QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater
Irrigation Price Review: 2012-17

Volume 2

Lower Mary River
Water Supply Scheme

November 2011

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SUBMISSIONS

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

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

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

Confidentiality

In the interests of transparency and to promote informed discussion, the Authority would prefer submissions to be made publicly available wherever this is reasonable. However, if a person making a submission does not want that submission to be public, that person should claim confidentiality in respect of the document (or any part of the document). Claims for confidentiality should be clearly noted on the front page of the submission and the relevant sections of the submission should be marked as confidential, so that the remainder of the document can be made publicly available. It would also be appreciated if two copies of each version of these submissions (i.e. the complete version and existing 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

Direction Notice

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

Summary of Price Recommendations

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

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

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Lower Mary River (Mary Barrage)											
Fixed (Part A)	8.28	8.52	8.92	9.20	9.48	9.84	12.61	12.92	13.25	13.58	13.92
Volumetric (Part B)	8.83	9.09	9.52	9.82	10.12	10.48	1.94	1.98	2.03	2.09	2.14
Lower Mary River (Tinana Barrage & Teddington Weir)											
Fixed (Part A)	11.88	12.48	13.08	13.52	13.92	14.40	14.92	15.30	15.68	16.07	16.47
Volumetric (Part B)	8.48	8.93	9.36	9.65	9.94	10.30	8.57	8.78	9.00	9 23	9.46

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

Table 2: Draft Termination Fees ($/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***
Lower Mary River (Tinana Barrage & Teddington Weir) to Lower Mary River (Mary Barrage)											
Termination fee (inc.GST)	n.d.	n.d.	37.24	37.06	41.90	47.03	187.20	191.88	196.68	201.60	206.64

Note: n.d. - no data. Source: Actual Prices (SunWater, 2011al) 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 conjuction with Volume 1. Also relevant is the Draft Report on Lower Mary Distribution System.

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. LOWER MARY RIVER WATER SUPPLY SCHEME

1.1 Scheme Description

The Lower Mary Water Supply Scheme (WSS) is located near the town of Maryborough. The scheme has 177 bulk customers (of whom 79 take water in the Lower Mary Distribution System which draws its supply from the Lower Mary WSS). Medium and high priority water access entitlements (WAEs) are outlined in Table 1.1. The high priority WAEs are for urban water use (Fraser Coast Regional Council).

Table 1.1: Volume of Water Entitlements in the Lower Mary WSS

Customer Group	*Irrigation WAE (ML)*	*Total WAE (ML)*
Medium Priority	22,055	32,688
High Priority	-	1,809
Total	**22,055**	**34,497**

Source: SunWater (2011am).

1.2 Bulk Water Infrastructure

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

The full supply storage capacity and age of the key infrastructure is detailed in Table 1.2.

Table 1.2: Bulk Water Infrastructure in the Lower Mary WSS

Storage Infrastructure	*Capacity (ML)*	*Age (years)*
Mary Barrage	12,000	28
Tinana Barrage	4,700	31

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

The characteristics of the bulk water assets are:

(a) Mary River Barrage is a concrete-capped sheet-pile structure constructed in 1982 that stores up to 12,000 ML; and

(b) Tinana Barrage is also a concrete-capped sheet-pile structure built in 1980 that stores up to 4,700 ML.

Teddington Weir on Tinana Creek is owned by the Fraser Coast Regional Council. Figure 1.1 shows the location of the Lower Mary River WSS and key infrastructure.

Figure 1.1: Lower Mary River WSS Locality Map

Source: SunWater (2011)

1.3 Network Service Plans

The Lower Mary River WSS bulk water network service plan (NSP) presents SunWater's:

(a) existing service standards;

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

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

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

1.4 Consultation

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

(a) invited submissions from interested parties;

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

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

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

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

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

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

Following the 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.

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 Lower Mary Tier 2 group indicated that they were in favour of retaining the existing price cap regulatory arrangement. In the 2011-12 interim 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 risks of water availability (volume risk). The following scheme specific risks identified by SunWater in the NSP associated with the Lower Mary WSS:

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

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

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

(d) unplanned frequency of installing and operating pumps to access low storage levels;

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

(f) the availability of chemicals to control submerged weeds and algae in channels; and

(g) outbreak of noxious weeds.

Other Stakeholders

No other stakeholders have commented on this matter.

2.3 Authority's Analysis

The Authority has, in Volume 1, analysed the general nature of the risks confronting SunWater and recommended that an adjusted price cap apply to all WSS. 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) (f), and (g) above will be dealt with via an end-of-period adjustment, or price trigger or cost pass through upon application by SunWater or customers.

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

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

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

During the 2005-06 price negotiations, it was generally agreed to adopt a 70:30 ratio of fixed to variable costs.

For the Lower Mary (Tinana Barrage and Teddington Weir) tariff structure, the Part A fixed charge was set to recover 70% of revenue while the Part B variable charge provided 30% of revenue, with average water use of 60% of WAE.

However, for the Lower Mary (Mary Barrage) section, due to the prevailing Government policy that there should be no real price decreases, the Part A fixed charge was set to recover 66% of revenue with a Part B variable charge recovering 34% of revenue, with an average water usage assumption of 47%.

Stakeholder Submissions

SunWater

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

Other Stakeholders

During the second round of stakeholder consultations, irrigators noted that there will be a significant impact on the scheme if Part A is charged to irrigators regardless of whether they use their allocations or not.

Maryborough Sugar Factory (MSF) (2010) indicated their preference for greater consumption-based pricing (as per the Intergovernmental Agreement on a NWI 2004 directive) with prices being low most of the time and prices being high when capacity constraints apply. MSF noted that consumption-based pricing also provides incentives for water use efficiency (i.e. increased investment in more efficient irrigation systems) and water conservation by the irrigation customer.

MSF understood the requirement for cost-recovery and a certain level of revenue stability for SunWater for the Lower Mary WSS to continue to supply water for the Fraser Coast Region. However, MSF submitted that it is extremely important to identify relevant costs to establish the appropriate tariff structure and level (pricing) of tariffs.

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.

In response to the irrigators' submission regarding water reliability and Part A charges, the Authority notes that under current legislative and contractual arrangements (and the Ministerial

Direction), customers must bear all the costs of water supply incurred by SunWater, irrespective of whether it is made available or not (provided the costs of supply are efficient and prudent).

The Authority recognises that its proposed tariff structure will affect parties that rarely use their full WAEs. This is an outcome consistent with current legislative and contractual arrangements (and the Ministerial Direction). The transitioning to the new tariff structure is assessed further in Chapter 6 – Draft Prices.

The Authority noted in Volume 1 that a fixed charge provides incentives for customers to utilise all of their announced allocation. Water resource planning, resource operations plans (ROPs) and resource operations licences (ROLs) determined how much water is required for consumptive and environmental purposes and the tariff structure provides part of the cost signal influencing the use of water allocated for consumptive purposes. It is appropriate to use all water allocated for consumptive purposes if the benefits to irrigators exceed the associated costs.

In relation to MSF's proposal for charges to be adjusted when there are supply constraints, the Authority considers that drought tariffs or scarcity pricing could be relevant. However, the prescription of how these would operate within a set price path requires further detailed analysis. Temporary water trades offer some opportunity for irrigators to purchase (or sell) water during periods of water supply constraints.

In response to MSF's concerns regarding efficiency, it is noted that efficiency is promoted as:

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

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

(c) in respect of setting tariffs to meet environmental objectives, the Authority notes that the institutional arrangements in Queensland administered by DERM establish the quantum, and allocation of water, between environmental and consumptive use. The Authority has been required to establish prices to recover SunWater's efficient business costs – to seek to achieve other broader goals would require a clear specification of those goals to enable the Authority to respond with relevant pricing recommendations.

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

(d) where a volumetric charge is relatively low (or zero) and, as a result, fixed costs are high, then there are incentives for customers to utilise all of an announced allocation. However, the appropriate degree of utilisation of capacity allocated for consumption can

only be determined by irrigators (and other customers) in the light of market conditions for their products, in the knowledge of the cost of water delivered (including on-farm costs) and the understanding of the impact of changed water consumption on their farms.

The nature of costs relevant to establishing the fixed and variable components of the tariff structure is discussed further below. 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 Lower Mary WSS are identified in Table 3.1.

Table 3.1: Volume of Permanent and Temporary Water Traded (ML)

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Permanent	0	0	0	0	0	0	0	0
Temporary	3463	2035	2092	1659	5184	606	163	259

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

3.2 Termination (Exit) Fees

Introduction

SunWater usually charges termination fees when a distribution system WAE is permanently transferred to the river. However, in some bulk services, such as in the Lower Mary WSS, termination fees have applied when a WAE is transferred from a relatively higher cost bulk tariff group to a relatively lower cost bulk tariff group.

During the 2006-11 price path and in the 2011-12 interim year, termination fees were charged for sales from the Tinana Barrage or Teddington Weir tariff groups to the Mary Barrage tariff groups.

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 remaining customers. Further, it should provide an incentive to SunWater to reduce costs following a customer's departure.

The same rationale also applies to the transfer of WAEs between bulk tariff groups where there is a price difference. If WAEs exited a higher cost bulk tariff group to a lower cost bulk tariff group then SunWater would either not recover its fixed costs, or the higher cost tariff group would need to increase, if a termination fee did not apply. Consequently, the Authority recommends that a termination fee may apply between bulk tariff groups, if there is a difference between the tariffs.

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 recommended 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 13.7 times the unbundled Part C tariff for the distribution system (close to the ACCC's guidance of up to 11). This compares with SunWater's 2011-12 termination fees which are 9.4 times the 2011-12 distribution system fixed charge. These multiples all include GST. Table 3.2 identifies the past termination fees and the Authority's recommended termination fees.

Table 3.2: Lower Mary River (Tinana Barrage & Teddington Weir) to Lower Mary River (Mary Barrage) Termination Fees ($/ML)

	Actual				***Recommended***				
	2008-09	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Exit Fee (incl. GST)	37.24	37.06	41.90	47.03	187.20	191.88	196.68	201.60	206.64
Change from previous year		-0.5%	13.1%	12.2%	298.1%	2.5%	2.5%	2.5%	2.5%

Source: SunWater (2011).

3.3 Water Use Forecasts

Introduction

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

In the previous review, up to 25 years of historical data was collated for nominal WAEs, 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, impacts of trading and scheme specific issues (SunWater, 2006a).

For the Lower Mary River WSS, the 2006-11 Final Report assumed a water use forecast of 47% for the calculation of the Part B charges over the next five year price path period for the Lower Mary (Mary Barrage) section and 60% for the Lower Mary River (Tinana Barrage and Teddington Weir section of the scheme. Water usage for high and medium priority irrigation WAE was not separately identified (SunWater, 2006b).

Stakeholder Submissions

SunWater

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

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

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

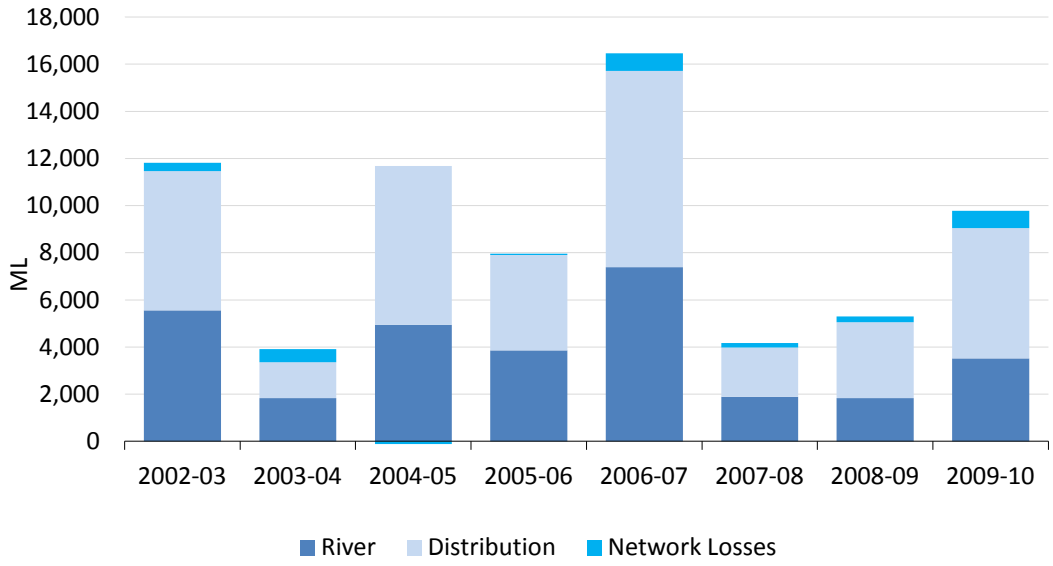
Based on the last eight years observations, SunWater has forecast use as follows:

(a) at a whole scheme level (all sectors) – an average of 26% of total WAEs; and

(b) for the irrigation sector only – 50% of irrigation WAEs. This is higher than the eight-year average of 38% due to the impact of past drought and a current increase in the commodity price of sugar.

Figure 3.1 shows historic usage information for the Lower Mary WSS submitted by SunWater (SunWater, 2011). The river category includes all irrigation and other usage sourced from the river. Distribution volumes refer to irrigation use only.

