied the historically accepted (status quo) approach of applying a real price increase of \$2/ML. The Authority considers that such a price path will allow irrigators to adjust to higher prices and make long term investment decisions based on expectations of future prices.

As discussed earlier, the volumetric charge should reflect the variable cost of supply and not be increased to recover fixed costs (refer Chapter 3: Pricing Framework).

Termination fees were set in respect of costs, not the value of WAE. It is appropriate that exiting irrigators contribute to the costs of their decision (refer Chapter 3: Pricing Framework).

For the final report, the Authority reviewed the approach to estimating termination fees (see Chapter 4, Volume 1). The net effect is that the Authority adopted a multiple of 11 including GST.

The Authority's final recommended prices are set out below.

Table 6.16: Recommended Medium Priority Prices for Theodore Distribution System (Real \$/ML)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Dawson Valley WSS – River											
Fixed (Part A)	9.16	9.44	9.88	10.20	10.48	10.88	15.17	15.55	15.94	16.34	16.75
Volumetric (Part B)	9.23	9.50	9.96	10.27	10.58	10.96	1.69	1.73	1.78	1.82	1.87
Dawson Channel (Theodore & Gibber Gonyah) (Unbundled)											
Fixed (Part C)	30.56	33.24	36.64	37.76	38.96	42.32	32.78	35.65	38.64	41.76	45.02
Volumetric (Part D)	11.08	12.26	13.72	14.16	14.59	15.11	28.44	29.15	29.88	30.63	31.39
Dawson Channel (Theodore & Gibber Gonyah) (Bundled)											
Fixed (Part A)	39.72	42.68	46.52	47.96	49.44	53.20	47.96	51.21	54.59	58.11	61.77
Volumetric (Part B)	20.31	21.76	23.68	24.43	25.17	26.07	30.13	30.88	31.66	32.45	33.26

Note: Bundled prices are for information only. Source: Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2012).

The Authority's recommended termination fees to apply to the Theodore Distribution Scheme during 2012-17 are outlined in Table 6. together with actual termination fees since 2008-09.

Table 6.17: Recommended Termination Fees (\$/ML)

	<i>Actual Prices</i>				<i>Recommended Prices</i>				
	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Dawson Channel to Dawson Regulated Section	328.04	323.95	367.64	436.51	721.35	739.38	757.87	776.81	796.23
Dawson Channel to Dawson Regulated Section (Glebe Weir Reservoir)	367.79	339.40	367.64	436.51	721.35	739.38	757.87	776.81	796.23

Source: Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2012).

Table 6.88: Recommended Drainage Charges (\$/ha of land)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Drainage Charges	18.75	19.33	20.25	20.85	21.45	22.20	22.76	23.32	23.91	24.50	25.12

Source: *Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2012).*

Table 6.19: Recommended Drainage Diversion Charges (\$/ML)

	<i>Actual Prices</i>						<i>Recommended Prices</i>				
	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
Drainage Diversion Charges	9.23	9.23	9.23	9.23	9.23	9.23	9.46	9.70	9.94	10.19	10.44

Source: *Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2012).*

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).

REFERENCES

- Alexander, I. and Irwin, T. (1996). *Price Caps, Rate-of-Return Regulation, and the Cost of Capital* (Note No. 87 in Public Policy for the Private Sector). Washington D.C.: World Bank Group.
- Alexander, I., Mayer, C., and Weeds, H. (1996). *Regulatory Structure and Risk And Infrastructure Firm: An International Comparison* (World Bank Policy Research Working Paper No. 1698). Washington D.C.: World Bank Group.
- Anderson, B. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, September.
- Anderson H. and Anderson, P. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- ARUP. (2011). Review of SunWater's Network Service Plans - Cluster 4 Final Report. A Consultancy Report Prepared for the Queensland Competition Authority, July.
- Aurecon. (2011a). Review of SunWater's Network Service Plans Bundaberg Cluster Draft Report. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Aurecon. (2011b). Review of SunWater's Network Service Plans Bundaberg Cluster Final Report. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Austin, G. and Austin C. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Australian Bureau of Statistics (ABS). (2011a). *Engineering Construction Activity, Australia., cat. no. 8762*. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS). (2011b). *Labour Price Index, cat. no. 6345*. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS). (2011c). *Producer Price Index, cat. no. 6427*. Canberra: Australian Bureau of Statistics.
- Australian Competition and Consumer Commission (ACCC). (2008a). *Water Charge (Termination Fees) Rules Final Advice*. Canberra: Commonwealth of Australia.
- Australian Competition and Consumer Commission (ACCC). (2008b). *Water Market Rules*. Canberra: Commonwealth of Australia.
- Australian Competition and Consumers Commission (ACCC). (2011). *Pricing Principles for Price Approvals and Determinations Under the Water Charge (Infrastructure) Rules 2010*. Canberra: Commonwealth of Australia.
- Australian Competition Tribunal. (2010). Application under S 71B of the National Electricity Law for a Review of a Distribution Determination Made by the Australian Energy Regulator in Relation to Ergon Energy Corporation Limited Pursuant to Clause 6.11.1 of the National Electricity Rules. Commonwealth of Australia, National Electricity Law.
- Australian Energy Regulator (AER). (2007). Decision: Powerlink Queensland Transmission Network Revenue Cap 2007-08 to 2011-12, Canberra: Commonwealth of Australia.
- Australian Sugar Milling Council (ASMC). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

-
- Avondale Water Board (AWB). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Baldwin, N. S. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.
- Biggs, J. (2011). Submission re: Irrigation Prices for SunWater Cunnumulla Weir Scheme, April.
- Bowen Broken Water Supply Scheme Irrigators (BBWSSI). (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Boyne River Irrigator Advisory Committee (BRIAC). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- Boyne River Irrigator Advisory Committee (BRIAC). (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Bundaberg Fruit and Vegetable Growers Cooperative Limited. (BFVG). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- Bundaberg Fruit and Vegetable Growers Cooperative Limited (BFVG). (2010b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- Bundaberg Regional Irrigators Group (BRIG). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Bundaberg Regional Irrigators Group (BRIG). (2010b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, September.
- Bundaberg Regional Irrigators Group (BRIG). (2010c). Submission re: Nodal Pricing, September.
- Bundaberg Regional Irrigators Group (BRIG). (2010d). Submission re: Extended Water Pricing Consultation Period, November.
- Bundaberg Regional Irrigators Group (BRIG). (2010e). Submission re: Irrigation Prices for Bundaberg Schemes 2011 to June 2016 on Issues Papers Released as at November 2010, November.
- Bundaberg Regional Irrigators Group (BRIG). (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, February.
- Bundaberg Regional Irrigators Group (BRIG). (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, March.
- Bundaberg Regional Irrigators Group (BRIG). (2011c). Submission re: Irrigation Prices for the Bundaberg Scheme 2011 to June 2016 Following the Bundaberg Visit by Aurecon Representatives March 2011, March.
- Bundaberg Regional Irrigators Group (BRIG). (2011d). Submission re: Irrigation Prices for SunWater Schemes 2011-16 Bundaberg Scheme, April.
- Bundaberg Regional Irrigators Group (BRIG). (2011e). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Bundaberg Regional Irrigators Group (BRIG). (2012). Submission re: Irrigation Prices for SunWater Schemes 2012-17, January.

