QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater
Irrigation Price Review: 2012-17
Volume 2
Theodore Distribution System

November 2011

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

SUBMISSIONS

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

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

Queensland Competition Authority
GPO Box 2257
Brisbane QLD 4001
Telephone: (07) 3222 0557
Fax: (07) 3222 0599
Email: water.submissions@qca.org.au

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

Confidentiality

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

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

Public access to submissions

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

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

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GLOSSARY

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

EXECUTIVE SUMMARY

Ministerial Direction

The Authority has been directed by the Minister for Finance and The Arts and the Treasurer for Queensland to recommend irrigation prices to apply to particular SunWater water supply schemes (WSS) from 1 July 2012 to 30 June 2017 (the 2012-17regulatory 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: Prices for the Theodore Distribution System ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
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. 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, 2011al) and Recommended Prices (QCA, 2011).

Table 2: Termination Fees ($/ML)

	Actual Prices				*Recommended 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	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 3: Drainage Charges ($/ha of land)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
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 4: Drainage Diversion Charges ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
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).

Draft Report

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

Volume 2, which comprises scheme specific reports, should be read in conjunction with Volume 1. Also relevant is the Draft 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 on key issues; and, publication of Issues Papers.

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

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

Customer Group	*Irrigation WAE (ML)*	*Total WAE (ML)*
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 Storage[1] to two sub-systems: Gibber Gunyah and Theodore. The system consists of two pump stations, 46 km of channels and 56 km of drains.

Gibber Gunyah Distribution Sub-System

The Gibber Gunyah 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, Gyranda 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);

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

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

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

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

The Authority has also received a number of submissions from stakeholders on matters such as capacity to pay, rate of return on existing assets, contributed assets, 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.

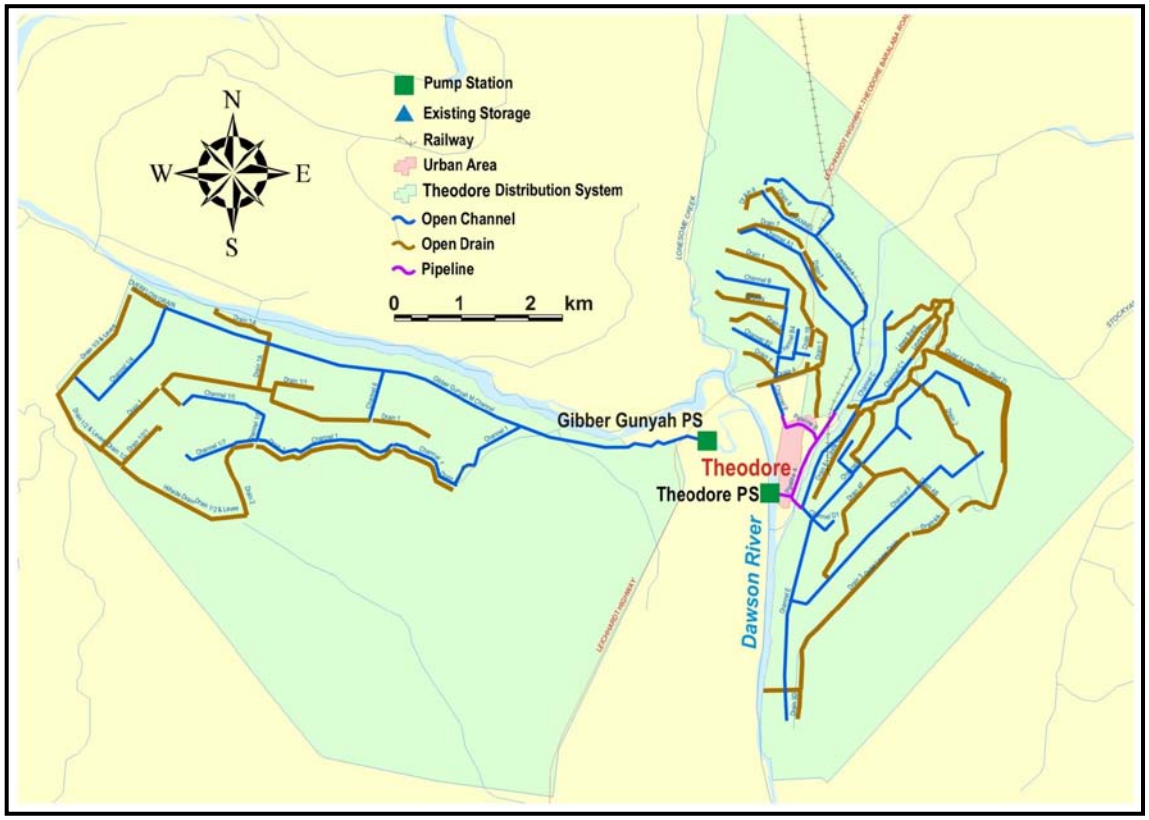


Figure 1.1: Theodore Distribution System Locality Map

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 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.