Figure 3.1: Water Usage for the Lower Mary WSS



Source: SunWater (2011).

Other Stakeholders

No other stakeholders have commented on this item.

Authority's Analysis

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

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 proposed in SunWater's NSPs.

The previous SunWater Irrigation Price Paths Final Report (SunWater, 2006b) nominated two tariff groups for the Lower Mary WSS:

(a) Tinana Barrage and Teddington Weir; and

(b) Mary Barrage.

Stakeholder Submissions

SunWater

In its NSP, SunWater does not propose to change the current tariff groups, other than unbundling of bulk water and distribution system charges.

Other Stakeholders

CANEGROWERS (2011a) noted that it is unclear which existing tariff groups are within the bulk and the distribution NSP respectively, citing an example that at the time of the last review there were 8,148ML of Medium Priority Water in the distribution system, 8,578ML in the Tinana Barrage and Teddington Weir systems and 5,358ML in the Lower Mary Barrage system (a total of 22,084ML). CANEGROWERS expressed concern regarding the lack of clarity where each of these allocations is designated within the NSPs between bulk and distribution and that both Tinana Barrage and the Teddington Weir tariff groups appear to be partially in the distribution system.

Authority's Analysis

The Authority has confirmed that the WAE data identified by CANEGROWERS corresponds to the irrigation customer nominal WAE data that was reported as being used in the previous price path.

The Authority has contrasted this information with the WAE data used for this review in Table 3.3. The WAE data used for the current review have been sourced from SunWater, using the latest available information as at October 2010.

Table 3.3: Comparison of WAE for Previous Review

	Previous Review			*Current Review*		
	Distribution	***Bulk***	***Total***	***Distribution***	***Bulk***	***Total***
Irrigation						
Medium Priority	nd	nd	nd	9,952	12,103	22,055
High Priority	nd	nd	nd	-	-	-
Subtotal	*8,148*	*13,936*	*22,084*	*9,952*	*12,103*	*22,055*
Other						
Medium Priority	nd	nd	nd	4,588*	6,045	10,633
High Priority	nd	nd	nd	324*	1,485	1,809
Subtotal	*nd*	*nd*	*nd*	*4,912*	*7.530*	*12,442*
Total	**nd**	**nd**	**nd**	**14,864**	**19,633**	**34,497**

*Note: * distribution losses. Nd: no data. Source: SunWater (2011am).*

The Authority notes that current irrigation WAEs of 22,055 ML is slightly lower than the 2006 total of 22,084 ML. The volume in the channel system has increased (from 8,148 ML to 9,952 ML) and the bulk volume has decreased (from 13,936 ML to 12,103 ML). The 12,103 ML for the bulk system is split between Tinana (7,586 ML) and Mary Barrage (4,517 ML).

The Authority also notes that current WAEs of 32,688 ML (medium priority) and 1,809 ML (high priority) include a SunWater allocation of 6,360 ML and distribution losses of 4,912 ML. The total current volume of 23,225 ML (excluding SunWater's allocation and distribution losses) also closely compares to the 2006 total of 22,084 ML.

The Authority asked SunWater to explain the apparent changes in WAEs from those used in the previous review, given there was no recorded trades in the Lower Mary from 2002-03 to 2009-10. SunWater was unable to explain the differences, but advised that the current NSP WAE data corresponds to the interim resource operations licence (ROL) and are consistent with its billing data base. SunWater noted that the data used in the previous review did not correspond to the 2005 IROL data.

The Authority proposes to adopt the current volumes as defined in the Lower Mary WSS and Lower Mary Distribution NSPs for medium and high priority allocations.

In accordance with the Direction, the Authority has adopted two tariff groups for the Lower Mary Water Supply Scheme:

(a) Lower Mary (Tinana Barrage and Teddington Weir); and

(b) Lower Mary (Mary Barrage).

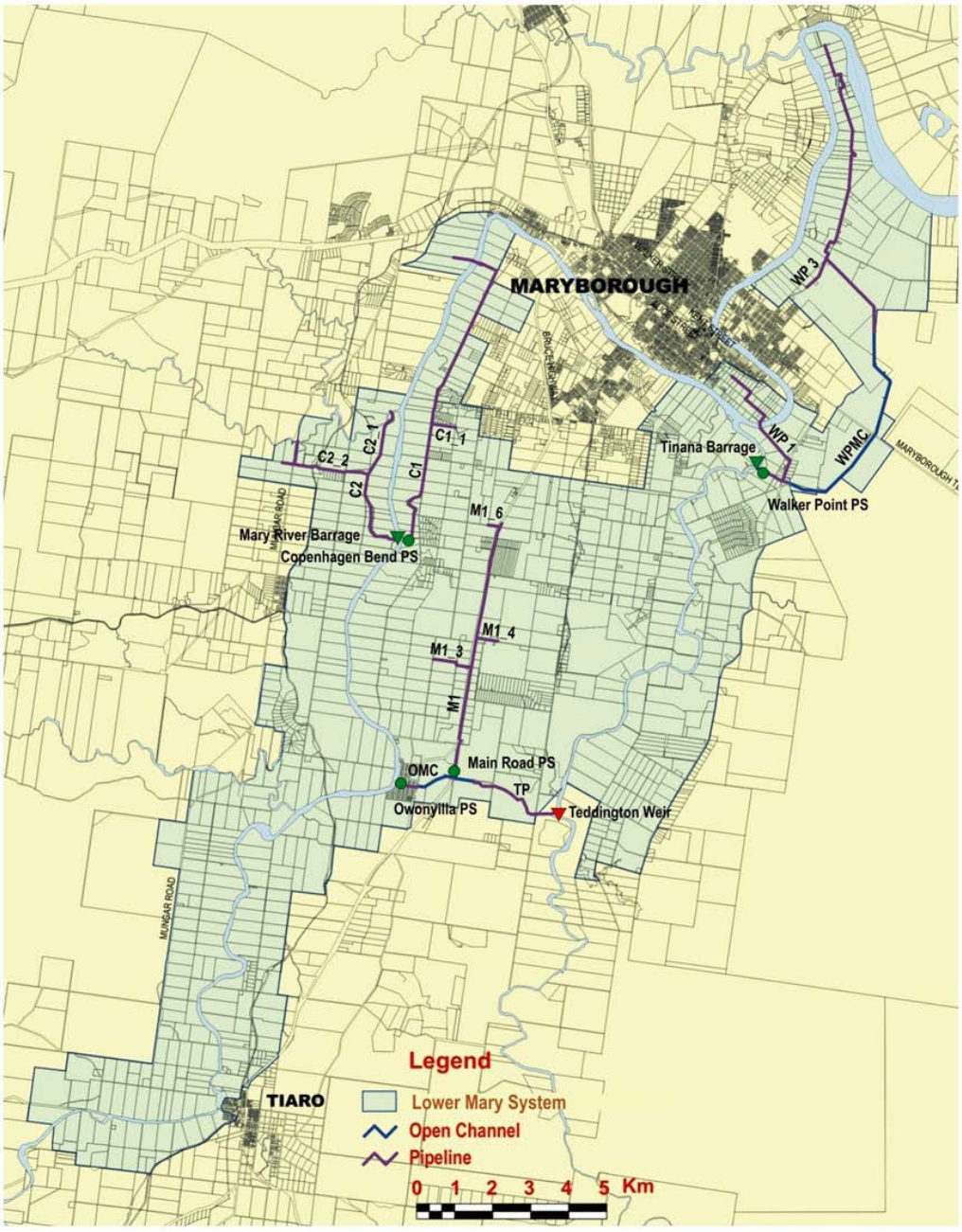
3.5 Owanyilla Pump Station and Main Channel

Submissions

SunWater

SunWater submitted that the Owanyilla Pump Station and Main Channel perform a bulk water function, as they supplement the Tinana Barrage and Teddington Weir. The Owanyilla Pump Station and Main Channel form part of the assets of the Lower Mary Distribution System, as shown in Figure 3.2.

Figure 3.2: Lower Mary Distribution System



Source: SunWater NSP for the Lower Mary Distribution System (2011).

SunWater submitted that hydrological modelling indicates 27% of water transported through the Owanyilla pump station and main channel relates to bulk water for the Tinana Barrage and Teddington Weir. SunWater further clarified that the 27% is based on the Integrated Quantity and Quality Model (IQQM) modelling of flows from the Mary to Tinana Creek consistent with likely ROP outcomes [the ROP was not finalised as at the date of SunWater's advice].

On this basis, SunWater submitted that 27% of the Owanyilla pump station and main channel costs should be included in the Tinana and Teddington Weir bulk water costs and deducted from the [distribution] cost base.

SunWater has not estimated costs separately for Tinana Barrage and Teddington Weir tariff group on the basis that all bulk assets make up the bulk WSS. SunWater noted that the water sharing rules aggregate the bulk water storages for making announced allocations.

Rather, SunWater estimated a cost transfer from distribution to bulk of $134,000 for 2011-12, including operating and electricity costs and a share of the renewals annuity for the pump station and main channel (see Table 3.4). However, SunWater did not include this cost transfer in its proposed cost base in the Lower Mary NSP (although it was separately identified as a proposed adjustment).

Table 3.4: Pump Station and Main Channel Cost Transfer (Real $'000)

	2011-12	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Pump station and Main Channel cost allocation	134	137	140	143	147

Source: SunWater (2011), Lower Mary River WSS NSP.

SunWater subsequently advised that the Owanyilla costs attributable to bulk water should be allocated between high and medium priority users on the basis of the headworks utilisation factor (HUF), with 58% of costs attributed to high priority users.

Other Stakeholders

CANEGROWERS (2011a) submitted that the use of channel infrastructure for the bulk system needs to be reviewed. CANEGROWERS submitted that if high priority customers or any deemed bulk customers are using any part of the channel infrastructure they should be paying the same channel charge as growers within the channel system for the proportion of their allocation which is typically delivered through the distribution system.

CANEGROWERS (2011a) noted that in the Lower Mary there is a pump station and channel which are used by high priority (bulk) customers and some customers with a different tariff not in the distribution system. These customers are only asked to pay part of the costs of running these (distribution) assets within the channel system rather than all channel costs. CANEGROWERS suggested that for the proportion of water typically used by these water users via the distribution system, these water users should pay the same channel price as all other customers.

CANEGROWERS (2011a) also suggested that tariff issues need to be resolved between three existing tariff groups and that high priority (bulk) customers using channels should pay the same channel charge as all the other customers. The use of the distribution system assets by two priority groups is also a concern for CANEGROWERS, suggesting that high priority (bulk)

users that use the distribution system should also pay the same [distribution] costs borne by Medium Priority [channel] users.

MSF (2010) indicated support for the continued application of postage stamp pricing to irrigation water, that is, with no differentiation within tariff groups and to maintain the same for each user irrespective of nominal allocation, water use or demand distribution. MSF commented that this is more consistent with capacity-to-pay of all users within the scheme. MSF stated its support for the differentiation between river and channel/pipeline tariffs (locational tariffs).

MSF (2011) questioned whether the Authority has verified SunWater's hydrological modelling to arrive at the figure of 27% above.

Authority's Analysis

As a general principle, the Authority considers that prices should reflect the costs of service provision. If a distribution asset is used by both bulk and distribution customers, it is appropriate that bulk customers be allocated a share of the costs commensurate with their relative usage of the asset.

As to whether the Owanyilla pump station and main channel is used by bulk customers in the Tinana Barrage and Teddington Weir tariff group, the Authority notes that:

(a) SunWater's NSPs and further advices are that the Owanyilla pump station and channel provide a bulk water function and this is supported by stakeholder submissions;

(b) under the Mary Basin ROP released on 11 September 2011, bulk water transfers from the Lower Mary River WSS to Teddington Weir are permitted and must occur when storages are at certain levels (section 113 sets out the rules for bulk water transfer). The bulk transfer volume must not exceed a given level in any water year; and

(c) in the previous price review, additional costs were allocated to the Tinana Barrage and Teddington Weir tariff group. The lower bound charge for the Tinana Barrage and Teddington Weir tariff group was $20.23/ML (in 2005-06 dollars) in total – 32% higher than the Mary Barrage lower bound charge of $15.31/ML. However as the actual Mary Barrage charge ($16.62/ML) was above lower bound it was maintained in real terms and the current actual price differential is 22%. Taking into account different average usage as forecast in 2005-06 and tariff structures, the revenue per ML was 40% higher for the Tinana/Teddington tariff group.

On the basis of the NSP, ROP and stakeholder comments, the Authority accepts that the Owanyilla pump station and channel provides a bulk water function.

To achieve cost-reflectivity, a portion of the relevant cost should be allocated to bulk water users in the Tinana Barrage/Teddington Weir tariff group.

The Authority has accepted the estimate of relative usage deriving from hydrological modelling using the IQQM program, which indicates 27% of water transported through the Owanyilla pump station and main channel relates to bulk water in the Tinana Barrage/Teddington Weir tariff group.

The IQQM is DERM's Integrated Quantity and Quality Modelling (IQQM) computer program that simulates daily stream flows, flow management, storages, releases, instream infrastructure, water diversions, water demands and other hydrologic events in the plan area. The IQQM is

used to assess consistency with the environmental flow and water security objectives of the Water Resource (Mary Basin) Plan.