-
- Bundaberg Sugar (BS). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- Burdekin River Irrigation Area Irrigators Committee (BRIAIC). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- Burdekin River Irrigation Area Irrigators Committee (BRIAIC). (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, March.
- Burdekin River Irrigation Area Irrigators Committee (BRIAIC). (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Burdekin River Irrigation Area Irrigators Committee (BRIAIC). (2012). Submission re: Irrigation Prices for SunWater Schemes 2012-17, January.
- CANEGROWERS. (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, February.
- CANEGROWERS. (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, March.
- CANEGROWERS. (2011c). Submission re: Irrigation Prices for Sunwater Schemes 2011-16, April.
- CANEGROWERS. (2012a). Submission re: Irrigation Prices for Sunwater Schemes 2012-17, January.
- CANEGROWERS. (2012b). Submission re: Irrigation Prices for Sunwater Schemes 2012-17, January.
- CANEGROWERS. (2012c). Submission re: Irrigation Prices for Sunwater Schemes 2012-17, January.
- CANEGROWERS. (2012d). Submission re: Irrigation Prices for Sunwater Schemes 2012-17, February.
- CANEGROWERS Isis Limited. (2010a). Submission re: Bundaberg Isis Irrigation Scheme, August.
- CANEGROWERS Isis Limited. (2010b). Submission re: The Progress of the Bundaberg - Isis Irrigation Scheme, August.
- CANEGROWERS Isis Limited. (2010c). Submission re: Water Pricing Options for the Bundaberg WSS, August.
- CANEGROWERS Isis Limited. (2011a). Submission re: Bundaberg Water Supply Scheme and Distribution System Network Service Plans, April.
- CANEGROWERS Isis Limited. (2011b). Submission re: Bundaberg Water Supply Scheme and Distribution System Network Service Plans, December.
- CANEGROWERS Proserpine Limited. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Cardno. (2008). Asset Valuation: Final Report. A Consultancy Report Prepared for SunWater, June.
- Cardno-Atkins. (2008). 2008 Review of Water Prices - Assessment of Expenditure Forecasts for Southern Rural Water: Final Report. A Consultancy Report Prepared for Essential Services Commission (ESC), March.

-
- Cardno-Atkins. (2009). Strategic Management Overview and Review of Operating and Capital Expenditure of State Water Corporation 2009: Final. A Consultancy Report Prepared for the Independent Pricing and Regulatory Tribunal of New South Wales (IPART), November.
- Central Downs Irrigators Ltd. (CDIL). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- Central Downs Irrigators Ltd. (CDIL). (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Central Highlands Cotton Growers and Irrigators Association (CHCGIA). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Central Highlands Cotton Growers and Irrigators Association (CHCGIA). (2010b). Submission re: Issues Paper, August.
- Childers and District Fruit and Vegetables Growers Association (CDFVGA). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- Cicero, C. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Condamine Plains Water (CPW) (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Cooinda Cotton Co.(CCC) (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, July.
- Cooinda Cotton Co. (CCC) (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Cooinda Cotton Co. (CCC) (2011b). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Corbett, L. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Cotton Australia. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- Cotton Australia. (2012a). Submission re: Irrigation Prices for SunWater Schemes 2012-17, January.
- Cotton Australia. (2012b). Submission re: Irrigation Prices for SunWater Schemes 2012-17 Dawson Valley Bulk and Distribution Scheme Submission, January.
- Cotton Australia. (2012c). Submission re: Irrigation Prices for SunWater Schemes 2012-17 Nogoia and Mackenzie Bulk and Distribution Scheme Submission, January.
- Cotton Australia. (2012d). Submission re: Irrigation Prices for SunWater Schemes 2012-17 St George Bulk and Distribution Scheme Submission, January.
- Cotton Australia. (2012e). Submission re: Irrigation Prices for SunWater Schemes 2012-17, January.
- Cotton Australia/QFF. (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, February.
- Cotton Australia/QFF. (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
-

-
- Council of Australian Governments (COAG). (1994). *Report of the Working Group on Water Resource Policy: Communique*. Canberra: Council of Australian Governments.
- Council of Australian Governments (COAG). (2004). *Intergovernmental Agreement on a National Water Initiative*. Canberra: Council of Australian Governments.
- Council of Australian Governments (COAG). (2010). *National Water Initiative Principles*. Canberra: Council of Australian Governments.
- Cronin, S. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Cunnamulla Golf Club (CGC). (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Dawson Valley Irrigators Group (DVIG). (2010). Submission re: Irrigation Prices for SunWater Scheme 2011-16, July.
- Department of Environment and Resource Management (DERM). (2000). Interim Resource Operations License: Burdekin Irrigation Area. Brisbane: Department of Environment and Resource Management.
- Department of Natural Resources and Water (DNRW). (2008). *Submission to Water Charge Rules Issues Paper for Charges Payable to Irrigation Infrastructure Operators*. Brisbane: Department of Natural Resources and Water.
- Deloitte. (2011a). SunWater Administration Cost Review Phase 2. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Deloitte. (2011b). SunWater Working Capital Allowance. A Consultancy Report Prepared for the Queensland Competition Authority, August..
- Deloitte. (2011c). Operations Benchmarking Phase 1: SunWater and PV Water. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Deloitte. (2011d). Forecast Growth in Labour Costs: Update of December 2010 Report. A Report Prepared for Australian Energy Regulator.
- Dunsdon, G. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16 for the Cunnamulla Weir Scheme, May.
- Economic Regulation Authority (ERA). (2007). Inquiry on Harvey Water Bulk Water Pricing, April.
- Economic Regulation Authority (ERA). (2009). Inquiry into Tariffs of the Water Corporation, Aqwest and Busselton Water, August.
- Enkelmann, P. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Enkelmann, P. (2011a). Submission from the Murgon Meeting of the 14 April 2011, April.
- Enkelmann, P. (2011b). Submission re: Irrigation Water Prices 2011-16, April.
- Enkelmann, P. (2011c). Submission re: Water Pricing for Barker Barambah Water Supply Scheme, April.
- Ernst and Young. (1997). SCARM Water Industry Asset Valuation Study - Draft Guidelines on Determining Full Cost Recovery, August.
-