2.3 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

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

Source: QCA (2011).

Consistent with the Authority's allocation of risks (Table 2.1), it is proposed that risks identified by SunWater in items (a), (b), (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.

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.

Stakeholder Submissions

SunWater

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.

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

The Authority considers 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 recommends 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, is addressed in a subsequent chapter.

Unbundling of tariffs further promotes cost reflectivity of charges.

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

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.

Stakeholder Submissions

SunWater

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.

Other Stakeholders

No other stakeholders have commented on this matter.

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 has 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 results 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 recommended termination fees, including annual increases are detailed in Table 3.2 (Dawson Channel to Dawson River) and Table 3.3 (Dawson Channel to Dawson River at Glebe Weir). 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: Termination Fees for Transfers from Dawson Channel to Dawson River Termination Fees ($/ML)

	Actual Prices				*Recommended Prices*				
	2008-09	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*213-014*	*2014-15*	*2015-16*	*2016-17*
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: Termination Fees for Transfers from Dawson Channel to Dawson River at Glebe Weir ($/ML)

	Actual Prices				*Recommended Prices*				
	2008-09	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*213-014*	*2014-15*	*2015-16*	*2016-17*
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 are higher than those charged by SunWater, as the Authority's approach:

(a) recovers 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) reflects 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) reflects the Authority's cost-reflective fixed charge and not the Authority's recommended fixed charge; and

(d) results 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.

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).

Stakeholder Submissions

SunWater

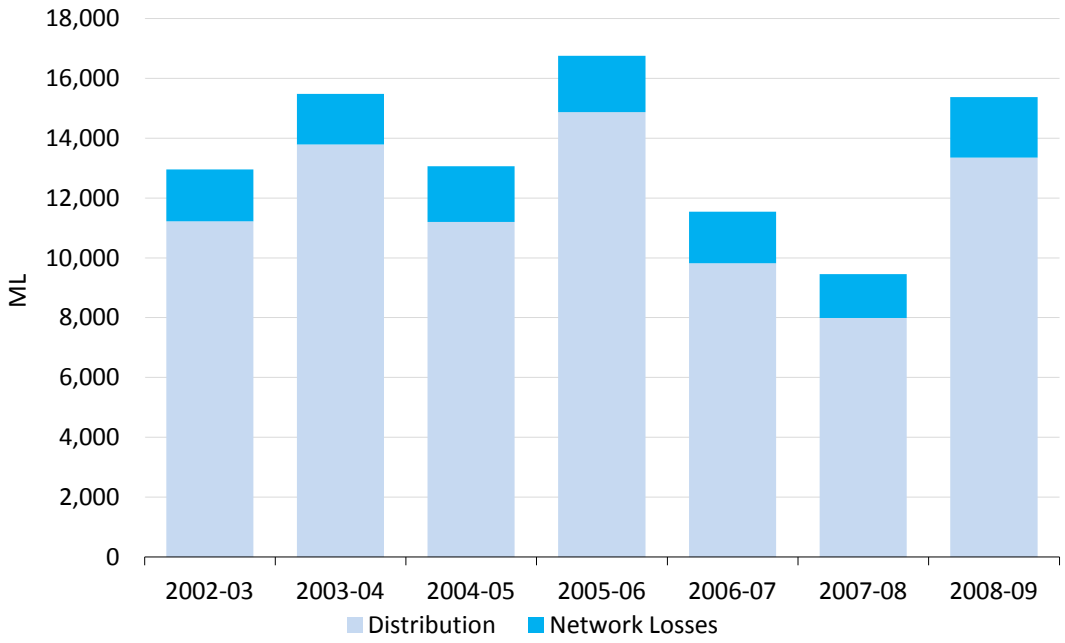
The available supply of water is determined by the announced allocations which are set according to rules contained in the Resource Operations Plan (ROP).

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



Source: SunWater (2011).

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

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

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).

Stakeholder's Submissions

SunWater

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.

Other Stakeholders

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 Volume 1, the Authority's general view is 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.

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).

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 is unable to recommend specific cost-reflective tariffs in this review, in the absence of cost-reflective information.

In the circumstances, the Authority recommends 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 recommends 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.

4. RENEWALS ANNUITY

4.1 Introduction

Ministerial Direction

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

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

Previous Review

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

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

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

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

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

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

Issues

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

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

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

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

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

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

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

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

(d) the methodology to calculate the renewals annuity.

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

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

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

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

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

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

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

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

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

SunWater submitted that the opening balance for the 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.

The Authority notes that SunWater has sought to transfer funds not required for foreseeable future renewals expenditures in distribution systems to bulk schemes. The Authority considers 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.