A measure of relative use deriving from hydrological modelling is preferred to maintaining the current price differentials which may reflect a range of different approaches taken in the previous price path.

As the Mary Basin ROP has recently been finalised, the Authority considers that SunWater should review its estimate of water use deriving from the IQQM program that is consistent with the revised ROP and provide evidence of this review and its outcomes to the Authority as soon as possible following the release of the Draft Report. Pending this advice, the Authority is proposing to adopt the current estimate.

In summary and is response to MSF, the Authority proposes to adopt the 27% allocation of Owanyilla pump station and main channel costs to the Tinana Barrage/Teddington Weir bulk tariff group.

The Authority considers these costs should be allocated between high and medium priority bulk users in the same manner as other bulk costs (the following chapter addresses SunWater's proposed HUF methodology). The Authority has no evidence to suggest that only high priority bulk water users should pay for these costs (as proposed by CANEGROWERS).

For clarity, and in response to CANEGROWERS, the Authority does not consider that Tinana Barrage/Teddington Weir customers should be classified as distribution system customers. While such an approach would be consistent with current practice in Burdekin-Haughton (Giru Groundwater) and Mareeba-Dimbulah (Walsh River and supplemented streams), the Authority's preference is for cost-reflective pricing where possible. The Tinana Barrage/Teddington Weir customers meet a share of the cost of Owanyilla channel and pipeline reflecting their level of usage as proposed by SunWater.

In response to MSF, the separate river and channel segment tariffs will remain in place, as per the Direction Notice.

The termination fees for sales between the two bulk tariff groups are dealt with in the Lower Mary Distribution System Draft Report, so as to present a consolidated view on proposed termination fees.

3.6 Distribution Losses

Introduction

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

Stakeholders' Submissions

SunWater

SunWater (2011w) submitted that distribution loss WAEs should be assigned bulk water costs (and water charges) due to the need to store these entitlements using headworks like any other types of WAEs.

Other Stakeholders

During Round 2 consultation, stakeholders expressed concern that the bulk water charge on irrigators was also paying for SunWater's distribution losses. MSF (2011) also questioned why bulk customers are being charged distribution losses, since the water is from ponded barrage storages and the irrigators would pay the pumping electricity on losses on distribution systems. MSF further commented that SunWater will not have an incentive to reduce distribution losses.

Authority's Analysis

As discussed in more detail in Volume 1, the Authority does not consider that bulk customers should contribute to the costs of distribution losses. For clarity, the Authority's recommended bulk water charges do not recover the costs of distribution losses. The water planning framework prescribes loss WAE needed to deliver the distribution system service, and does not recognise any benefit or right to any excess loss WAE to river customers.

The Authority's proposed treatment of distribution losses is consistent with that of the preceding 2006-11 price path.

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 system.

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) an assessment of the efficiency (and prudency where not previously approved) of renewals expenditure incurred during the previous price path (i.e. 2006-11);

  (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 is therefore not practicable within the time available for the review, nor desirable given the potential costs involved, 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, 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.

Submissions

SunWater

SunWater submitted that the opening balance for the Lower Mary WSS (including the Lower Mary Distribution System) was negative $973,000.

Other Stakeholders

CANEGROWERS (2011a) submitted that the unbundling of the starting renewals balance for bulk versus distribution system is an interesting process. CANEGROWERS submitted that given that there may or may not be a relationship between spending from 2007-35 and spending from 2000-06, it is difficult to see why this process was chosen. CANEGROWERS noted that

this is especially the case when the renewals spend appears to be quite variable for some schemes and historical and future spending patterns may be very different between bulk and distribution system for some schemes.

CANEGROWERS noted that in schemes where historical and future spending are even, this methodology may be reasonable but for other schemes with much more variable spending the chosen methodology will not suffice.

Authority's Analysis

The Authority has accepted SunWater's unbundled opening ARR balance for Lower Mary WSS of negative $85,000.

The Authority's unbundled ARR balance reflects SunWater's proposed methodology for the separation of bulk and distribution system assets, which takes into account past and future renewals expenditure (see Volume 1).

In October 2011, Indec advised that it had uncovered actual renewals expenditure for 1999-00 to 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.

In response to stakeholder submissions, the Authority concluded in Volume 1 that SunWater's proposal to unbundle opening ARR balances using 24 years of forecast renewals expenditure, combined with the present value of actual expenditure data available for 2006-11 is defensible. The Authority notes that actual 2000-06 renewals expenditure data is not available.

The Authority has also recommended an enhanced consultative role as also outlined below.

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 Lower Mary WSS for 2006-11 (Table 4.1). 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. This expenditure included indirect and overhead costs which are subject to a separate review by the Authority (see Chapter 5). 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 (Actual) Renewals Expenditure 2006-11 (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Past (Actual) Renewals Expenditure	57	22	22	114	29

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

Other Stakeholders

During the first round of consultation (May 2010), irrigators submitted that some assets are inefficient and were designed to deliver a far greater level of service than was ever required.

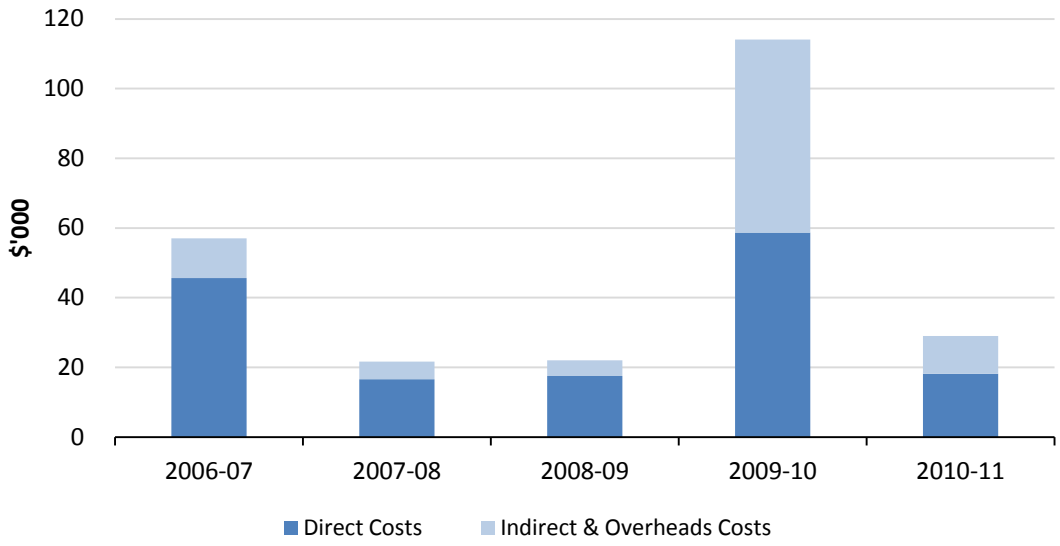
During the second round of stakeholder consultations (April 2011), irrigators noted that the scheme is overdesigned but the NSP has not explained how such overdesign is treated in the price review.

Authority's Analysis

Total Renewals Expenditure

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

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



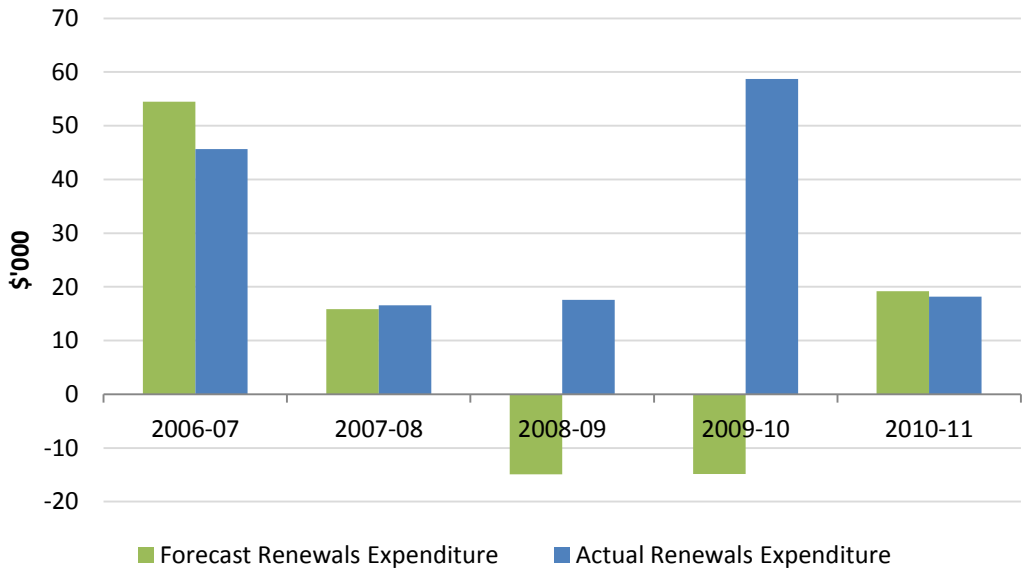
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011.
Source: SunWater (2011an)

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 Lower Mary WSS for 2006-11 is shown in Figure 4.2.

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



Note: Negative values have been queried with SunWater but no information was received as at the Draft Report. The Authority will resolve this issue for the Final Report. 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 $97,000 (direct costs) higher than forecast over the 2006-11 period.

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

In the absence of forecast renewals expenditure for 2006-11 from SunWater (as noted above), Aurecon sought to identify variances between annually budgeted (Board approved) and actual expenditure for certain projects. Aurecon noted a number of limitations in the general past renewals information provided by SunWater including:

(a) no indication of the Board approved budget for all projects in 2006-07;

(b) totals include indirect and overhead costs, and any proposed changes in allocation methods by the Authority will impact renewal activity costs;

(c) many projects run over several financial years, in which the Board approved budget only appeared in the first year, and not subsequently. Further there was difficulty linking activities across years, due to the nature of the database provided; and

(d) the summation of annual totals within the database did not equate with stated renewals expenditure in the NSP.[1]

[1] Aurecon stated that this discrepancy could be due to a significant amount of renewal projects being below $10,000 in value as it requested expenditure items valued at only $10,000 and above. Despite Aurecon's request, the Authority notes that the database provided by SunWater includes some projects below $10,000 but does not equate to the figures submitted in the NSP.

Aurecon found that of the four items provided by SunWater for 2009-10, only one item had a Board approved budget. For the remaining three items for 2009-10, all were below the Board approved budget. However, all three items were work-in-progress.

Aurecon identified a number of other renewals expenditure items over the 2006-11 period including:

(a) meter installations in 2006-07 at a cost of $50,205. For these items, Aurecon found there was no indication of a Board approved budget;

(b) metering investigation for Teddington Weir diversion pipeline in 2008-09 at a cost of $12,990; and

(c) replacement of joint filler and sealant at Tinana Barrage in 2009-10 at a cost of $14,937.

In addition to recommendations on the general level of past renewals information, Aurecon sought to assess the prudency and efficiency of selected past renewals items. Aurecon's analysis was on the basis of total costs including indirect costs and overheads. From a list of items, Aurecon selected two for closer review.

Item 1: Repair Protection Works and Concrete Crest and Replace Joint Filler and Sealer on Mary Barrage Crest (including indirect and overhead costs)

SunWater

This item of renewals expenditure was undertaken in 2009-10 at a cost of $65,989.

Aurecon's Review

Aurecon indicated that at its site inspection the barrage was overflowing, making it impossible to view the work completed. As such, Aurecon could not offer any observation regarding the work undertaken. However, Aurecon noted that a condition audit recommended the need for the works (validating the timing of the work).

Authority's Analysis

The Authority notes that Aurecon had insufficient information to verify the prudency and efficiency of this renewals expenditure.

Item 2: Install Marker Buoys near the Mary Barrage (including indirect and overhead cost)

SunWater

This item was undertaken in 2008-09 at a cost of $17,084.

Aurecon's Review

Aurecon indicated that there is a mandatory requirement for the marker buoys at the barrage location. The installation of the marker buoys was undertaken by external contactors.

Aurecon's site visit (2011) revealed that two of the recently installed marker buoys were missing as a result of the recent floods. The regional SunWater manager indicated that the cost of replacing the missing marker bouys will initially be sought via the Insurance Policy, and as at this time, had no indication if the claim for flood damage was successful.

Aurecon observed that the installation of the marker buoys was prudent, and the total cost of $17,084 as efficient when examining the cost for installation of marker buoys at other water impoundments.

Authority's Analysis

On the basis of Aurecon's advice, the Authority considers this renewals expenditure to be prudent and efficient. Any future revenue from the Insurance Policy should offset this cost.

Conclusion

In summary, two items for the Lower Mary River WSS were sampled:

(a) there was insufficient information to verify the expenditure to Repair Protection Works and Concrete Crest and Replace Joint Filler and Sealer on Mary Barrage Crest; and

(b) the installation of Marker Buoys near the Mary Barrage was found to be prudent and efficient.

As noted in Volume 1, the Authority has recommended that a 10% cost reduction be applied to all non-sampled and sampled items for which there was insufficient information.