-
- Essential Services Commission (ESC). (2008). *2008 Water Price Review: Regional and Rural Businesses' Water Plans 2008-13 and Melbourne Water's Drainage and Waterways Water Plan 2008-13*, June.
- Essential Services Commission (ESC). (2009). *Metropolitan Melbourne Water Price Review 2008-09: Final Decision*, June.
- Essential Services Commission of South Australia (ESCOSA). (2010). *Inquiry into the 2010-11 Metropolitan and Regional Potable Water and Sewerage Pricing Process: Final Report*, October.
- Eslake, S. (2011). *Productivity*. A paper presented to the Reserve Bank of Australia Annual Conference, The Grattan Institute, Victoria, August.
- Eton Irrigators Advisory Committee (EIAC). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Eton Irrigators Advisory Committee (EIAC). (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, March.
- Eton Irrigators Advisory Committee (EIAC). (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Eton Irrigators Advisory Committee (EIAC). (2011c). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Francis, P., & Francis, M. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16 - Three Moon Creek Water Supply Scheme, April.
- Frontier Economics. (2005). Review of Pricing Policies: A Report Prepared for Goulburn Murray Water, March.
- Frontier Economics. (2008). Termination Fees and Landholder Considerations. A Consultancy Report Prepared for the Australian Competition and Consumers Association, October.
- GHD. (2001). State Water Projects Distribution System Efficiency Review: Burdekin Irrigation Area. A Consultancy Report Prepared for the Department of Natural Resources.
- GHD. (2009). Review of WHS Hazard Reduction Project Schedule Close-off Report, November.
- GHD. (2011). Review of SunWater's Network Service Plans: Toowoomba Cluster - Operational and Capital Expenditure - Final Report. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Gilbert and Sutherland. (2011). Quality Assurance Assessment of a Review of SunWater's Headworks Utilisation Factors Methodology. A Consultancy Report Prepared for the Queensland Competition Authority, March.
- Goulburn-Murray Water (GMW). (2009). Goulburn-Murray Water: Water Services Committee Charter, September.
- Grout, P.A. and Zalewska, A. (2006). The impact of regulation on market risk. *Journal of Financial Economics*, 80(1), 149-184.
- Growcom. (2010). Submission re: Segmented Water Pricing in Bundaberg, September.

-
- Halcrow. (2005). 2005 Review of Rural Water Prices Assessment of Expenditure Forecasts: Goulburn-Murray Water. A Consultancy Report Prepared for the Essential Services Commission, December.
- Halcrow. (2011). SunWater - Biloela Water Supply Schemes ("Cluster 3"): Review of Price Paths 2011-2016. A Consultancy Report Prepared for the Queensland Competition Authority, June.
- Hetherington, M. and Hetherington, K. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Heywood, R. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Hinchliffe, G., Hinchliffe, P., & Farmer, G. (2011). Submission re: Network Service Plan - Lower Fitzroy Water Supply Scheme, April.
- Holt, K. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December..
- Hubert, J. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Independent Competition and Regulatory Commission (ICRC). (2008). Water and Wastewater Price Review: Final Report and Price Determination, April.
- INDEC. (2005). Productivity and Cost Efficiency Review of Irrigation Services Provided by SunWater. A Consultancy Report Prepared for the Statewide Irrigation Pricing Working Group (Tier 1), December.
- INDEC. (2011a). SunWater Water Supply Schemes 2011-16 Price Paths: Audit and Review of SunWater's Business Operating Model (BOM). A Consultancy Report Prepared for the Queensland Competition Authority, March.
- INDEC. (2011b). SunWater Water Supply Schemes 2011-16 Price Paths: Review of SunWater Pricing Model - Step 1. A Consultancy Report Prepared for the Queensland Competition Authority, March.
- INDEC. (2011c). SunWater Water Supply Schemes 2011-16 Price Paths: Qualitative Framework and Assessment of Fixed and Variable Cost Drivers. A Consultancy Report Prepared for the Queensland Competition Authority, October.
- INDEC. (2011d). SunWater Water Supply Schemes 2012-2017 Price Paths: Analysis of SunWater's 2006-07 to 2010-11 Renewals Expenditure Forecasts. A Consultancy Report Prepared for the Queensland Competition Authority, October.
- INDEC. (2011e). SunWater Irrigation Pricing Data Forecasts 2003-11. Excel Spreadsheets Prepared for the Queensland Competition Authority, October.
- INDEC. (2011f). SunWater Refurbishment and Augmentation Cash Spend Details. Excel Spreadsheets Prepared for the Queensland Competition Authority, October.
- INDEC. (2011g). SunWater Water Supply Schemes 2011-16 Price Paths: Analysis of SunWater's Forecast Total Cost. A Consultancy Report Prepared for the Queensland Competition Authority, October.
- Independent Pricing and Regulatory Tribunal (IPART). (2004). Bulk Water Prices 2005-06 - Issues Paper, September.
- Independent Pricing and Regulatory Tribunal (IPART). (2006). Bulk Water Prices for State Water Corporation and Water Administration Corporation, September.
-

-
- Independent Pricing and Regulatory Tribunal (IPART). (2009a). Review of Prices for the Sydney Catchment Authority From 1 July 2009 to 20 June 2012; Water - Determination and Final Report, June.
- Independent Pricing and Regulatory Tribunal (IPART). (2009b). Review of Prices for Water, Sewerage and Other Services for Hunter Water Corporation: Determination and Final Report, July.
- Independent Pricing and Regulatory Tribunal (IPART). (2010a). Review of Bulk Water Charges for State Water Corporation: Water-Final, June.
- Independent Pricing and Regulatory Tribunal (IPART). (2010b). Review of Prices for the Water Administration Ministerial Corporation, July.
- Independent Pricing and Regulatory Tribunal (IPART). (2011). Review of Prices for the Water Administration Ministerial Corporation: Water - Determination, February.
- InterSafe Group Pty Ltd. (2005). Report on High Risk Management Plan: SunWater Operations & Maintenance - Mareeba Works - Far North Queensland, July.
- InterSafe Group Pty Ltd. (2007). Report on SunWater Ayr Region Sampled Focussed Recall, October.
- Isis Central Sugar Mill (ICSM). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- Isis Central Sugar Mill (ICSM). (2010a). Submission re: Water Pricing Options, August.
- Isis Central Sugar Mill (ICSM). (2010b). Submission re: Water Pricing Options, September.
- Isis Central Sugar Mill (ICSM). (2012). Submission re: Irrigation Prices for SunWater Schemes 2012-17 Bundaberg Distribution System, January.
- Isis Sugar Partnership (ISP). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- Jackson, I. (2012). Submission re: Irrigation Prices for SunWater Schemes 2012-17, January.
- Jenyns, M. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Kavanagh, G. (2011). Submission re: Irrigation Prices for SunWater 2011-16, June.
- Kelsey Creek Water Board (KCWB). (2011). Submission re: Irrigation Prices for SunWater Schemes, April.
- Lally, M. (2011). The Estimated WACC for the SEQ Interim Price Monitoring. A Paper Prepared for the Queensland Competition Authority.
- Lower Boyne River Irrigators (LBRI). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- Lower Burdekin Water (LBW). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Lower Burdekin Water (LBW). (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.