The Authority recommends 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.

In October 2011, Indec advised that it had uncovered actual renewals expenditure for some 2000-06. The Authority has not been able to review this information or quality assure it for the purposes of the Draft Report, but intends to do so for the Final Report.

4.3 Past Renewals Expenditure

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

Submissions

SunWater

SunWater (2011) submitted actual renewals expenditure for the 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***
Past (Actual) 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

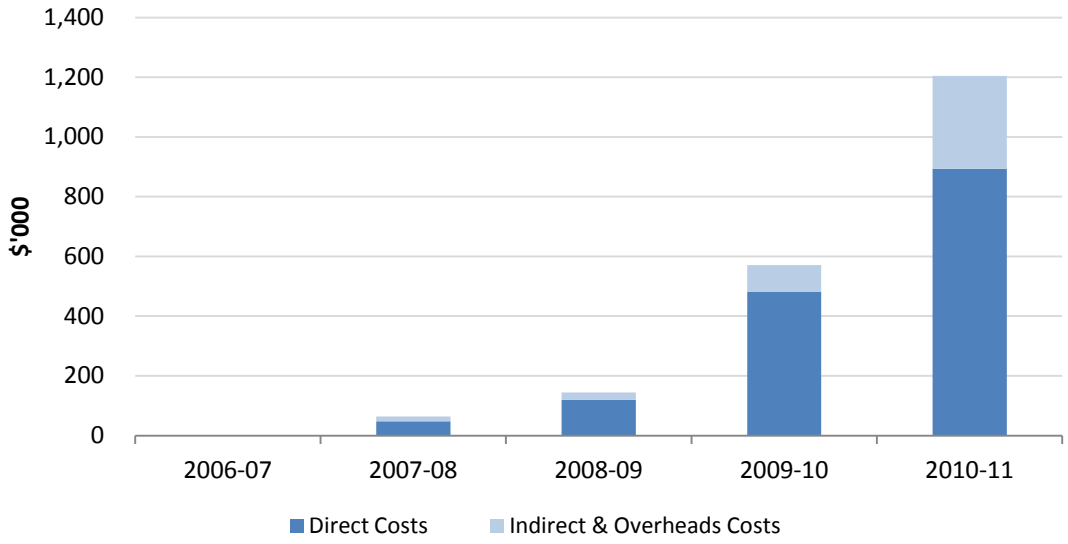
No other stakeholders have commented on these items.

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)



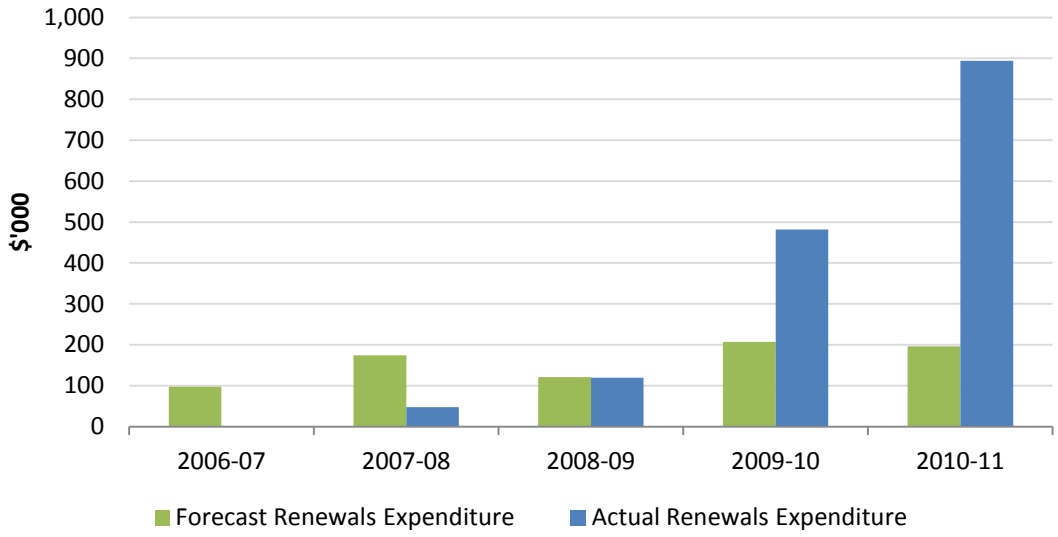
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011.
Source: SunWater (2011an).

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 Indec (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.

Halcrow was appointed to review the efficiency (and prudency 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

SunWater

SunWater indicated 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).

Other Stakeholders

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.

Item 2: Public Safety Strategy (Fencing Policy)

SunWater

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.

Other Stakeholders

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 prudency. However, Halcrow reports that, on the basis of the item's description, it is generally of a nature and order of cost that would be expected for irrigation system infrastructure.