Table 4.2: Review of Selected Past Renewals Expenditure 2006-11 (Real $'000)

Item	*Date*	*SunWater*	*Authority's Findings*	*Recommended*
Sampled Items				
Repair protection works and concrete crest, Mary Barrage	2009-10	66	Insufficient Information	10% saving applied
Marker Buoys, Mary Barrage	2008-09	17	Prudent and efficient	17
Non-Sampled Items				10% savings applied

Note: SunWater (2011), Aurecon (2011) and QCA (2011)

In response to stakeholder comments that the scheme is overdesigned, the Authority notes that under the Ministerial Direction, optimisation of the existing asset base is beyond the scope of the Authority's review. The Authority has reviewed selected past assets for prudency and efficiency as noted above.

4.4 Opening ARR Balance (at 1 July 2012)

Stakeholder Submissions

SunWater

SunWater indicated that the renewals opening ARR balance for 1 July 2011 was $219,000 for the Lower Mary River WSS. This estimate reflects the most recent information provided by SunWater to the Authority in September 2011 and may differ from the NSP.

Other Stakeholders

No other stakeholders have commented on this item.

Authority's Analysis

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 Lower Mary River is $235,000.

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 $174,000, 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 projects expected to occur over the Authority's recommended planning period (20 years), with a material project being defined as one which accounts for 5% 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 projects 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 Lower Mary River WSS 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 (Real $'000)

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Mary Barrage	21	-	14	8	-
Tinana Barrage	59	12	15	15	-
Total	**80**	**12**	**29**	**23**	**0**

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

The major item is Tinana Barrage rock protection at an estimated cost of- $59,000 in 2011-12.

The major expense items from 2016-36 include:

(a) replacement of buoys at Mary Barrage at an estimated cost of $26,000 in 2023-24; and

(b) replacement of control gate at Tinana Barrage at an estimated cost of $12,000 in 2024-25.

SunWater's forecast renewal expenditure items greater than $10,000 in value, for the years 2010-12 to 2034-36 in 2010-11 dollar terms are provided in **Appendix A.**

Other Stakeholders

Irrigators at the second round of stakeholder consultations commented that SunWater's renewal expenditures are not detailed enough to foster greater understanding by the irrigators about the nature of these costs.

Similarly, CANEGROWERS (2011a) commented that a reconfiguration of the scheme is required to ensure that the renewals program reflects the most efficient cost of delivering water demanded in the scheme. CANEGROWERS pointed out that details about cost items are insufficient for irrigators to provide comments. With insufficient time at the second round of stakeholder consultations to discuss these in detail, the CANEGROWERS suggested that more detailed discussions are required to resolve concerns, with a focus on the scheme overdesign issue.

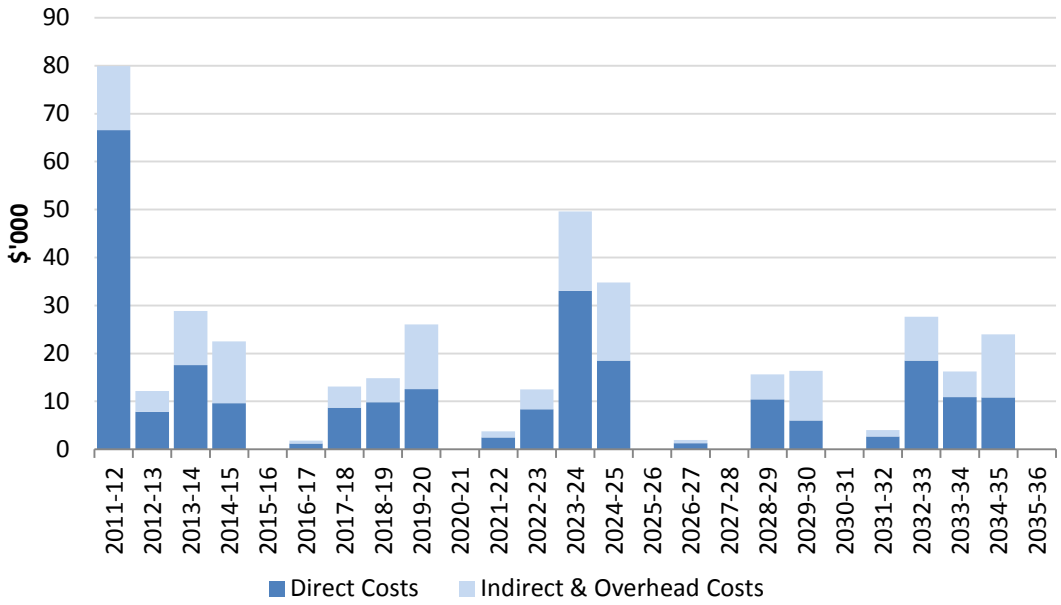
CANEGROWERS also pointed out that the costs as well as the type of works provided in the NSP may not be efficient for the Lower Mary scheme since these costs are more reflective of costs appropriate for larger irrigation schemes and industrial schemes.

Authority's Analysis

Total Costs

SunWater's proposed renewals expenditure for 2011-36 for the Lower Mary River WSS is shown in Figure 4.3. This reflects the most recent renewals information provided by SunWater to the Authority in September 2011, and differs from the NSP. Where possible, 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 projects is reviewed in Chapter 5.

Figure 4.3: Forecast Renewals Expenditure 2012-36



Source: SunWater (2011am).

Item Review

As for past renewals expenditure, Aurecon reviewed the prudency and efficiency of a sample of items. The Authority subsequently referred two items to SKM for review. Aurecon and SKM assessed the efficiency of the total costs of renewals items, that is, including indirect and overhead costs.

Item 1: Tinana Barrage – Concrete Skin over Rock Protection Works (including indirect and overhead cost)

SunWater

The renewals expenditure item is for the placement of a concrete skin over rock protection in 2011-12 at a total forecast cost as defined in SunWater's NSP of $59,000.

The ground level of the rock bed on the left hand side of Tinana Barrage has been observed to be dropping/sinking in height. The rock bed has also suffered loss of rock over the years and it is suspected that under-mining has begun in the rock bed. The proposed solution has been developed to rectify the effects from under-mining.

SunWater advised that the asset was initially installed in 1982 as part of the original construction of the distribution system.

Aurecon's Review

Aurecon advised that it undertook a site inspection and review of the proposed Skin Rock protection at the Tinana barrage.

Aurecon observed that some erosion had occurred due to recent floods. Aurecon also noticed that substantial bank repair works had been undertaken in recent years, but an examination of the database provided by SunWater did not identify recent expenditures for 2006-07 to 2010-11 (under asset renewals expenditure).

Aurecon also noted that:

(a) condition assessment during the 2010 dam safety inspection identified the need to pour concrete over the rock protection at Tinana Barrage to stabilise the existing rocks; and

(b) SunWater was undertaking a risk-averse approach, investing in preventive measures such as extending the rock protection bank at the barrage, rather than potentially incurring significant repairs work that may occur from future significant flood events.

Aurecon considered that the proposed work program and adoption of a risk averse approach appeared justified (prudent) given that there was evidence of minor damage resulting from the recent flooding.

Aurecon advised that a detailed costing for the works was not completed, and as such Aurecon was unable to evaluate the effectiveness of the proposed expenditure. However, based on other works which may incur up to 50% in indirect and overhead costs, and the scope of concreting required both upstream and downstream of the existing concreted pad area identified during the site inspection, Aurecon viewed the costs for the item as efficient.

Aurecon noted that a significant component of the budget is for the engagement of external contractors for the actual works, but also significant internal indirect and overhead costs are incorporated into the costing.

Based on limited costing information Aurecon assessed the expenditure as prudent and efficient.

SKM's Review

SKM reviewed the total cost for the item, based on SunWater's SAP Works Management System (WMS) which identified a cost of $56,600 for the relevant elements of the capital expenditure.[2]

SKM noted that SunWater has allocated a standard run to failure asset life of 80 years and a refurbishment period of 27 years. SKM considered both the run to failure asset life and refurbishment period to be appropriate for this asset type.

(a) Available Information

SKM reviewed SunWater's SAP-WMS, and asset condition and risk assessment policy and procedures.

[2] The Authority notes that the total cost (including direct and indirect) submitted by SunWater for this renewals item ($59,000) does not equate to the amount reviewed by SKM ($56,600). As discussed in Volume 1, this is because SKM's review was based on SunWater's Systems, Applications and Products (SAP) system, which uses a simplified method for calculating indirect and overhead costs than SunWater's financial system, which formed the basis of SunWater's NSPs and submissions to the Authority. However, where direct costs were reviewed by SKM this aligns with the direct costs submitted to the Authority.

Table 4.4: Documentation Reviewed Specific to the Tinana Barrage Refurbishment

Doc No.	*Document Name*	*Document Title*	*Date*
1106723	1106723-v1-6_ Tinana_Barrage_Concrete_Sk in_over_rock_protection	Lower Mary Water Supply – Tinana Barrage – Place Concrete Skin over Rock Protection (MVA-TCK-BARR-PWKS)	24th August 2011
1113998	PRODUCTION-#1113998- v1-Options_Analysis_for_Tinan_Barrage_-_Downstream_ Left_Bank Rock_Bed	Options Analysis for Tinana Barrage Downstream Left Bank Rock Bed	14th November 2008

Source: SKM (2011)

(b) Prudency Review

SKM considered that SunWater has largely followed the policies and procedures that it has in place to determine renewals item replacement/refurbishment dates and costs for such.

SKM indicated that a desk top risk assessment was undertaken in September 2005. The assessed risk was 'Erosion due to flood may lead to storage undermining and failure' and the assessed risk was low. The risk was re-reviewed on 29 October 2009, and increased to a High with the following comment: 'Risk is increased due to current condition of protection works/repair before next flood event'.

Risk is determined by two factors; consequence and likelihood of occurrence. Whilst it is expected that the likelihood (or probability) of failure will be influenced by the condition of the asset, it could be argued that the consequences of the failure will remain unchanged. SKM noted that the probability has been increased from 'Rare' (3) to 'Unlikely' (20), as expected. Whilst a change to the consequence score is not expected as a result of the condition assessment, it may have occurred due to an improved interpretation of the risk scenario.

SKM recommended that the risk assessment is reviewed following the upgrade works, to ensure that it adequately reflects the probability of failure and does not unnecessarily result in reduced refurbishment periods.

Based on SunWater's processes, application of a risk based asset life of 50 years and a refurbishment period of 17 years was considered appropriate.

Three condition assessments have been undertaken by SunWater; the first occurred in October 2004, the second in May 2008 and the latest in June 2010. This is within SunWater's condition assessment frequency of every 10 years.

These assessments show the condition deteriorating from a score of two in 2004, to a score of four in 2008 (with recorded scores of three and four). The associated comment states that: "Wire gabions L/H bank upstream and downstream damaged through fire and silt coverage. Rockwork has moved D/S off protection works, about 50m from L/H bank." SKM noted that the assessment categories did change over this period.

The condition assessments show the condition improving from an overall score of four in 2008 to an overall score of two in 2010. However, the associated comment remains generally identical and a maximum condition score of 4 remains for the deterioration of the wire/gabion mattresses, which is the key item under consideration in this review. Whilst the improvements in condition are not typically expected, SKM noted that the scoring process contains a certain amount of subjectivity and could reflect the conditions on site during the inspection. SKM

agreed that the condition assessment supports works to the existing rock bed on the left hand bank.

SunWater's Asset Refurbishment Planning Guidelines state that high risk assets should not be permitted to deteriorate beyond condition four. This supports the inclusion of the expenditure within 2011-12.

Options Evaluation

Four options have been identified within Options Analysis for Tinana Barrage Downstream Left Bank Rock Bed (SunWater 2008), as follows:

(a) option one consists of adding a concrete skin over the existing rock bed section of protective works;

(b) option two consists of filling any voids with concrete and using a crane positioned on the bank of the barrage to place rocks on the downstream rock bed to improve the integrity of the structure;

(c) option three consists of filling any voids with concrete and using bobcats to place rocks on the downstream rock bed to improve the integrity of the structure. The bobcats would drive out along the crest of the barrage to put the rocks into place; and

(d) option four – do nothing. It is considered that deciding to do nothing regarding the possible under-mining would not be beneficial due to the loss of revenue, customer requirements and public perception of SunWater in the event of a failure of the barrage.

Option 1 is SunWater's recommended option. SunWater stated that applying a concrete skin over the existing rock protection will eradicate any further undermining that is expected to recur. The option of filling the voids with concrete does not remove the source of the original erosion – it merely fills the existing voids.

The key driver for the expenditure is to prevent undermining, which is the suspected cause of the ground level dropping. The above solutions are proposed to prevent suspected undermining in the rock bed. In this case, SKM indicated that the undermining process is when the flowing water goes through the voids and lift the rocks and sand. It may be that ground level of the rock bed on the left hand side of Tinana Barrage is dropping or sinking in height as the soil slope is not stable itself. SKM recommended that the underlying cause of the dropping of the soil slope is investigated prior to adoption of the preferred solution. SunWater advised SKM that options will be investigated during the following design stages.

SKM undertook a high level review of the four options. In relation to Option 1, SKM recommended that several issues are investigated prior to the implementation of this option. Whilst the placement of a concrete skin would stop water getting into the existing rock bed section and lifting the slabs, if the skin cracks due to the on-going settlement of the bank, it would not survive for the proposed 40 years.