-
- Lower Burdekin Water (LBW). (2011b). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- MacDonald, K. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Macintyre Brook Irrigators Association (MBIA). (2011). Submission re: SunWater Price Path Issues Regarding the Macintyre Brook Scheme, April.
- Mackay Canegrowers Limited and Mackay Sugar Limited (MCL and MSL). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Mackay Irrigation Stakeholders (MIS). (2010). Submission re: Irrigations Prices for SunWater Schemes 2011-16, November.
- Mackenzie, R. A. (2010a). Submission re: Rate of Return, June.
- Mackenzie, R. A. (2010b). Submission re: Postage Stamp Prices, June.
- Mackenzie, R. A. (2010c). Submission re: Standard Supply Contracts, September.
- MacroMonitor (2010) Australian Construction Cost Trends 2010. Viewed on 19 October 2010. http://www.macromonitor.com.au/index_files/Pages570.htm.
- Mareeba-Dimbulah Irrigation Area Council (MDIAC). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- Mareeba-Dimbulah Irrigation Area Council (MDIAC). (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Mareeba-Dimbulah Irrigation Area Council (MDIAC). (2011b). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Mareeba-Dimbulah Irrigation Area Council (MDIAC). (2012). Submission re: Irrigation Prices for SunWater Schemes 2012-17, January.
- Maryborough Sugar Factory (MSF). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- Maryborough Sugar Factory (MSF). (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Maryborough Sugar Factory (MSF). (2011b). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- McCull, D. (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- McCull, D. (2010b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- McGuigan, B. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- McLellan, P., & McLellan, B. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-2016, April.
- Millar, C. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.
-

- Mobbs, N. and Mobbs, J. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- National Water Commission (NWC). (2008). *National Performance Report 2006-07: Rural Water Service Providers*. Canberra: Australian Government.
- National Water Commission (NWC). (2009a). *Australian Water Reform: Second Biennial Assessment of Progress in Implementation of the National Water Initiative*. Canberra: Australian Government.
- National Water Commission (NWC). (2009b). *National Performance Report: Rural Water Performance Reporting Indicators and Definitions 2008-09*. Canberra: Australian Government.
- National Water Commission (NWC). (2010). *National Performance Report 2008-09: Rural Water Service Providers*. Canberra: Australian Government.
- National Water Commission (NWC). (2011). *National Performance Report 2009-10: Rural Water Service Providers*. Canberra: Australian Government.
- NERA Economic Consulting. (2010a). Form of Price Control: SunWater Water Supply Schemes. Issues Paper Prepared for the Queensland Competition Authority, August.
- NERA Economic Consulting (NERA). (2010b). Single or Multiple Rate of Return: SunWater. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- NERA Economic Consulting (NERA). (2011). Cost of Capital for Water Infrastructure Company. A Consultancy Report Prepared for the Queensland Competition Authority, March.
- NERA Economic Consulting (NERA). (2012a). SunWater's Electricity Cost Model. A Consultancy Report Prepared for the Queensland Competition Authority, April.
- O'Brien MP, J. (2010). Submission re: Irrigation Prices fo SunWater Schemes 2011-16, June.
- Office for Water Security. (2010). *Water for Good*. Adelaide: Government of South Australia.
- Osborne, S. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Otto, N., & Otto, M. (2011). Submission re: Irrigation Prices for SunWater Schemes, April.
- Parsons Brinckerhoff. (PB) (2010). Provisions of Services for Costing SunWater's Work Instructions. A Consultancy Report Prepared for SunWater, October.
- Pioneer Valley Water Co-operative Limited (PVWaterL). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Pioneer Valley Water Co-operative Limited (PVWaterL). (2011a). Submission re: SunWater Network Service Plan - Pioneer River Water Supply Schemes, February.
- Pioneer Valley Water Co-operative Limited (PVWaterL). (2011b). Submission on Consultants Draft Report on Pioneer WSS Network Service Plan, April.
- Pioneer Valley Water Co-Operative Limited (PVWaterL). (2011c). Submission on Consultants Draft Report on SunWater Administration Cost Review, April.
- Pioneer Valley Water Co-Operative Limited (PVWaterL). (2011d). Review of Irrigation Water Pricing in SunWater Schemes: Comments on SunWater Response to PVWater Submission, June.

-
- Pioneer Valley Water Co-Operative Limited (PVWaterL). (2011e). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Pioneer Valley Water Co-Operative Limited (PVWaterL). (2012). Submission re: Irrigation Prices for SunWater Schemes 2012-17, February.
- PricewaterhouseCoopers (PwC). (2010a). Pricing Principles and Tariff Structures for SunWater's Water Supply Schemes. Issues Paper Prepared for the Queensland Competition Authority, September.
- PricewaterhouseCoopers (PwC). (2010b). Allocating Capital Costs of Bulk Water Supply Assets. Issues Paper Prepared for the Queensland Competition Authority, September.
- Productivity Commission (PC). (2011). *Australia's Urban Water Sector (Draft Report)*. Canberra: Commonwealth of Australia.
- Proserpine District Canegrowers Cooperative Limited and Proserpine Co-operative Sugar Milling Association Limited (PDCCL and PCSMAL). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- Queensland Competition Authority (QCA). (2000). Statement of Regulatory Pricing Principles for the Water Sector, December.
- Queensland Competition Authority (QCA). (2002). Gladstone Area Water Board: Investigation of Pricing Practices, September.
- Queensland Competition Authority (QCA). (2004). Draft Report on General Pricing Principles for Infrastructure Investments Made in Response to Extraordinary Circumstances.
- Queensland Competition Authority (QCA). (2005). Gladstone Area Water Board: Investigation of Pricing Practices - Final Report, March.
- Queensland Competition Authority (QCA). (2007). Final Decision: Advice to the Minister for Mines and Energy - Benchmark Retail Cost Index for Electricity: 2005-07 and 2007-08, June.
- Queensland Competition Authority (QCA). (2009a). Remade Final Decision: 2008-09 Benchmark Retail Retail Cost Index, June.
- Queensland Competition Authority (QCA). (2009b). Review of Electricity Pricing and Tariff Structures - Stage 1, September.
- Queensland Competition Authority (QCA). (2010a). Gladstone Area Water Board: Investigation of Pricing Practices, July.
- Queensland Competition Authority (QCA) (2010b). QR Network's 2010 DAU: Final Decision, September.
- Queensland Competition Authority (QCA) (2010c). Final Decision: Benchmark Retail Retail Cost Index for Electricity: 2010-11, May.
- Queensland Competition Authority (QCA). (2011a). South East Queensland (SEQ) Interim Price Monitoring for 2010-11, March.
- Queensland Competition Authority (QCA). (2011b). South East Queensland (SEQ) Grid Service Charges 2011-12, July.
-