Authority's Analysis

SunWater has advised that compliance with the *Workplace Health and Safety Act 1995* (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.

Conclusion

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

(a) one item was prudent and efficient and have been 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 has recommended that a 10% saving be applied to all non-sampled and sampled items for which there was insufficient information.

In total, the Authority recommends the expenditure be adjusted as shown in Table 4.2.

Table 4.2: Review of Selected Past Renewals Expenditure 2006-11

Item	*Date*	*SunWater*	*Authority's Findings*	*Recommended*
Sampled Items				
1. Intersafe program	2006-07	$145,845	Prudent and efficient	$145,845
2. Public Safety Strategy (Fencing Policy)	2008-09	$67,249	Prudent but only 50% efficient	$33,624
Subtotal		$213,094		$179,469
Non-Sampled Items				10% saving applied

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

4.4 Opening ARR Balance (at 1 July 2012)

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.

Based on the Authority's assessment of the prudency and efficiency of past renewals expenditure, and the proposed methodology for unbundling ARR balances, the recommended opening ARR balance for 1 July 2011 for Theodore Distribution System is $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.

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.

4.5 Forecast Renewals Expenditure

Planning Methodology

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

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

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

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's proposed renewals expenditure for the Theodore Distribution System is presented in Table 4.3 as provided in its NSP (submitted prior to the Government's announced interim prices for 2011-12).

Table 4.3: Forecast Renewals Expenditure 2011-16 ($'000)

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Gibber Gunyah Drainage	10	-	-	-	-
Gibber Gunyah Irrigation Distribution	-	-	-	-	14
Gibber Gunyah 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 Gunyah 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 Gunyah 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

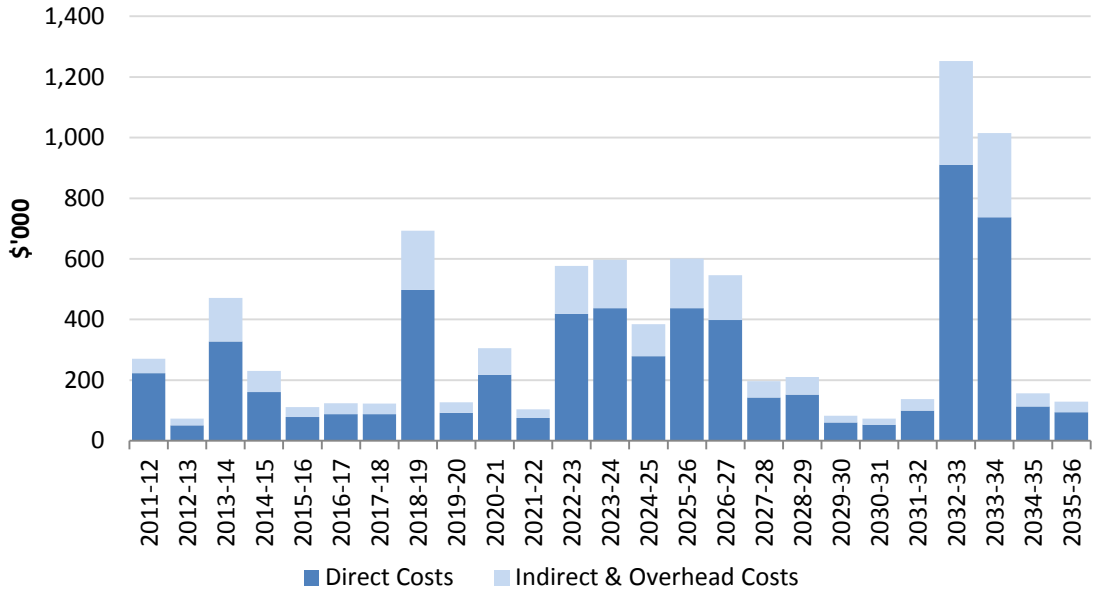
Stakeholder submissions that raised general concerns in relation to future renewals expenditure are provided in the Dawson Valley WSS Draft Report.

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).

Item Reviews

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

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

SunWater

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

Each pump at the Gibber Gunyah 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.

Other Stakeholders

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 consultation[2] 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

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.

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

SunWater

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

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.

Other Stakeholders

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.

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

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

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.

Item 3: LIT/1 - Gibber Gunyah Pump Station – Replace Submersible Pump, Flygt[3]

SunWater

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).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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.

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

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.

[3] ITT Flygt is a water and wastewater company.

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

SunWater

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.

Other Stakeholders

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

The Authority notes 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.

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

SunWater

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.

Other Stakeholders

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 a 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

The Authority notes 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.

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

SunWater

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).

Other Stakeholders

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

The Authority accepts 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).

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

SunWater

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.