If the water level drops suddenly after a flood, the concrete skin would prevent the relief of pressure from behind the skin and the skin would fall into the creek possibly with the slope material. In order to avoid this scenario, a drainage system would be required.

Based on conversations with SunWater, SKM noted that the standard design would be applied, which include no fines foundation drains. In addition, the concrete skin is designed to crack, and therefore no reinforcing steel is proposed.

Whilst design of a proposed solution is outside of the scope of this review, SKM recommended that alternative solutions are considered and documented, including filling the voids with graded sand/gravel/bidim and then placing a properly-designed rock screen and/or geotextile suitable for the velocities expected. If rocks cannot resist the hydrodynamic forces, it may be that a properly designed slab, as adopted for spillway/tilling basins, is required.

Timing of Renewal/Refurbishment

SKM noted that the condition score is consistent with the condition of an asset nearing the end of its refurbishment period and, as such, considered the timing of this refurbishment to be prudent.

Conclusion on Prudency Evaluation

SKM recognised that there are currently problems with the ground level dropping on the left hand side of Tinana Barrage. The suspected cause of this is undermining, but this does not appear to have been confirmed by investigation. The solutions are proposed to prevent suspected undermining in the rock bed, but may not address any underlying issues associated with slope stability.

SKM accepted the need for an inclusion of a renewals item to resolve the current problem, but recommended that options are further investigated to ensure they are fit for purpose. SKM further recommended that the justification for the expenditure is strengthened through further description of the consequences of not completing the works.

(c) Efficiency Evaluation

The item costs are based on the Options Analysis for Tinana Barrage Downstream Left Bank Rock Bed Report (SunWater, 2008). This options report refers to the Kolan Barrage maintenance project within 2006. SKM reviewed SunWater's SAP-WMS and identified actual cost data for the Kolan Barrage Rockfill Maintenance undertaken in July 2006 for $17,779 (order 5063610). This supported the cost estimates for options two and three. No comparable costs are provided for the preferred option, the application of a concrete skin.

Table 4.5 presents SunWater's cost estimate for the installation of the skin rock protection to the downstream left bank of Tinana Barrage:

Table 4.5: Refurbishment Cost

Cost Item	***SunWater Projected Cost***
Internal Labour Transfer	1,920
Internal Overhead Transfer	4,740
Materials	50,000
Service Charges	0
Total	**56,660**

Source: SKM (2011).

In reviewing the efficiency of the proposed solution, SKM considered that the proposed costs are low compared to market rates and are therefore efficient.

Authority's Analysis

The Authority notes that the total cost (including direct and indirect) submitted by SunWater for this renewals item ($59,000) does not equate to the amount reviewed by SKM ($56,600). This is because SKM's review was based on SunWater's SAP system, which uses a simplified method for calculating indirect and overhead costs than SunWater's financial system, which formed the basis of SunWater's NSPs and submissions to the Authority. However, where direct costs were reviewed by SKM this aligns with the direct costs submitted to the Authority.

The Authority recommends that the renewals expenditure proposed by SunWater for the Tinana Barrage concrete skin be included, on the basis that there is a need for a response to the problems identified with Tinana Barrage by 2012, and that the forecast costs are judged to be efficient.

While this is a small cost item, it is significant in a small scheme such as Lower Mary WSS. Accordingly, the Authority notes SKM's comments that more work be done on options to ensure that the best option is selected.

Item 2: Refurbishment and Regular Maintenance of concrete skin over Mary Barrage protection works (including indirect and overhead cost)

SunWater

In the NSP, SunWater proposed $15,000 of expenditure in 2013-14 and every five years thereafter to refurbish the concrete skin on the Mary Barrage.

SKM's Review

As part of its review of Item 1, SKM noted that in 2014, it is planned to undertake refurbishment/ regular maintenance of the concrete skin over the barrage protection works, and that this is to be confirmed with condition assessment in 2012-13. Given that the intended works are due to be installed in 2011-12, based on SunWater's standard procedures at least a 17-year refurbishment period is expected.

SKM considered that regular maintenance within two years of installation appears excessive and is not prudent. It is recommended that the timing of future refurbishment works is calculated based on the risk of failure of the barrage with the updated assets.

Following discussions with SunWater, SKM advised that this item has been removed from the live SAP system.

Authority's Analysis

Following SKM's review and as agreed by SunWater, the Authority therefore recommends that this item be deleted from forecast renewals expenditure.

Item 3: Five-yearly Inspection – Mary Barrage and Tinana Barrage

SunWater

SunWater proposed to undertake a five-yearly inspection of Mary Barrage, commencing in 2014-15.

Aurecon's Review

Aurecon's review of dam inspection costs across a number of schemes found that the proposed five-year dam safety inspections for Mary River Barrage and Tinana Barrage were prudent and efficient.

Authority Analysis

The Authority accepts that this expenditure is prudent and efficient.

Conclusion

In summary, three items for the Lower Mary River WSS were sampled. Of these:

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

(b) one item was removed from SunWater's proposed renewals 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 that renewals expenditure be adjusted as per Table 4.6.

Table 4.6: Review of Forecast Renewals Expenditure 2012-36 ($'000)

Item	*Year*	*SunWater ($)*	*Authority's Findings*	*Recommended ($)*
Sampled Items				
1. Tinana Barrage – Concrete Skin over Rock Protection Works	2011-12	59	Prudent and efficient	59
2. Refurbishment and Regular Maintenance of concrete skin over Mary Barrage protection works	2013-14, 2018-19, 2023-24, 2028-29, 2033-34	15, 15, 15, 15, 15	Not prudent or efficient	0
3. 5-yearly inspection of Mary Barrage and Tinana Barrage	2014-15, 2019-20, 2024-25, 2029-30, 2034-35	8, 8, 8, 8, 8	Prudent and efficient	8, 8, 8, 8, 8
Non-Sampled Items				10% savings applied

Source: SunWater (2011), Aurecon (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

MSF (2011) submitted that if SunWater wants to continue with a renewals annuity regime then the asset management plan (AMP) needs to be available to customer scrutiny so that there is consultation on renewals expenditure. The AMP should have transparency for economic efficiency and investment decisions. Currently, MSF has not seen an AMP for the Lower Mary River WSS for at least the last five years.

MSF noted that the IAC meetings are very irregular, if held at all. One has not been held for at least two years and even when a meeting was held, it did not address the issues of operation matters, asset management plans, maintenance and improvements to the schemes, and the management of the renewals annuity.

MSF submitted that SunWater's claim about consultations it held with IAC was far from the actual truth.

MSF further submitted that the NSP should be consulted with customers so that the quality of service and the standard of upgrades customers are prepared to fund are agreed upon. This should include the longer term forecasts of renewals expenditure that are critical to annuity calculation and that impact on water pricing.

Authority's Analysis

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

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

4.7 Allocation of Headworks Renewals Costs According to WAE Priority

Previous Review

For the 2006-11 price path, the renewals costs for the Lower Mary River bulk water infrastructure were apportioned between priority groups using pricing conversion factors. The conversion to medium priority WAE was determined by the Mary River Basin ROP conversion factor (1.5:1); that is, one ML of high priority WAE was considered equivalent to 1.5 ML of medium priority WAE.

Stakeholder Submissions

SunWater

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

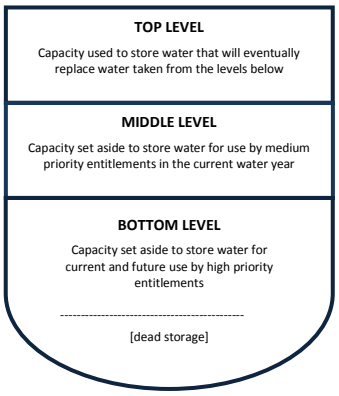
SunWater submitted that, in general, the HUF allocates a greater proportion of capital costs per ML of high priority WAEs. Specifically, the HUF methodology takes into account water sharing rules, Critical Water Sharing Arrangements (CWSAs) and other operational requirements that typically give high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

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

Step 1: Identify the water entitlement groupings for each scheme, as listed in DERM's Water Entitlement Register, and establish which groups are to be considered as high priority (HP) and medium priority (MP) for the purposes of the HUFs calculation[3].

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

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



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

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

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

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

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

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

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

The parameters used for determining the HUFs for the Lower Mary WSS are summarised in Table 4.7. The HUFs for this scheme (SunWater 2010d) are 42% for medium priority and 58% for high priority.

Table 4.7: Application of HUFs Methodology

STEP 1: Water Entitlement Groups (DERM's Water Allocation Register)

Nominal Group	(ML)	HUF Group	(ML)
Medium Priority	32,688	MP_A	32,688
High Priority	1,809	HP_A	1,809

STEP 2: ROP Conversion Factor Adjustment

Conversion Factor: ROP_{CF}	N/A
Maximum volume that can be converted to HP: $HP_A max$	1,809
Corresponding volume of MP: $MP_A min = MP_A-(HP_A max-HP_A)*ROP_{CF}$	32,688

STEP 3: Water Sharing Rules & Operational Requirements

Water Sharing Rules	
Volume below which MP not available: $MP_0 AA$	12,193
Volume above which max. MP available: $MP_{100} AA$	16,700
CWSAs and other operational requirements	
Likely increase in volume effectively reserved for HP: MP_0	12,193
Likely increase in min. storage before maximum MP available: MP_{100}	16,700
Key Dam Level Measures	
Full Supply Level: FSV_{hwks}	16,700
Dead Storage Level: DSL_{hwks}	7,065

STEP 4: Hydrologic performance of headworks storage

Storage Layer	Storage Capacity (ML)	Prob. of Utilisation	Utilised Capacity (ML)
Top: $\max\{(FSV_{hwks}-MP_{100}),0\}$*	$MP_2 = 0$; $HP_2 = 0$	0%	$MP_{2u} = 0$; $HP_{2u} = 0$
Middle: $\min\{(MP_{100}-MP_0),(FSV_{hwks}-MP_0)\}$	$MP_1 = 4,507$	80%	$MP_{1u} = 3,596$
Bottom: $MP_0 - DSV_{hwks}$	$HP_1 = 5,128$	90%	$HP_{1u} = 4,916$

STEP 5: Calculation of HUFs for each Water Entitlement Group

Formula	HUF Group	Nominal Group
MP_A: $(MP_{1u}+MP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ $= (3,596+0) / (3,596+4,916+0+0)$	$HUF_{mp} = 42\%$	Medium Priority = 42%
HP_A: $(HP_{1u}+HP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ $= (+4,916+0) / (3,596+4,916+0+0)$	$HUF_{hp} = 58\%$	High Priority = 58%

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

Other Stakeholders

CANEGROWERS (2011a) submitted that there is a need for conversion factors applicable to both operational and renewals costs to ensure that if medium priority allocations are converted to high priority there is not an extra cost to remaining medium priority customers. CANEGROWERS noted that if SunWater's claim that all costs besides electricity costs are fixed, then this justifies the use of the same conversion factor for both operational and renewals costs.

CANEGROWERS submitted that HUF needs much more detailed explanation and review but a revised HUF methodology seems appropriate for bulk systems.

MSF (2010) noted that it understood HUFs are to allocate capital costs only and not operating costs. MSF was interested to see the HUF that was being proposed to replace the water pricing conversion factor in the Lower Mary River WSS.

MSF submitted that even though the SunWater HUFs – Technical Paper (3/9/10) was referred to in the issue paper it could not be obtained from SunWater or the Authority to view. MSF submitted that it would have been courteous to provide some lower level explanation and worked examples to demonstrate the impact of some of the proposed pricing tools/regulation in order for MSF to present a well understood and informed opinion on the issues papers.

Authority's Analysis

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

As discussed in Volume 1, the Authority endorsed SunWater's proposed approach for the allocation of capital costs, subject to the following amendment proposed by G&S that the method for apportioning the top layer of storage between medium and high priority be modified to reflect the ratio of nominal volumes rather than ratio of MP_1:HP_1

SunWater (2011y) accepted these recommendations and submitted recalculated HUFs for each scheme. However, since there is no top layer of storage to apportion to the Lower Mary WSS, the recommendations made by G&S do not affect the HUF values for this scheme.

The Authority estimates that based on the HUF methodology, the conversion for medium priority to high priority would be 24.9:1. This compares with the water pricing conversion factor of 2.3:1 used for 2006-11 price paths. Further, the Authority notes that under the HUF approach, medium priority irrigators will now pay 42% of the cost of renewals whereas previously medium priority irrigators paid 89%.

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 Lower Mary River WSS the recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.8. 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

annuity for 2012-16. SunWater did not submit a disaggregation between high and medium priority customers.