-
- Queensland Competition Authority (QCA) (2011c). Final Decision: Benchmark Retail Retail Cost Index for Electricity: 2011-12, May.
- Queensland Competition Authority (QCA) (2011d). Approval of QR Network's Revenue Cap Adjustment Amounts 2009-10, April.
- Queensland Farmers' Federation (QFF). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, July.
- Queensland Farmers' Federation (QFF). (2010b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.
- Queensland Farmers' Federation (QFF). (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Queensland Farmers' Federation (QFF). (2012). Submission re: Irrigation Prices for SunWater Schemes 2012-17, January.
- Queensland Valuation Services (QVAS). (2010). Permanent Water Trade.
- Robertson MP, Hon Stephen. (2010a). Submission re: Nodal Pricing Arrangements, September.
- Robertson MP, Hon Stephen. (2010b). Submission re: Assets Associated with Bulk Water Supply Service, September.
- Robertson MP, Hon Stephen. (2012). Submission re: Authority's Draft Report on the SunWater Irrigation Price Review: 2012-17, February.
- Roth, R. (2011). Submission re: Irrigation Prices for Sunwater Schemes 2011-16 - Three Moon Creek, March.
- SAHA. (2010). Renewals Annuity or a Regulatory Depreciation Allowance: SunWater's Water Supply Schemes 2011-16 Price Paths. Issues Paper Prepared for the Queensland Competition Authority, September.
- SAHA. (2011). Assessment of SunWater's Administration Costs. A Consultancy Report Prepared for the Queensland Competition Authority, January.
- Simpson Farms. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- Sinclair Knight Merz (SKM). (2011). Review of Selected Annuity Values for Refurbishment and Replacement Items. A Consultancy Report Prepared for the Queensland Competition Authority, October.
- Sinclair Knight Merz (SKM). (2012a). SunWater Price Regulation: A Review of Selected Annuity Values for Refurbishment and Replacement Items - Addendum. A Consultancy Report Prepared for the Queensland Competition Authority, April.
- Sinclair Knight Merz (SKM). (2012b). Clarification on Two Renewals Project Items for St George Distribution System, April.
- Smith, T. and Smith, C. (2011). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Southern Rural Water (SRW). (2007a). Customer-Charter: Water Supply, Version 5, August.

-
- Southern Rural Water (SRW). (2007b). Southern Rural Water: Water Plan 2008-13.
- SP Exports. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.
- St George Irrigators (SGI). (2010). Perspectives on Pricing of Irrigation Water in Queensland 2011-2016, July.
- St George Irrigators (SGI). (2011). St George Water Supply Scheme, Network Service Plan, 2012-2016, April.
- State Water. (2008). 2008-12 Customer Service Charter Terms of Reference.
- Stewart, D. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.
- Stewart, D. (2011a). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Stewart, D. (2011b). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Strathdee, B. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.
- SunWater. (2003). *SunWater Annual Report 2002-03*. Brisbane: SunWater Limited.
- SunWater. (2004). *SunWater Annual Report 2003-04*. Brisbane: SunWater Limited.
- SunWater. (2005). *SunWater Annual Report 2004-05*. Brisbane: SunWater Limited.
- SunWater. (2006a). *Statewide Irrigation Pricing Working Group: Tier 1 Report*. Brisbane: SunWater Limited.
- SunWater. (2006b). *SunWater Irrigation Price Paths 2006-07 to 2010-11: Final Report*. Brisbane: SunWater Limited, September.
- SunWater. (2006c). *SunWater Annual Report 2005-06*. Brisbane: SunWater Limited.
- SunWater. (2007). *SunWater Annual Report 2006-07*. Brisbane: SunWater Limited.
- SunWater. (2008). *SunWater Annual Report 2007-08*. Brisbane: SunWater Limited.
- SunWater. (2009a). *SunWater Annual Report 2008-09*. Brisbane: SunWater Limited.
- SunWater. (2009b). *SunWater: Statement of Corporate Intent*. Brisbane: SunWater Limited.
- SunWater. (2010a). QCA Review of Irrigation Prices: Public Submission Letter, May.
- SunWater. (2010b). QCA Review of Irrigation Prices: Service Framework Background Paper. Brisbane, May.
- SunWater. (2010c). QCA Review of Irrigation Prices: Contributed Assets Background Paper, May.
- SunWater. (2010d). QCA Review of Irrigation Prices: Headworks Utilisation Factors Technical Report, September.
- SunWater. (2010e). QCA Review of Irrigation Prices: Bulk Water Asset Valuation, October.
- SunWater. (2010f). QCA Review of Irrigation Prices: Asset Management Planning Methodology Paper, October.
-