Other Stakeholders

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

The Authority accepts 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.

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

SunWater

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).

Other Stakeholders

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

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).

Conclusion

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

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

(b) four items are prudent but insufficient information was provided to determine efficiency, requiring adjustment to forecast expenditure;

(c) one item it was not possible to conclude the item was prudent or efficient, requiring adjustment to forecast expenditure; and

(d) one item was unable to determine prudency and 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 has recommended that a 10% saving be applied to all non-sampled and sampled items for which there was insufficient information.

In total, the Authority recommends the direct renewals expenditure be adjusted as shown in Table 4.4.

Table 4.4: Review of Forecast (Direct) Renewals Expenditure 2011-36 ($'000)

Item	*Year*	*SunWater*	*Authority's Findings*	*Recommended*
Sampled Items				
1. Gibber Gunyah Pump Station -Replace Suction Pipe Pump Number 2	2013-14	106	Prudent but insufficient information to assess the efficiency	10% saving applied.
2. Gibber Gunyah Pump Station -Replace Suction Pipe Pump Number 3	2014-15	96	Prudent but insufficient information to assess the efficiency	10% saving applied.
3. Gibber Gunyah Pump Station -Replace Submersible Pump, Flygt	2018-19	258	Prudent but insufficient information to assess the efficiency	10% saving applied.
4. Theodore Drainage – Replace Structure	2032-33	201	Unable to determine prudency and insufficient information to assess the efficiency	10% saving applied.
5. Theodore Irrigation Distribution – 11DVAXX DVAXX Replace Siphon	2011-12	140	Unable to determine the prudency and efficiency	10% saving applied.
6. Theodore Pump Station – Refurbish control: replace PLC, components etc;	2013-14	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
8. Theodore Pump Station – Replace Concrete Structure	2025-26	146	Prudent but insufficient information to assess the efficiency	10% saving applied.
Non-Sampled Items				10% saving applied.

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

4.6 SunWater's Consultation with Customers

Submissions

SunWater

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

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

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

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

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

Other Stakeholders

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.

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.

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.

4.8 Calculating the Renewals Annuity

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

For the Theodore Distribution System the recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.5.

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.

Table 4.5: 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*
SunWater	140	91	99	108	144	4	6	27	44	45	45
Authority	-	-	-	-	-	-	174	200	219	217	213
High Priority	-	-	-	-	-	-	0	0	0	0	0
Medium Priority	-	-	-	-	-	-	174	200	219	216	213

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

(d) the most appropriate methodologies for assigning operating costs to service contracts[4] 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

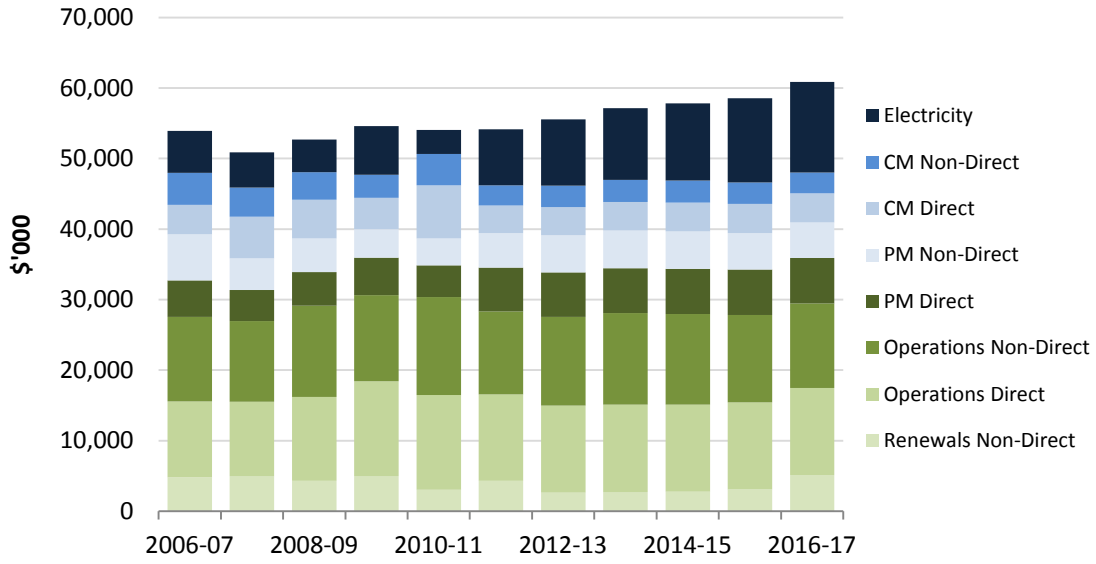
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

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.