Table 4.8: Lower Mary River WSS Renewals Annuity* ($'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Total SunWater	**74**	**172**	**127**	**145**	**135**	2	2	3	3	3	3
Total Authority	-	-	-	-	-	-	-4	-4	-4	-3	-3
High Priority	-	-	-	-	-	-	-2	-2	-2	-1	-1
Medium Priority	-	-	-	-	-	-	-2	-1	-1	-1	-1
Distribution Losses	-	-	-	-	-	-	-1	-1	-1	0	0

**Note: Negative renewals annuities will be addressed in the pricing chapter. Includes indirect and overhead costs relating to renewals expenditure, which is discussed in Chapter 5. Source: SunWater (2011); Authority's Analysis.*

5. OPERATING COSTS

5.1 Background

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 this scheme;

(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;

(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 for this scheme to include service provision, compliance, insurance, recreation and other supporting activities (these were not classified by direct and indirect costs). SunWater noted that:

(a) a Service Manager and 41 staff are located at the Bundaberg office and are responsible for the day-to-day water supply management and for delivery of the programmed works for all users in the region. A senior operator is located in Maryborough;

(b) service provision relates to:

[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.

(i) water delivery – scheduling and releasing bulk water from storages, surveillance of water levels and flows in the river, and quarterly meter reading. The Lower Mary River WSS operates as an on-demand water supply with no water ordering system in place. This requires ongoing monitoring of stream flows and storage levels by SunWater's operations staff to manage releases efficiently and requires data from gauging stations to be available to these staff in real time. The maintenance of these stations and the supporting communications systems is performed by a centralised support unit; and

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

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

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

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

Storage	***Monitoring Requirements***			
	Inflow	***Head Water***	***Tail Water***	***BGA***
Mary River Barrage	No	Yes	No	Yes
Tinana Barrager	No	Yes	No	No

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

The ROP for the Mary River Basin which will cover the Lower Mary WSS is currently under development by DERM. It is expected that this ROP will contain many new scheme operation and management rules, some of which will lead to additional responsibilities and increased compliance costs for SunWater.

SunWater participates in the water planning processes led by DERM, including the development and review of Water Resource Plans (WRPs). This includes the making of submissions and proposing operating rules. The activity – which often requires hydrologic modelling and customer consultation – is highly specialised.

Customers often seek to have an input in planning activities and SunWater actively assists customers in identifying options and liaising with DERM who are the authors of the current IROL and the future ROP and ROL.

(ii) environmental management to comply with the ROP and the *Environmental Protection Act 1994* which require SunWater to deal with a range of environmental risks such as fish deaths, chemical usage, pollution, contamination and approvals for in stream works;

(iii) land management (weed and pest control, rates and land tax, security and trespass and access to land owned by SunWater);

(iv) workplace health and safety (WHS) to comply with the *Workplace Health and Safety Act 1995* (the WHS Act);

(v) financial reporting and taxation managed centrally through a finance group which also manages accounts payable for the business;

(vi) irrigation pricing that is subject to regulatory oversight by the Authority;

(vii) strategic asset management plan (SAMP) must be maintained under the *Water Supply (Safety and Reliability) Act 2008*;

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

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

Previous Review

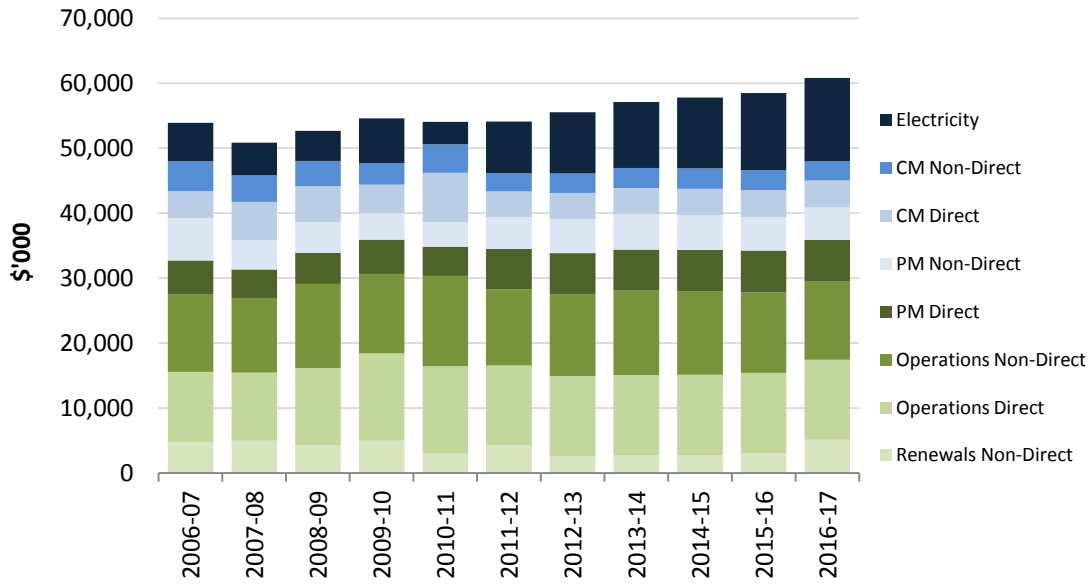
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

Stakeholder Submissions

SunWater

SunWater's past and forecast total operating costs for its irrigation service contracts (all sectors) are summarised in Figure 5.1. 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.

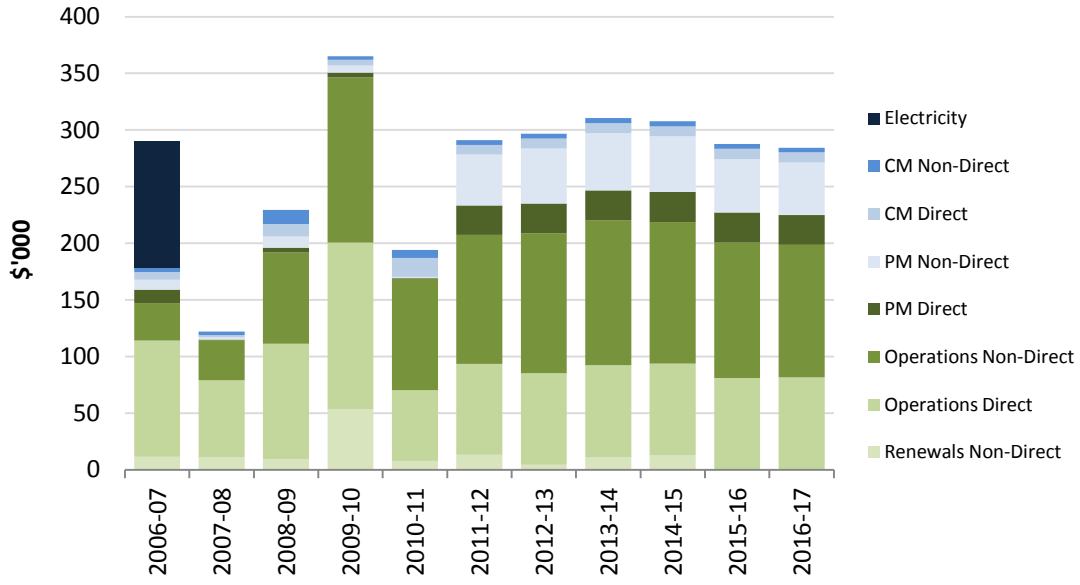
Figure 5.1: SunWater's Total Operating Costs (Real $'000) – All Service Contracts



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 Lower Mary WSS (all sectors) is shown in Figure 5.2, Table 5.2 and Table 5.3.

Figure 5.2: Total Operating costs – Lower Mary WSS (Real $'000)



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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	136	103	183	293	161	194	204	209	206	201	198
Electricity	112	0	0	0	0	0	0	0	0	0	0
Preventive maintenance	21	3	14	10	2	71	75	77	76	74	73
Corrective maintenance	10	5	23	8	24	13	13	13	13	13	13
Renewals non-direct	11	11	9	54	8	13	4	11	13	0	1
Total	**290**	**122**	**230**	**365**	**194**	**291**	**297**	**311**	**308**	**288**	**284**

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).

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	44	14	40	79	48	88	89	89	89	89	89
Electricity	112	0	0	0	0	0	0	0	0	0	0
Contractors	5	1	12	11	10	2	2	2	2	2	2
Materials	2	0	5	4	8	9	9	9	9	9	9
Other	70	55	60	62	13	16	16	16	16	16	16
Non-direct	57	51	112	209	115	176	181	194	191	171	168
Total	**290**	**122**	**230**	**365**	**194**	**291**	**297**	**311**	**308**	**288**	**284**

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).

In its NSP, SunWater submitted that bulk water operating costs for this scheme averaged $235,000 per year over the period of the current price path. [Operating costs as defined in the NSP exclude the indirect and overhead costs allocated to renewals expenditure.] The projected efficient average operating costs in the NSP for 2011-16 are $286,000 million per annum.

Other Stakeholders

CANEGROWERS (2011a) contended that there needs to be a thorough review of operating costs over the next five years compared to efficient costs used for the existing price path. In addition, a staggering 60% of operating costs are overheads but insurance is only $7,000.

MSF (2010) contended that it was exceptionally difficult to comment on the issues papers when they were not aware of SunWater's efficient operational, maintenance and administrative costs.

MSF (2011) noted that efficient operating costs for the proposed price path in the NSP average $286,000, a 17.8% increase over the current price path average of $235,000. In addition, MSF questioned why:

(a) operating costs are not correlated with water use even though they were in 2006-07 and 2007-08;

(b) electricity cost was substantial in 2006-07 for Lower Mary bulk system and whether this was for transferring water from Mary Barrage to Tinana Barrage through the channel system;

(c) weed control costs were high in 2010-11 considering Lower Mary WSS is a bulk system and in a big wet season (2010-11) flood tends to wash weeds down the river/creek;

(d) preventive maintenance is significant from 2010-11 onwards; and

(e) labour costs almost doubled from $44,000 in 2006-07 to $79,000 in 2009-10, yet water use was less. In addition, water usage is projected to be lower but labour costs are projected to increase.

MSF (2011) also expressed concern over the absence of justification of the increase in operation costs from 2007-08 to 2009-10 even though the Aurecon report (Aurecon, 2011a) presented a break up of expenditure. MSF was also concerned that Aurecon was unable to identify any potential efficiency gains.

MSF further questioned the necessity of all of the costs being booked to the Lower Mary WSS.

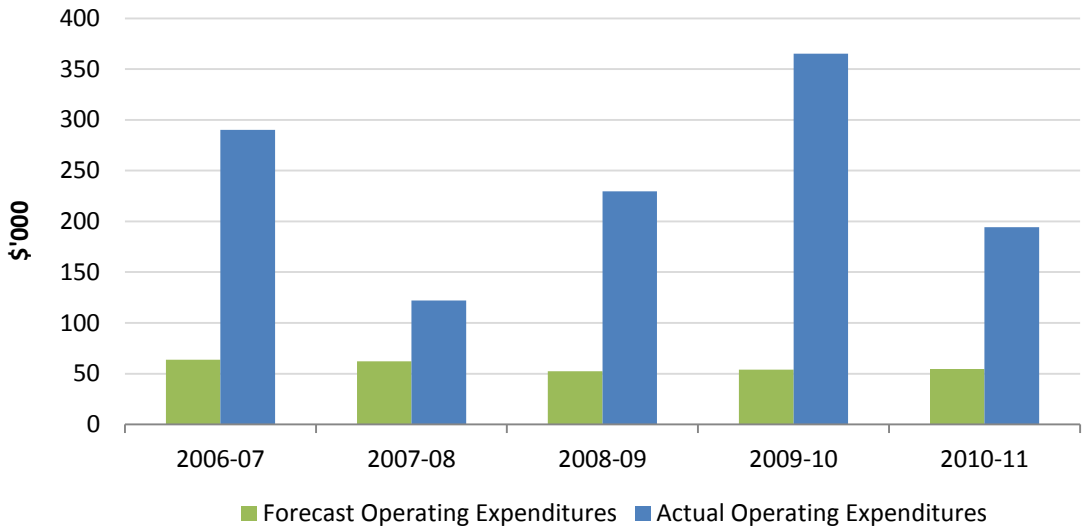
Authority's Analysis

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 Lower Mary WSS is shown in Figure 5.3. For this scheme, actual operating costs exceeded those originally forecast. 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 $)



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

In 2011, the Authority engaged Indec to assess whether SunWater achieved the 2005-06 cost savings, including savings realised through SLFI.

Indec has not, however, inferred from its analysis that SunWater should alter 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 5.4). SunWater's approach to the forecasting of non-direct operating expenditures is detailed in Volume 1.

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

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

Total non-direct costs and those allocated to the Lower Mary WSS are in Table 5.4.

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	27,831	25,097	25,872	24,579	21,130	23,770	23,512	24,244	24,055	23,708	25,089
Lower Mary	57	51	112	209	115	176	181	194	191	171	168

Source: SunWater (2011ap).

The non-direct costs for this scheme include a portion of SunWater's total overhead costs (for example, human resources (HR), information, communication and technology (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

CANEGROWERS (2011a) submitted that:

(a) SunWater's structure seems to bear little resemblance to what is required to efficiently deliver water to irrigation customers. CANEGROWERS noted that from the surface SunWater appeared to be a very centrally controlled organisation with a top heavy structure and a significant overstaffing as well as duplication of roles.