-
- SunWater. (2010g). *SunWater Annual Report 2009-10*. Brisbane: SunWater Limited.
- SunWater. (2010h). QCA Review of Irrigation Prices: Return of Capital Renewals or Depreciation, October.
- SunWater. (2011a). QCA Review of Irrigation Prices: Centralised Costs Background Paper, January.
- SunWater. (2011b). QCA Review of Irrigation Prices: Cost Forecasting Assumptions Background Paper, January.
- SunWater. (2011c). QCA Review of Irrigation Prices: Renewals Annuity Background Paper, January.
- SunWater. (2011d). QCA Review of Irrigation Prices: Pricing Principles and Tariff Structures January.
- SunWater. (2011e). QCA Review of Irrigation Prices: Form of Regulation, January.
- SunWater. (2011f). QCA Review of Irrigation Prices: Review and Adjustment Triggers Supplementary Information, February.
- SunWater. (2011g). QCA Review of Irrigation Prices: Allocation of Centralised Costs Supplementary Information, February.
- SunWater. (2011h). QCA Review of Irrigation Prices: Electricity Costs Background Paper, February.
- SunWater. (2011i). QCA Review of Irrigation Prices: Water Distribution Entitlements Supplementary Information, February.
- SunWater. (2011j). QCA Review of Irrigation Prices: Bulk Water Price Differentiation Supplementary Submission, February.
- SunWater. (2011k). QCA Review of Irrigation Prices: Customer Involvement in Renewals Expenditure Supplementary Background Paper, February.
- SunWater. (2011l). QCA Review of Irrigation Prices: Weighted Average Cost of Capital - Renewals Annuity Background Paper, February.
- SunWater. (2011m). QCA Review of Irrigation Prices: Pumping Cost Reconciliation, February.
- SunWater. (2011n). QCA Review of Irrigation Prices: WAE Reconciliation, February.
- SunWater. (2011o). QCA Review of Irrigation Prices: Storage Rental Fees, March.
- SunWater. (2011p). QCA Review of Irrigation Prices: Pricing of Distribution Losses, March.
- SunWater. (2011q). QCA Review of Irrigation Prices: Estimated Flood Damage Letter, March.
- SunWater. (2011r). QCA Review of Irrigation Prices: Metering and Price Model Letter, March.
- SunWater. (2011s). QCA Review of Irrigation Prices: Tariff Groupings, March.
- SunWater. (2011t). QCA Review of Irrigation Prices: Revenue Analysis, March.
- SunWater. (2011u). QCA Review of Irrigation Prices: Electricity - Actual vs 2006 IPR Forecast, March.
-

-
- SunWater. (2011v). QCA Review of Irrigation Prices: Water Harvesting Usage Summary, April.
- SunWater. (2011w). QCA Review of Irrigation Prices: Headworks Utilisation Factors, Critical Periods and Bulk Water Supply Capital Cost Allocatooon, April.
- SunWater. (2011x). QCA Review of Irrigation Prices: Headworks Utilisation Factors, Combined Technical Paper and Addendum, May.
- SunWater. (2011y). QCA Review of Irrigation Prices: Service Delivery Strategies, May.
- SunWater. (2011z). QCA Review of Irrigation Prices: Service Delivery Paper, May.
- SunWater. (2011aa). QCA Review of Irrigation Prices: Drainage Data, April.
- SunWater. (2011ab). QCA Review of Irrigation Prices: Response to Pioneer Valley Water Board Submission on the Pioneer River Water Supply Scheme - Network Services Plan, May.
- SunWater. (2011ac). QCA Review of Irrigation Prices: Administration Costs for Bundaberg Groundwater, June.
- SunWater. (2011ad). QCA Review of Irrigation Prices: Supplementary Information on Electricity Cost Management, Background Paper, August.
- SunWater. (2011ae). QCA Review of Irrigation Prices: Intersafe, August.
- SunWater. (2011af). QCA Review of Irrigation Prices: SunWater Analysis of Working Capital, August.
- SunWater. (2011ag). QCA Review of Irrigation Prices: SunWater Submission on Deloitte Administration Cost Review Stage 2 Report, August.
- SunWater. (2011ah). QCA Review of Irrigation Prices: SunWater Submission on Drainage Charges, February.
- SunWater. (2011ai). QCA Review of Irrigation Prices: Background Paper on the Treatment of Costs Related to Inflatable Rubber Dams, September.
- SunWater. (2011aj). QCA Review of Irrigation Prices: Supplementary Information on Response to Issues - Operating Costs Forecasts, September.
- SunWater. (2011ak). QCA Review of Irrigation Prices: Background Paper on Electricity Cost Re-Forecast, September.
- SunWater. (2011al). SunWater Published Water Prices 2005-06 to 2011-12, PDF files submitted by SunWater to the Queensland Competition Authority.
- SunWater. (2011am). SunWater Irrigation Pricing Model.
- SunWater. (2011an). SunWater Annuity Expenditures 2007-11 for all 30 Irrigation Service Contracts. Excel Spreadsheet Submitted by SunWater to the Queensland Competition Authority, September.
- SunWater. (2011ao). SunWater Financial Model. Excel Spreadsheet Submitted by SunWater to the Queensland Competition Authority, October.
- SunWater. (2011ap). SunWater Operating Expenditures and Renewals 2007-11. Excel Spreadsheet Submitted by SunWater to the Queensland Competition Authority, September.
-

-
- SunWater. (2011aq). QCA Review of Irrigation Prices: Background Paper on Expenditure Update Changed Regulatory Period, September.
- SunWater. (2011ar). QCA Review of Irrigation Prices: Response to QCA Consultants' Review of Opex, October.
- SunWater. (2011as). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Response to Draft Report, December.
- SunWater. (2011at). *SunWater Annual Report 2010-11*. Brisbane: SunWater Limited
- SunWater. (2012a). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Background Paper on Main Channel Factors, January.
- SunWater. (2012b). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Excel Spreadsheet of Distribution System Losses, January.
- SunWater. (2012c). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Water Use Data, February.
- SunWater. (2012e). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Response to Renewals Expenditure Request 4 (a) - Insurance Proceeds, March.
- SunWater. (2012f). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Service Contract Annuity Expenditure 2001-2011, March.
- SunWater. (2012g). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Recommended Changes to CAM, March.
- SunWater. (2012h). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Application of Interest on Annuity Before the 2006-11 Price Path, March.
- SunWater. (2012i). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Expenditure Information Request, February.
- SunWater. (2012j). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Draft Prices (And Opex Continued) Information Request, March.
- SunWater. (2012k). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Minimum Charge, March.
- SunWater. (2012l). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Land Leases, March.
- SunWater. (2012m). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Drainage Revenue, March.
- SunWater. (2012n). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Mareeba Access Charge, March.
- SunWater. (2012o). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Response on the Authority's Draft Recommendation to Change SunWater's CAM, March.
- SunWater. (2012p). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Replacement of Inflatable Rubber Dam, March.
-