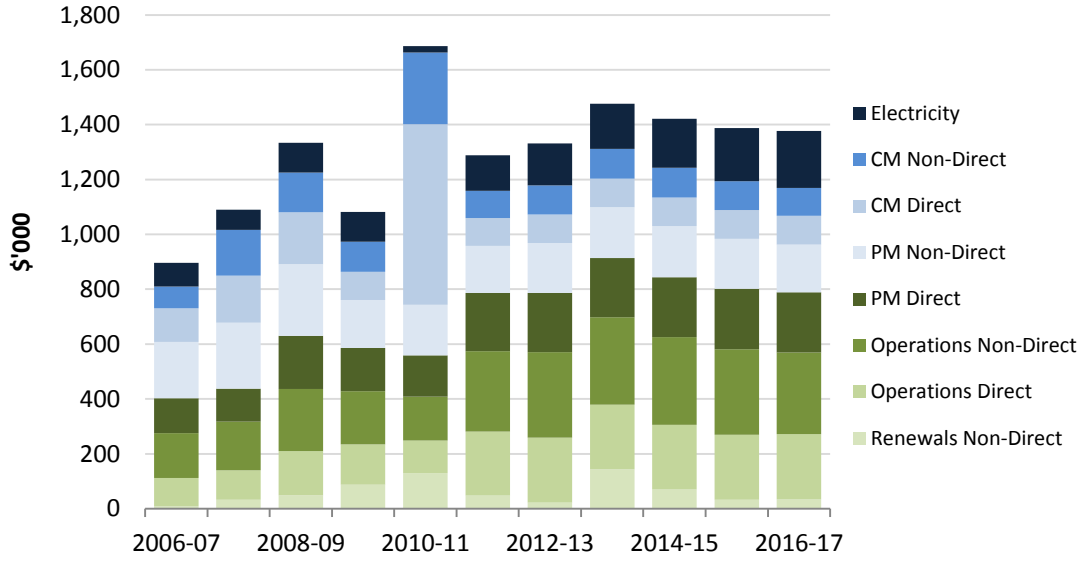
Figure 5.1: SunWater's Total Operating Costs (Real $'000) – All Service Contracts



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**	**1,476**	**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**	**1,476**	**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.

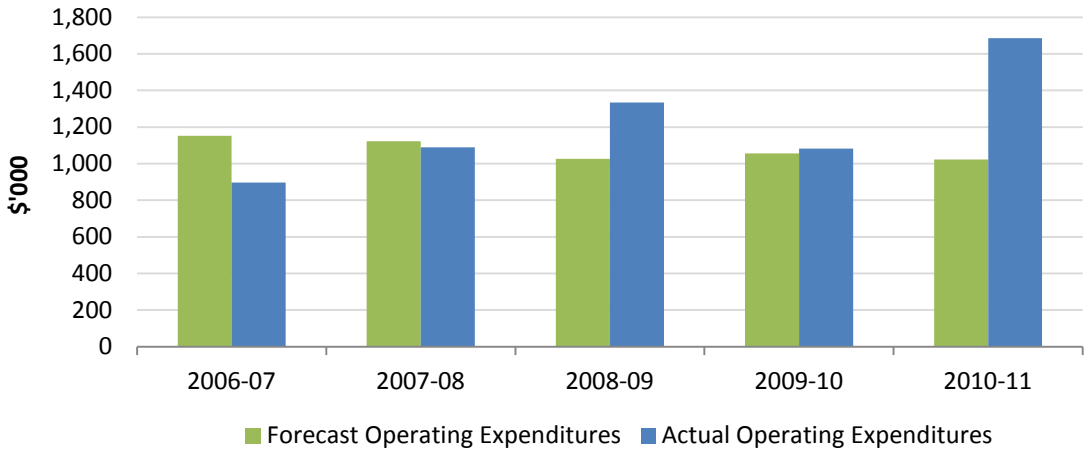
Authority's Analysis

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

In Volume 1, the Authority noted that during the beginning of the 2006-11 price paths, SunWater's total operating costs increased above those previously forecast. In response, in July 2009, SunWater instigated a program to reduce costs by $10 million (the Smarter Lighter Faster Initiative (SLFI)). SunWater submitted that these savings should be fully realised by 30 June 2012.

In 2011, the Authority engaged Indec to assess whether SunWater achieved the cost savings forecast in 2005-06. A comparison of forecast and actual operating costs for the Theodore Distribution System is shown in Figure 5.3 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 5.3: Forecast and Actual SunWater Operating Expenditure 2006-11 (Real $'000)



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

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

5.3 Non-Direct Costs

Introduction

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

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

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

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

Previous Review

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

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

Stakeholders

SunWater

As noted in Volume 1, SunWater submitted that it will incur $23.5 million in total non-direct costs in 2012-13 (Table 5.3). 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 prudency and efficiency, the Authority commissioned Deloitte Touche Tohmatsu (Deloitte) to review SunWater's non-direct costs. Deloitte carried out benchmarking to assess where potential efficiencies within SunWater may be achieved. Deloitte identified savings of $495,314 (in 2010-11 dollars) per annum in finance, human resources, information technology, and health, safety, environmental and quality areas (for the whole of SunWater).