CANEGROWERS questioned the placement of regional operations managers at the far bottom level of the organisational structure yet they were the key scheme operations personnel dealing with customers. CANEGROWERS contended that this highlights the lack of importance placed by SunWater on scheme management;

(b) the need to apply a 5% loading to non-labour costs is unclear. Further, the true marginal cost of overheads to purchases needs to be better justified and if there is no marginal cost then the overheads should not be added, particularly given SunWater's assertion that only electricity costs are variable costs;

(c) the method to allocate overhead costs by direct labour costs favours capital intensive activities and schemes over labour intensive ones. CANEGROWERS questioned the appropriateness of penalising schemes that have been maintained in an outdated way [labour intensive] relative to a modernised/automated one;

(d) there seems to be arbitrary allocation of costs items between bulk, distribution and other;

(e) the extremely high level of SunWater overheads and the fact that too high a cost is apportioned to distribution versus bulk system has delivered some unbelievable and unrealistic overhead costs for many schemes;

(f) the comparison in costs to State Water Corporation is of no value as there is no point benchmarking against an inefficient government entity from another state. CANEGROWERS submitted that there is much more value in comparing to efficient businesses and the Pioneer Valley Water Board (PVWater) would be a good comparison on a scheme by scheme basis; and

(g) there has been an increase in SunWater non-scheme business over the past decade. CANEGROWERS submitted that perhaps a cost allocation methodology based on revenue may better reflect effort.

MSF (2011) submitted that the figures presented in the NSP were at such a high level such that it was difficult to comment on the allocation of indirect and overheads costs. Further, MSF found it difficult to comment on the Deloitte Touche Tohmatsu (Deloitte) report dated 27 March 2011 as MSF did not understand all of the cost groupings.

MSF questioned the efficiency of these costs, noting the [high] proportion of indirect and overheads cost in operating cost. Further, MSF questioned whether the centralisation of customer services to Brisbane has resulted in a decrease in costs to the Lower Mary WSS or any other schemes and that if there has not been a cost reduction, the justification for this.

MSF stated their disagreement with Deloitte report, where full time equivalents (FTEs) are used as the comparator to remove differences in remuneration scales and differences in foreign exchange and timing.

MSF noted that strategic and stakeholder relations (SSR), water planning, corporate relations and business strategy have 12 FTEs. MSF questioned the need for advertising and corporate relations, noting the Lower Mary WSS is a well-established scheme with captive customer base.

MSF also questioned whether the dam safety specialist staff costs included in the centralised costs were allocated to the Lower Mary WSS, given there is no dam in the scheme. Further, Lower Mary WSS does not have public visitors to water infrastructure sites that require public safety awareness campaign.

MSF questioned whether the cost of schedulers was also allocated to the Lower Mary WSS, given that there is no scheduling in the scheme.

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 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 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 can make comparisons unreliable.[5]

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

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

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

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

Deloitte reviewed SunWater's proposed 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

[5] For example, PVWater have 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.

(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 Lower Mary WSS (from all customers) is set out in Table 5.5 below. The allocation of these costs between high and medium priority customers is discussed below.

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	57	51	112	209	115	176	181	194	191	171	168
Authority							176	180	181	159	153

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's 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 Brinkerhoff (PB 2010) review. These estimates were then escalated forward for the 2012-17 pricing period. Further details are outlined in Volume 1.

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	103	68	102	147	62	80	81	81	81	81	81
Electricity	112	0	0	0	0	0	0	0	0	0	0
Preventive maintenance	12	1	4	4	1	26	26	26	26	26	26
Corrective maintenance	7	2	11	5	17	9	9	9	9	9	9
Total	**233**	**71**	**117**	**156**	**80**	**115**	**116**	**116**	**116**	**117**	**117**

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).

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	44	14	40	79	48	88	89	89	89	89	89
Electricity	112	0	0	0	0	0	0	0	0	0	0
Contractors	5	1	12	11	10	2	2	2	2	2	2
Materials	2	0	5	4	8	9	9	9	9	9	9
Other	70	55	60	62	13	16	16	16	16	16	16
Total	**233**	**71**	**117**	**156**	**80**	**115**	**116**	**116**	**116**	**117**	**117**

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).

Authority's Analysis

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

Aurecon (2011) reported that the major limitation to their review was the lack of precise information from SunWater, particularly given the tight time frames for their study. Although Aurecon found that SunWater staff were willing to provide information as requested, a number of difficulties were still encountered, including that:

(a) reports due for completion in 2010, were still incomplete during the review period;

(b) obtaining operational trend expenditure information was difficult due to the implementation of the Business Operating Model (BOM) and management accounting system;

(c) historical cost data, which had been re-coded for entry into the BOM, could not be traced or verified;

(d) the capacity of the BOM to extract specific data for analysis was limited;

(e) the incorporation of indirect and overhead costs in all activities made it difficult to assess the activity related expenditure; and

(f) retrieving information regarding individual assets was difficult.

Aurecon also noted that SunWater has developed a new electronic Asset Management System, which has greatly improved information capture and asset management data, but access to all components of this system is limited to a handful of computers and personnel located within the Brisbane office. Extracting specific asset information was extremely time-consuming for all involved.

Aurecon concluded that SunWater underestimated the level of detail and information required for the review. This impacted SunWater's capacity in many cases to provide the requested information within the required timeframes. Aurecon therefore found that significant information gaps still exist, which hindered their capacity to adequately assess the prudency and efficiency of all proposed operational 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.

Aurecon'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

Operations relate to the day-to-day operational activity (other than maintenance) enabling water delivery, customer management, asset management planning, financial and ROP reporting, WHS compliance, administration and environmental and land management.

SunWater's operating expenditure forecasts have been developed on the basis of detailed work instructions and operational manuals for each scheme.

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

Other Stakeholders

CANEGROWERS (2011a) contended that it was extremely difficult to make any informed comments on operations costs since the headings used are general and high level and consequently are not conducive to scrutiny. Detail at least one level down needs to be provided.

MSF (2011) expressed concern over the absence of justification of the increase in operation costs from 2007-08 to 2009-10 even though the Aurecon report (Aurecon, 2011a) presented a break up of expenditure. MSF was also concerned that Aurecon was unable to identify any potential efficiency gains.

MSF further questioned the necessity of all of the costs being booked to the Lower Mary WSS.

Authority Analysis

Aurecon's Review

Aurecon reviewed SunWater's Operations costs in more detail as shown in Table 5.8.

Table 5.8: Operations Expenditure bv Type ($2010-11, $'000)

Type	*Actuals*				*Forecast*	*Forecast*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Labour	33	12	31	74	61	61	61	61	61	61
Materials	-	-	-	-	2	2	2	2	2	2
Contractors	2	1	12	11	1	1	1	1	1	1
Other	68	55	59	62	14	14	14	14	14	14
Total Direct Costs	*103*	*68*	*102*	*73*	*78*	*78*	*78*	*78*	*78*	*78*
Indirects	-	18	44	64	53	52	59	63	60	57
Overheads	33	17	37	81	60	60	60	61	61	60136
Total	**136**	**103**	**183**	**292**	**191**	**190**	**197**	**202**	**199**	**195**

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

Particular observations by Aurecon were that:

(a) operations costs comprise between 48.7% (2006-07) and 96.7% (2009-10) of total operating costs;

(b) operations costs in 2009-10 have more than doubled that of 2006-07, yet water usage in 2009-10 was only 61% of that delivered in 2006-07;

(c) overheads and indirects represent 59.5% of the total cost in 2010-11; and

(d) cost items in the 'other' category included insurance ($7,000 in 2010-11), rates ($5,000) and other local administrative costs including telephone, etc. Aurecon also noted that 'other' costs have declined substantially in 2010-11 and that this may be due to a component of insurance costs being transferred from the bulk scheme to the distribution scheme.

Aurecon provided a summary of the Operations costs by activity for the four years 2006-07 to 2009-10 (Table 5.9).

Table 5.9: Operations Expenditure by Activity ($2010-11, $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*
Customer Management	10	-	-	13
Workplace H&S	-	-	-	3
Environmental Management	16	-	-	3
Water Management		27	35	25
Scheme Management	66	58	127	203
Dam Safety	-	-	1	7
Schedule /Deliver	43	-	-	25
Metering	-	18	19	13
Facility Management	-	-	-	-
Other	-	-	-	-

Source: Aurecon (2011b). Note: includes indirect and overhead costs. Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Significant items include:

(a) water management – activities related to announcement of water allocations, water quality monitoring and sampling, blue-green algae management, Submersible Data Loggers SDL readings, shoreline inspections, monitoring of groundwater levels and salinity levels, bore measurements and preparation of data for Department of Natural Resources, Mines and Water (NRMW) and SunWater. Contractors are used for water quality monitoring. SunWater noted that 2006-07 was a transition year in switching from the previous internal trade model to the new BOM, giving rise to comparability problems with line items;

(b) scheme management – activities related to the preparation and provision of reports and statistics for clients, including meetings with clients reviewing contract progress/performance, energy management including the review of electricity consumption tariffs and accounts, land and property management including legal advice, Operations and Maintenance Manual development, Operations, Maintenance and Surveillance (OMS) plans, Facility Contingency Plans and Emergency Action Plans (EAP) for all facilities other than dams, System Leakage Management Plans (SLMPs), insurance costs, rates and land taxes;

(c) schedule/deliver – activities related to scheduling, releasing, operation of pump stations and SCADA, system surveillance including monitoring of water entitlement and observation of and reporting of any breaches, flood operations preparation, water harvesting, ROP compliance of water levels and flows and reporting of water information; and

(d) metering – activities related to the reading of customer water meters.

Aurecon noted stakeholders have raised the issue that there are more cost-effective strategies to avoid reading 'sleeper' meters each quarter by SunWater staff. In response to Aurecon's questions, SunWater confirmed that there was no additional meter installed since 2009 and that metering costs has actually decreased by $6,000 in 2009-10. Aurecon noted that this possibly indicates that SunWater has identified substantial labour efficiencies in reading meters.

Further, Aurecon noted that quarterly meter reading is a statutory requirement.

Aurecon noted that SunWater advised that a number of weir safety inspections costs that were previously recorded under Dam Safety are now incorporated in Preventive Maintenance activity for the forecast price path. Aurecon was not able to identify the cost of weir safety inspections specifically, but notes that overall dam safety expenditure was only $1,000 in 2008-09 and $7,000 in 2009-10 and is likely to include other activities in addition to weir safety inspections.

Aurecon's review of other schemes reveals that annual weir safety inspections costs vary between $1,480 and $1,850. Assuming an approximate cost of $1,500 per annum for each Mary and Tinana Barrage, Aurecon opined that approximately $3,000 should be reduced from historical average when calculating the forecast cost for 2010-11.

Aurecon noted that the provision of disaggregated historical activity data for Operations by SunWater provided substantial insights, but also identified substantial activities and issues requiring additional information and explanation from SunWater.

Aurecon noted that SunWater was not able to provide 2010-11 cost-estimates for the sub-activities which Aurecon views as critical in verifying the prudency and efficiency of these costs. Aurecon recommends that to verify the prudency and efficiency of 2010-11 expenditure, the following information and analysis is required:

(a) the 2010-11 cost estimates for sub-activities be released and examined to ensure compliance with SunWater's averaging methodology (preceding 4/5 years); and

(b) that cost estimates for metering be examined and projected based on 2009-10 costs (assuming that it represents improved efficiencies in reading meters, as costs are lower than the preceding years).

Due to the above data limitations, Aurecon was unable to validate fully the prudency and efficiency of Operations costs, although it acknowledged that SunWater is proposing a lower cost structure for the coming price path.

Conclusion

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

The Authority notes that Aurecon was unable to validate the prudency and efficiency of SunWater's operations costs due to insufficient information.

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

The Authority has not made any specific adjustments to operations costs.

Item 2: Preventive Maintenance

Stakeholder Submissions

SunWater

SunWater defines preventive maintenance 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.

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

SunWater's proposed costs for this item are identified in Table 5.6 above.

Other Stakeholders

No other stakeholders have commented on this item.

Authority Analysis

Aurecon's Review

Aurecon observed that:

(a) weed control costs were significant in terms of labour input. Considering that it is a bulk river system, weed control costs would be expected to be minimal, with the possible exception of land based weed control around the bulk assets and access roads. As a small ponded system incorporating two key barrages, Aurecon questioned whether the weed control activity was related to major on-land weed control activities around the barrages and access roads;

(b) in 2006-07, costs that should have been coded to refurbishment were included in preventive maintenance causing a spike in these costs;

(c) in 2010-11, 64.3% of preventive maintenance costs were indirect costs and overheads, 34.3% was accounted for by labour and 1.4% by contractors; and

(d) both condition monitoring and servicing costs are highly variable. Aurecon noted that since that stakeholders have expressed the fact that the two barrages represents most of the assets for the scheme, it is hard to see where significant preventive maintenance activities are likely to occur.

Aurecon noted that SunWater's proposed labour costs for preventive maintenance of $26,574 in 2010-11 are informed by PB in 2010. PB proposed that for 2010-11 a total of 534 hours would

require a total of $26,574 for condition monitoring and servicing. SunWater's forecast labour costs were based on the average of the previous four years.