-
- SunWater. (2012q). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Renewals Expenditures and Annuities Information Request, February.
- SunWater. (2012r). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Escalation of Electricity Prices, April.
- SunWater. (2012s). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Further Support to the Inclusion of Non-Directs in Renewals, March.
- SunWater. (2012t). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Direct Opex Information request, March.
- SunWater. (2012u). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Adjustment to Overheads, March.
- SunWater. (2012v). Submission re: Irrigation Prices for SunWater Schemes: 2012-17 Application of QCA Efficiency Savings to Non-Direct Costs, April.
- Sydney Catchment Authority (SCA). (2010). Sydney Catchment Authority Annual Report 2009-10. Sydney: Sydney Catchment Authority.
- Synergies Economic Consulting. (2010). Rural Water Pricing Business and Scheme Overview. A Consultancy Report to the Queensland Competition Authority, January.
- Tableland Canegrowers Ltd and Mareeba District Fruit and Vegetable Growers Association Inc. (TCL and MDFVGA). (2010a). Submission re: Key Issues on Irrigation Prices for Mareeba-Dimbulah Water Supply Scheme, July.
- Tableland Canegrowers Ltd and Mareeba District Fruit and Vegetable Growers Association Inc (TCL and MDFVGA). (2010b). Submission re: Tiered Pricing, August.
- Tanner, J., & Tanner, S. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.
- Thomas, W. A. (2011). Submission re: Principles Relevant to Recovering Long-Run Average Costs of SunWater Schemes, April.
- Voss, A. (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.
- Voss, A. (2011b). Submission re: Irrigation Prices for SunWater Schemes 2012-17, December.
- Water Act 2000 (Qld).*
- Water Act 2007, No. 137 (Cwlth).*
- Water Charge (Infrastructure) Rules (Cwlth).*
- Water Industry Regulatory Order 2003 (Vic).*
- Water Regulation 2002 (Qld).*
- Water Supply (Safety and Reliability) Act 2008 (Qld).*
- Workplace Health and Safety Act 1995 (Qld).*
- Weir, T. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, July.
-

World Wildlife Fund (WWF). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.

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.

<i>Asset</i>	<i>Year</i>	<i>Description</i>	<i>Value (\$'000)</i>
Gibber Gonyah Drainage	2011-12	Replace Foot Bridge 2330M	10
Gibber Gonyah Irrigation Dist	2015-16	Replace Actuator, Elec Rubicon	14
	2016-17	Replace Scour Outlet & Access @ 415.9	18
	2020-21	Replace Gate Control Equipment	11
	2023-24	Replace Control Gate 2296.5M	16
	2030-31	Replace Actuator, Elec Rubicon	13
	2035-36	Replace Gate Control Equipment	11
Gibber Gonyah Pump Station	2011-12	Change out - obsolete	11
		Refurbish Valve - Brought forward from 2017(; therefore I have pushed life out 5 years)	11
	2012-13	Refurbish Motor - bearing, bake & varnish, corrosion, test etc - last carried out in 2002(JA)	28
		Refurbish Pump - shaft & gland may need replacement - last carried out in 2002 (JA)	22
		Refurbish Motor - bearing, bake & varnish, corrosion, test etc - last carried out in 2002 (JA)	22
	2013-14	Replace Suction Pipe Pump No2	152
		Replace 600D Suction Valve	71
		Replace 450D Suction Valve	20
		Install emergency stop buttons at top and bottom of pumpwell	11
		Refurbish Valve	11
	2014-15	Replace Suction Pipe Pump No3	138
		Replace 600D Non Return Valve	18
		Install emergency lighting in accordance with WHS 9	11
	2015-16	Refurbish pump	46
	2016-17	Replace 450D Non Return Valve	30
	2018-19	Replace Submersible Pump, Flygt	360
		Replace Pump	125
		Replace 600D Discharge Valve	70
		Replace 450D Discharge Valve	20
	2021-22	Refurbish pump	45
	2022-23	Replace Control Equipment	278
	2023-24	11DVAXX REFURBISH PUMP PUN2 GG	19
		Refurbish Valve	11
		Internal inspection and report*	11
	2024-25	Internal inspection and report*	11
	2025-26	Refurbish Motor - bearing, bake & varnish, corrosion, test etc - last carried out in 2002(JA)	28
		Refurbish Motor - bearing, bake & varnish, corrosion, test etc - last carried out in 2002 (JA)	22
		Refurbish Pump - shaft & gland may need replacement - last carried out in 2002 (JA)	22
	2026-27	Refurbish Valve - Brought forward from 2017(; therefore I have pushed life out 5 years)	11
	2027-28	Refurbish pump	44
	2028-29	Replace Switchboard Low Voltage 415V	138
		Replace Cables & Cableways	20
	2033-34	Replace Pipework	82

<i>Asset</i>	<i>Year</i>	<i>Description</i>	<i>Value (\$'000)</i>
Theodore Drainage		Refurbish pump	44
		Internal inspection and report*	11
		Refurbish Valve	11
	2034-35	Internal inspection and report*	11
	2013-14	Install guardrails at crossing - Drain DR4b AC02	17
	2016-17	Replace Control Equipment	30
		Replace Access Crossing 652M	22
		Replace Access Crossing 0M	11
	2018-19	Replace Highway Crossing 1496M	61
		Replace Access Crossing 130M	25
		Replace Access Crossing 894M	23
	2019-20	Replace Road Crossing 779M	28
		Replace Access Crossing 20M	11
		Replace Access Crossing 205M	11
		Replace Access Crossing 145M	11
		Replace Access Crossing 180M	11
	2020-21	Replace Access Crossing 245M	11
	2022-23	Replace Road Crossing 2094M	44
		Replace Access Crossing 241M	10
	2023-24	Replace Earth Works	49
		Replace Access Crossing 110M	27
	2024-25	Replace Access Crossing 373M	18
	2025-26	Replace Access Crossing 782M	25
	2026-27	Replace Access Crossing 617M	28
	2027-28	Replace Access Crossing 0M	22
		Refurbish Structure - replace guardrail, refurbish metalwork, protection works, safety fittings etcife*	17
	2028-29	Replace Access Crossing 374M	23
	2029-30	Replace Access Crossing 365M	21
	2030-31	Replace Access Crossing Bed2 1486M	29
	2031-32	Replace Drain Inlet/Rd Xing 820M R E	31
		Replace Control Equipment	29
	2032-33	Replace Structure	277
		Replace Road Bridge 2217M	44
		Replace Access Crossing 666M	41
		Replace Cross Drain Aprox Midway	41
		Replace Access Crossing 1345M	38
		Replace Access Crossing Bed1 3511M	36
		Replace Access Crossing Bed2 2M	33
		Replace Access Crossing 1723M	29
		Replace Access Crossing Bed1 3984M	26
		Replace Access Crossing Bed1 1125M	25
		Replace Access Crossing 115M	22
		Replace Access Crossing 137M	21
		Replace Access Crossing 105M	20
	2033-34	Replace Access Crossing (Double) 2497M	168
		Replace Cross Drain/Access Xing 0M	63
		Replace Cross Drain 1381M	54
	Replace Cross Drain 559M	30	
	Replace Access Crossing 724M	27	
	Replace Access Crossing 0M	26	
	Replace Access Crossing 929M	24	
	Replace Cross Drain/Access Xing 706M	17	