Deloitte was unable to draw any definitive conclusions from an attempt to benchmark against Pioneer Valley Water Board (PVWater) and other Australian rural water service providers. Deloitte noted that PVWater's non-direct costs were higher than those of SunWater as a percentage of total operating costs – but that there are differences between PVWater and SunWater which made the comparison unreliable.[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 recommends that SunWater's forecast total non-direct operating costs should be reduced by a compounding 1.5% per annum (based on the Authority's view that non-labour productivity gains are achievable in line with labour productivity gains).

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

[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.

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 has therefore accepted SunWater's proposed DLC methodology with two exceptions recommended by Deloitte:

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

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

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

The Authority's recommended level of non-direct costs to be recovered from the Theodore Distribution System (from all customers) is set out in below. 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

Source: SunWater (2011ap).

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

5.4 Direct Costs

Introduction

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

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

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

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

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

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

Stakeholder Submissions

SunWater

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

SunWater's forecast direct operating expenditure by activity is set out in Table 5.5 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 prudency and efficiency of SunWater's proposed direct operating expenditure for this scheme.

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

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

(a) attain greater operating efficiency;

(b) achieve greater transparency;

(c) facilitate future price reviews; and

(d) promote more meaningful stakeholder engagement.

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

Item 1: Operations

Stakeholder Submissions

SunWater

SunWater stated 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.

Other Stakeholders

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

Authority's Analysis

Consultant's Review

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)

Sub-Activities	*2006-07*	*2007-08*	*2008-09*	*2009-10*
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.

Conclusion

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

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

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

Item 2: Preventive Maintenance

Stakeholder Submissions

SunWater

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

Preventive maintenance includes:

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

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

Consultant's Review

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)

Type	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
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)

Type	*2006-07*	*2007-08*	*2008-09*	*2009-10*
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 Gunyah 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)

Type	*2006-07*	*2007-08*	*2008-09*	*2009-10*
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 Gunyah 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.

Conclusion

In Volume 1, the Authority accepted the basis of Halcrow's adjustments to condition monitoring and services. Further, the Authority noted that most of its consultants considered that that there is scope for SunWater to achieve further efficiencies once the balance of preventive and corrective maintenance is optimised. The Authority considered that this

potential for efficiency could be addressed via the broad efficiency measures imposed on SunWater schemes (noted further below).

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

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

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

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

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

The Authority accepts Halcrow's recommendation 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.

Item 3: Corrective Maintenance

Stakeholder Submission

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.

Other Stakeholders

No other stakeholders commented on this item.

Authority's Analysis

Consultant's Review

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 involves. It would not be prudent to reduce the corrective maintenance costs at this time.

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

Conclusion

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

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

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

Item 4: Electricity

Stakeholder Submissions

SunWater

SunWater submitted that the electricity costs for the distribution system mostly relate to the operation of the Gibber Gunyah 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.

Other Stakeholders

No other stakeholders commented on this item.

Authority Analysis

Consultant's Review

Halcrow noted that electricity costs for the Theodore Distribution System relate to operation of the Theodore, Fork Farmers and Gibber Gunyah 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.

Conclusion

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

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

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

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

Item 5: Cost Escalation

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

[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.

Direct Labour

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

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

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

Direct Materials and Contractors

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

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

Other 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.

Conclusion

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. As noted in Volume 1, the Authority has applied a minimum 2.43% saving to direct operating costs (excluding electricity) in 2012-13. A further 0.75% saving arising from labour productivity is also applied, compounding annually.

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

	SunWater					*Authority*				
	2012-13	***2013-14***	***2014-15***	***2015-16***	***2016-17***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Operations	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**

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

5.5 Cost Allocation According to WAE Priority

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

Previous Review

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

Stakeholder Submissions

SunWater

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

Other Stakeholders

No other stakeholders commented on this item.

Authority's Analysis

In Volume 1, the Authority has summarised the views of its consultants and has recommended that, in relation to distribution systems fixed operating costs in 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).

5.6 Summary of Operating Costs

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

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operation					
Labour	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 Recommended Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
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).

6. DRAFT PRICES

6.1 Background

Ministerial Direction

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

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

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

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

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

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

The Ministerial Direction also requires that:

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

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

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

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

Previous Review

In the 2006-11 price paths, real price increases over the five years were capped at $10/ML for relevant schemes. 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.