<i>Asset</i>	<i>Year</i>	<i>Description</i>	<i>Value (\$'000)</i>
Theodore Irrigation Distrib	2034-35	Replace Access Crossing 330M	27
	2035-36	Replace Access Crossing 1102M	32
	2011-12	11DVAXX DVAXX REPLACE SIPHON CHD TH	148
	2015-16	Refurbish: WH&S Install safety fence adjacent to house 0m to 222m both sides. (There is no security in this area allowing small children to access the channel	11
	2017-18	Replace Structure	95
	2019-20	Replace Road Crossing 29M	25
	2020-21	Replace Gate Control Equipment	25
		Replace Actuator, Elec Rubicon	14
	2022-23	Replace Check/Road Crossing 2946M	42
		Replace Road Crossing 3489M	37
		Replace Highway Crossing 579M	36
		Replace Road Crossing 4468M	31
		Replace Access Crossing 205M	28
		Replace Access Crossing 250M	24
	2024-25	Replace Channel Overflow 4706M	22
	2025-26	Replace Gate, Vert Slide Rubicon	69
		Replace Gate, Ushot Awma	13
		Refurbish: WH&S Install safety fence adjacent to house 0m to 222m both sides. (There is no security in this area allowing small children to access the channel	11
		Enhance: WH&S Install safety fence adjacent to house 0m to 222m both sides. (There is no security in this area allowing small children to access the channel) - check with policy	11
		Enhance WH&S (policy)Install safety fence adjacent to house 1800m to 2100m (There is no security in this area allowing small children to access the channel)	11
	2031-32	Replace Check Structure 257M	19
		external paint @ 25yrs @ \$10,000 - difficult task over water - repaint @ 15yr intervals *	11
	2032-33	Replace Offtake Channel Cha3 1389M	82
		Replace Road Crossing 1740M	28
		Replace Structures	25
		Replace Check Structure 2132M	23
		Replace Offtake Channel A4 3140M	22
		Replace Check Structure 4158M	22
		Replace Check Structure 2396M	22
		Replace Check Structure 3283M	21
		Replace Check Structure 2123M	21
		Replace 750D Rc Pipe	21
	Replace Channel Overflow 614M	20	
	Replace Channel Overflow 2694M	20	
	Replace Check Structure 366M	19	
	Replace Check Structure 2317M	19	
	Replace Offtake Channel B0 670M	19	
	Replace Check Structure 4492M	19	
	Replace Check Structure 2435M	18	
	Replace Offtake Channel B4 1023M	17	
2033-34	Replace Channel Overflow 2644M	31	
	Replace Channel Overflow 2629M	30	
	Replace Structures	26	
	Replace 375D Rc Pipe 2958-3049M	26	

<i>Asset</i>	<i>Year</i>	<i>Description</i>	<i>Value (\$'000)</i>
Theodore Pump Station		Replace Channel Overflow 3066M	23
		Replace Check Structure 2325M	22
		Replace Check Structure 918M	22
		Replace Channel Overflow 3826M	22
		Replace Check Structure 1411M	22
		Replace Check Structure 2845M	22
		Replace Check Structure 1896M	21
		Replace Scour Outlet	16
	2035-36	Replace Gate Control Equipment	25
		Replace Actuator, Elec Rubicon	14
		Refurbish: WH&S Install safety fence adjacent to house 0m to 222m both sides. (There is no security in this area allowing small children to access the channel	11
	2011-12	11DVA11 REFURBISH PUN3 MOTOR & PUMP	27
		Replace 350D Discharge Valve	26
		Refurbish Valve	11
		Replace 500D Discharge Valve	10
	2013-14	Refurbish control - replace PLC, components etc; obsolescence, reliability	85
		Refurbish Valve	45
		Refurbish Motor (do in conjunction with pump)* - This project was brought forward (emergency)to March	45
		Install emergency stop buttons at top and bottom of pumpwell	11
	2014-15	major maintenance 2010 @ 15yr intervals @ \$10,000	23
		Install emergency lighting in accordance with WHS 9	11
		Refurbish: major maintenance 2010 @ 15yr intervals @ \$10,000	11
		Refurbish System - replace components - old system*	11
	2015-16	External paint and joint maintenance	23
		Refurbish Valve	11
	2017-18	Refurbish Pump*	17
	2019-20	Refurbish System - replace components - old system*	11
		Refurbish Valve	11
	2020-21	Replace Pumpwell Building	137
		Refurbish control - replace PLC, components etc; obsolescence, reliability	85
	2021-22	Refurbish Valve	45
	2022-23	Refurbish Surge Tank - concrete encasement & internal metalwork (decommission?)	22
	2023-24	Replace Pump No1	83
		Replace 700D Msl Pipe (Pump No1)	63
		Replace 525D Msl Pipe (Pump No2)	51
		Replace 525D Msl Pipe (Pump No3)	50
		Replace Motor No1 415V	35
		Replace 610D Msl Pipe (Pump No1)	34
		11DVA16 Refurbish Pump and Motor -PUN2 -	28
		Replace Unificate & Bend (All Pumps)	23
	Replace 356D Msl Pipe (Pump No3)	23	
	Replace 356D Msl Pipe (Pump No2)	22	
	Replace 525D Non Return Valve	17	
	Refurbish Valve	11	
2024-25	Replace 900D Rc Pipe 20-180M	168	
	Replace 900D Msl Pipe 0-20M	110	
	11DVA11 REFURBISH PUN3 MOTOR & PUMP	28	
	Refurbish System - replace components - old system*	11	

<i>Asset</i>	<i>Year</i>	<i>Description</i>	<i>Value (\$'000)</i>
	2025-26	Replace Concrete Structure	201
		Replace Pump No2	89
		Replace Motor No2 415V	22
		Replace 375D Non Return Valve	16
	2026-27	Replace Control Equipment	195
		Replace Pump No3	137
		Replace Stairway & Handrails	60
		Refurbish Motor (do in conjunction with pump)* - This project was brought forward (emergency)to March	44
		Replace 375D Non Return Valve	16
		Replace Motor No3 415V	12
	2027-28	Refurbish control - replace PLC, components etc; obsolescence, reliability	83
		Refurbish Valve	11
	2029-30	Refurbish Valve	45
		Refurbish System - replace components - old system*	11
	2030-31	Refurbish Pump*	17
	2031-32	Refurbish Valve	11
	2034-35	Refurbish control - replace PLC, components etc; obsolescence, reliability	83
		Refurbish System - replace components - old system*	11
	2035-36	Refurbish Valve	11