6.3 Total Costs

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)

	Actual Costs						***Future Costs***				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
SunWater's Submitted Costs	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
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

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

6.4 Fixed and Variable Costs

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

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

6.5 Allocation of Costs According to WAE Priority

Fixed Costs

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

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Net Fixed Costs	1,139	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

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

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

Variable Costs

Variable costs are allocated to all users on the basis of water use. Volumetric tariffs are calculated based on SunWater's eight-year historical water usage data for all sectors. However, consistent with SunWater's assumed typical year for operating cost forecasts, the Authority has removed from the eight years of data, the three lowest water-use years for each service contract. Accordingly, to determine the volumetric charge, the Authority has assumed historical total water use for all sectors to be 75.8% of WAE.

6.6 Cost Reflective Prices

Cost-reflective prices reflect the Authority's estimates of prudent and efficient costs, recommended tariff structures, and the allocation of costs to different priority groups. As noted in Chapter 3 Pricing Framework, drainage and drainage diversion charges have been rolled forward in real terms.

Table 6.3: 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	11.36	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, 2011al) and Cost Reflective Prices (QCA, 2011).

Table 6.4: 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	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, 2011al) and Cost Reflective Prices (QCA, 2011).

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

	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 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, 2011al) and Calculated Prices (QCA, 2011).

Table 6.6: 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, 2011am) and Calculated Prices (QCA, 2011).

6.7 Queensland Government Pricing Policies

As noted above, the Queensland Government has directed that:

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

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

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

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

Authority's Analysis

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

The Authority has calculated these current revenues using the relevant 2010-11 prices, current irrigation WAE and the five-year average (irrigation only) water use during 2006-11 (Table 6.7). 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 6.7).

Table 6.7: Comparison of Current Prices and Cost-Reflective Prices (Real $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*					
Channel Bundled	51.94	26.44	15,941	10,677	1,110,372	1,665,438	-555,066

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

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.

After tariff rebalancing, the revenue-neutral bundled tariff for the Theodore Distribution System is a fixed charge of $54.21 per WAE and $21.76 per ML of usage, and the $2/ML real increase is applied to the fixed charge. At this rate of increase, 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 recommended prices to apply to the Theodore Distribution System for 2012-17 are outlined in Table 6.8, 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 6.9 together with actual termination fees since 2008-09. The Authority's recommended termination fees are higher than those charged by SunWater, as the Authority's approach:

(a) recovers 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) reflects 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) reflects the Authority's cost-reflective fixed charge and not the Authority's recommended fixed charge;

(d) results 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 recommended drainage and drainage diversion charges to apply to the Theodore Distribution System in 2012-17 are outlined in Table 6.10 and Table 6.11 together with actual drainage and drainage diversion charges since 2006-07.

Table 6.8: Draft Medium Priority Prices for Theodore Distribution System (Real $/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
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 6.9: Draft Termination Fees ($/ML)

	Actual Prices				*Recommended 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	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 6.10: Draft Drainage Charges ($/ha of land)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
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 6.11: Draft Drainage Diversion Charges ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
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).

6.9 Impact of Recommended Prices

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

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APPENDIX A: FUTURE RENEWALS LIST

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

Asset	*Year*	*Description*	*Value ($'000)*
Gibber Gunyah Drainage	2011-12	Replace Foot Bridge 2330M	10
Gibber Gunyah 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 Gunyah 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

Asset	*Year*	*Description*	*Value ($'000)*
		Refurbish pump	44
		Internal inspection and report*	11
		Refurbish Valve	11
	2034-35	Internal inspection and report*	11
Theodore Drainage	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

Asset	*Year*	*Description*	*Value ($'000)*
	2034-35	Replace Access Crossing 330M	27
	2035-36	Replace Access Crossing 1102M	32
Theodore Irrigation Distrib	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

Asset	*Year*	*Description*	*Value ($'000)*
		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
Theodore Pump Station	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 conjuction with pump)* - This project was brougth 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 Mscl Pipe (Pump No1)	63
		Replace 525D Mscl Pipe (Pump No2)	51
		Replace 525D Mscl Pipe (Pump No3)	50
		Replace Motor No1 415V	35
		Replace 610D Mscl Pipe (Pump No1)	34
		11DVA16 Refurbish Pump and Motor -PUN2 -	28
		Replace Unificate & Bend (All Pumps)	23
		Replace 356D Mscl Pipe (Pump No3)	23
		Replace 356D Mscl Pipe (Pump No2)	22
		Replace 525D Non Return Valve	17
		Refurbish Valve	11
	2024-25	Replace 900D Rc Pipe 20-180M	168
		Replace 900D Mscl Pipe 0-20M	110
		11DVA11 REFURBISH PUN3 MOTOR & PUMP	28
		Refurbish System - replace components - old system*	11

Asset	*Year*	*Description*	*Value ($'000)*
	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 conjuction with pump)* - This project was brougth 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