Aurecon noted that the PB report also stated that historically a number of preventive maintenance activities were incorrectly recorded to other activities. Aurecon noted that there is no corresponding increase within historical corrective maintenance costs to account for the substantial disparity. This leaves three remaining options to account for the difference between the projected requirement of 534 hours and the historic average between 2006-07 and 2009-10 of 67 hours:

(a) that a large number of prescribed activities were not undertaken;

(b) that a large number of prescribed activities were undertaken and coded to activities other than maintenance (e.g. renewals); or

(c) regional SunWater staff identified substantial efficiencies.

Aurecon is of the view that a combination of all the options occurred but that unfortunately, the PB report does not audit historically what prescribed activities were undertaken (or not). Aurecon's field trip and discussion with stakeholders and regional SunWater staff, and inspection of selected asset sites, did not reveal any prescribed difficulties with historic preventive maintenance activities to date.

Therefore, Aurecon was unable to validate the prescribed annual expense listed within the NSP for 2010-11 to 2015-16 as being prudent or efficient. To identify the prudent and efficient cost, Aurecon recommended that an audit of the historical activities against the optimised schedule (developed by PB) to quantify the disparity between 2009-10 actual and recommended.

In the interim Aurecon suggested that the highest hours previously recorded be accepted, plus the estimated hours of input required for weir safety inspections (estimated at 32 hours each) and weed control requirements as follows:

(a) 100 hours of labour input for condition monitoring and servicing based on 2008-09 actuals;

(b) 64 hours of additional input for weir safety inspections; and

(c) 20 hours of labour input for weed control.

With limited information Aurecon assesses that the interim prudent and efficient annual labour input for preventive maintenance be set at 184 hours.

Aurecon noted that the 2010-11 hourly labour rate adopted by PB ($50/hour) exceeded SunWater's actual costs in 2009-10 ($40/hour), possibly due to an assumption by PB of the utilisation of more senior SunWater staff.

Aurecon recommended that the 184 hours of labour be budgeted at $45/hour at a total cost of $8,250 for these activities. In total for labour for monitoring and weed control, Aurecon recommended that the $24,000 estimate projected by SunWater be revised to $8,250.

Aurecon's analysis results in a reduction of $15,750 in total preventive maintenance, to be applied to each year of the next pricing period.

SunWater's Response

In relation to Aurecon's suggested reductions in labour costs related to preventive maintenance based on a four-year historical average, SunWater submitted that past data is not a reliable indicator of actual costs or work. SunWater noted that some past preventive maintenance at storages was booked to operations, rather than preventive maintenance.

SunWater considered that the PB review (which informed SunWater's submission) identified the labour effort and materials – contractor costs for each maintenance item from first principles. SunWater submitted that this was a thorough and detailed review undertaken by an independent party, is forward looking and is the best source of reliable information for the costs forecasts.

In response to Aurecon's comments regarding the difference in wages rates between SunWater's historic costs, and those recommended by PB, SunWater responded that the costs for 2010-11 were based on information received from field staff through consultation. Each preventive maintenance job was costed by identifying the different staff required to complete the work. Depending on the level of employee, different hourly labour rates were used.

Further, SunWater submitted that, in reviewing its preventive maintenance activity costs, Aurecon (and Halcrow in its review of WSSs in the North region) tried to evaluate the costs by sub-activity.

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 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.

For this scheme, the Authority has therefore reduced SunWater's estimates by $15,750 in line with Aurecon's findings.

Item 3: Corrective Maintenance

Stakeholder Submissions

SunWater

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

SunWater submitted that even with sound preventive maintenance practices, unexpected failures can still occur or other incidents can arise that require reactive corrective maintenance.

SunWater identifies 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 has forecast 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.

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

Other Stakeholders

No other stakeholders have commented on this item.

Authority Analysis

Consultant's Review

Aurecon noted that corrective maintenance costs mainly related to materials (38.5%), indirect costs and overheads (30.8%), labour (15.4%) and other direct (15.4%).

Aurecon noted the difficulty in forecasting corrective maintenance costs, and that SunWater's approach of using historical expenditure as a basis for forecasting is commonly used by other water utilities. However, in this case, SunWater has incorporated additional costs into the calculation which Aurecon was unable to reconcile.

Aurecon noted that the average annual direct cost (2006-07 to 2009-10) was $6,200 (excluding indirect costs and overheads). This compares to SunWater's forecast of $9,000 for the period starting in 2010-11. Aurecon noted that SunWater may have used the average of the two most recent years (2008-09 and 2009-10) in order to arrive at its forecast (the past two years average is $8,000).

Aurecon noted that without the capacity to replicate SunWater's proposed 2010-11 cost, Aurecon was unable to validate the prudency and efficiency of the proposed cost. Therefore, Aurecon recommended that SunWater provide additional detail regarding its 2010-11 calculation and the reason for projecting an additional $2,800 per annum.

SunWater's Response

In relation to Aurecon's question of why proposed corrective maintenance cost was $2,800 higher than the four-year average, SunWater submitted that the forecast for corrective maintenance was made based on the expected operating conditions for the Lower Mary WSS over 2011-12 to 2015-16.

SunWater noted that Aurecon's Table 7-6 shows that corrective maintenance cost is forecast to be 4.6% of operating costs in 2010-11, compared with the use of four-year average of 5.4% [as employed by Aurecon]. In addition, Aurecon did not consider the impact of above-consumer price index (CPI) cost escalations in their analysis.

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, that SunWater formally document its processes for the development of correct maintenance expenditure forecasts.

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.

On the basis of Aurecon's advice, the Authority has not made any specific adjustments to corrective maintenance.

Item 4: Electricity

Stakeholder Submissions

SunWater

For the coming price path, SunWater's NSP for Lower Mary WSS does not contain electricity costs.

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).

Other Stakeholders

No other stakeholders have commented on this item.

Authority's Analysis

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 also 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 has adjusted proposed electricity costs as set out in Table 5.12 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).

Direct Labour

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

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

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

Direct Materials and Contractors

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

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

Other Costs

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

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Lower Mary WSS is set out in Table 5.10.

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 5.10: 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	81	81	81	81	81	76	76	76	77	77
Electricity	0	0	0	0	0	0	0	0	0	0
Preventive maintenance	26	26	26	26	26	25	25	25	25	25
Corrective maintenance	9	9	9	9	9	8	8	8	8	8
Total	**116**	**116**	**116**	**117**	**117**	**109**	**109**	**110**	**110**	**110**

Note: Totals vary from NSP due to the 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).

5.5 Cost Allocation According to WAE Priority

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

Previous Review

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

Stakeholder Submissions

SunWater

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

Other Stakeholders

CANEGROWERS (2011a) noted SunWater's statement that all costs besides electricity costs are fixed, suggesting they are linked to asset maintenance rather than water delivery. CANEGROWERS opined that if this is the case, it justifies the use of the same conversion factor for both operational and renewals costs.

CANEGROWERS contended that HUF needs much more detailed explanation and review but a revised HUF methodology seemed appropriate for bulk systems and a trading conversion factor for channel systems could be used for renewals and operational costs.

MSF (2010) submitted that it understands HUFs are to allocate capital costs only and not operating costs. MSF expressed interest in seeing the HUF being proposed to replace the water pricing conversion factor for the Lower Mary WSS.

Authority's Analysis

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

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

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

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

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

The effect for the Lower Mary WSS 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 5.11. The Authority's recommended operating costs are set out in Table 5.12..

Table 5.11: SunWater's Proposed Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	63	63	63	63	63
Materials	1	1	1	1	1
Contractors	2	2	2	2	2
Other	16	16	16	16	16
Non-direct	123	128	125	120	117
Preventive Maintenance					
Labour	25	25	25	25	25
Materials	1	1	1	1	1
Contractors	1	1	1	1	1
Other	0	0	0	0	0
Non-direct	49	50	49	47	46
Corrective Maintenance					
Labour	2	2	2	2	2
Materials	0	0	0	0	0
Contractors	7	7	7	7	7
Other	0	0	0	0	0
Non-direct	4	5	4	4	4
Electricity	0	0	0	0	0
Total	**292**	**299**	**295**	**288**	**284**

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	59	59	59	60	60
Materials	1	1	1	1	1
Contractors	0	0	0	0	0
Other	15	15	15	15	15
Non-direct	120	123	118	111	107
Preventive Maintenance					
Labour	23	23	24	24	24
Materials	0	0	0	0	0
Contractors	1	1	1	1	1
Other	0	0	0	0	0
Non-direct	47	48	46	44	42
Corrective Maintenance					
Labour	2	2	2	2	2
Materials	6	6	6	6	6
Contractors	0	0	0	0	0
Other	0	0	0	0	0
Non-direct	4	4	4	4	4
Electricity	0	0	0	0	0
Total	**280**	**284**	**278**	**269**	**263**

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 the consumer price index (CPI).

For the Lower Mary River (Tinana Barrage & Teddington Weir), prices over 2006-11 increased in real terms to achieve lower bound costs in 2007-08, and maintained in real terms thereafter. In 2011-12, prices in this scheme were increased by CPI.

For the Lower Mary River (Mary Barrage), prices over 2006-11 were rebalanced and maintained in real terms to 2010-11. In 2011-12, prices in this scheme were increased by CPI.

6.2 Approach to Calculating Prices

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

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

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

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

(d) calculated cost-reflective irrigation prices;

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

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

6.3 Total Costs

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

Table 6.1: Total Costs for the Lower Mary WSS (Real $'000)

	Actual Costs						***Future Costs***				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
SunWater's Submitted Costs	353	279	342	447	322	278	292	300	296	289	285
Renewals Annuity	74	172	127	145	135	2	2	3	3	3	3
Operating Costs	279	111	220	311	186	278	292	299	295	288	284
Revenue Offsets	0	-4	-5	-9	0	-2	-2	-2	-2	-2	-2
Authority's Total Costs							274	279	273	264	258
Renewals Annuity							-4	-4	-4	-3	-3
Operating Costs							280	284	278	269	263
Revenue offsets							-2	-2	-2	-2	-2
Return on Working Capital							0	0	0	0	0

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: Actual Costs (SunWater, 2011ap) and Total Costs (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 Lower Mary WSS 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;

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

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

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

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

(d) costs that *should* vary with water use under Indec's proposed optimal (prudent and efficient) management approach (as outlined in Volume 1). On average across all SunWater's distribution systems, Indec considered 75% of costs would be fixed and 25% variable. However Indec proposed that scheme-specific tariff structures should be applied to reflect the relevant scheme costs.

For Lower Mary WSS, Indec considered 92% of costs should be fixed and 8% variable under recommended management approach. The Authority notes that this ratio differs from the current tariff structure which reflects the recovery of 70% of costs in the fixed charge and 30% 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	**252**	**257**	**251**	**243**	**238**
High Priority	85	86	85	82	80
Medium Priority	131	134	130	126	124
Distribution Losses	36	37	36	35	34

Source: 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 33.0% of WAE.

6.6 Cost Reflective Prices

Cost-reflective prices reflect the Authority's estimates of prudent and efficient costs, recommended tariff structures, and the allocation of costs to different priority groups. The Authority's approach to termination fees is explained in the Lower Mary Distribution System Draft Report and in Volume 1.

Table 6.3: Medium Priority Prices for the Lower Mary WSS ($/ML)

	Actual Prices						*Cost Reflective Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Lower Mary River (Mary Barrage)											
Fixed (Part A)	8.28	8.52	8.92	9.20	9.48	9.84	4.66	4.77	4.89	5.01	5.14
Volumetric (Part B)	8.83	9.09	9.52	9.82	10.12	10.48	1.94	1.98	2.03	2.09	2.14
Lower Mary River (Tinana Barrage & Teddington Weir)											
Fixed (Part A)	11.88	12.48	13.08	13.52	13.92	14.40	14.67	15.04	15.41	15.80	16.19
Volumetric (Part B)	8.48	8.93	9.36	9.65	9.94	10.30	8.57	8.78	9.00	9.23	9.46

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

Table 6.4: Termination Fees ($/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*
Lower Mary River (Tinana Barrage & Teddington Weir) to Lower Mary River (Mary Barrage)											
Termination fee (inc.GST)	n.d.	n.d.	37.24	37.06	41.90	47.03	187.20	191.88	196.68	201.60	206.64

Note: n.d. - no data. Source: Actual Prices (SunWater, 2011al) and Cost Reflective Prices (QCA, 2011).

6.7 Queensland Government Pricing Policies

As noted above, the Queensland Government has directed that:

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

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

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

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

Authority's Analysis

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

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

For both the Lower Mary River (Mary Barrage) and Lower Mary River (Tinana Barrage and Teddington Weir) tariff groups, current revenues are above the level required to recover prudent and efficient costs. Therefore, the Authority is required to recommend prices that maintain these revenues in real terms for the 2012-17 regulatory period.

Table 6.5: Comparison of Current Prices and Cost-Reflective Prices (Real $ 2012-13)

Tariff Group	*2010-11 Prices (indexed to 2012-13)*		*Irrigation WAE (ML)*	*Water Use (ML)*	*Current Revenue*	*Revenue from Cost Reflective Tariffs*	*Difference*
	Fixed	*Variable*					
Lower Mary River (Mary Barrage)	9.96	10.63	14,469	4,513	192,094	76,114	115,980
Lower Mary River (Tinana Barrage & Teddington Weir)	33.28	20.27	7,586	2,366	135,652	131,569	4,082

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

6.8 The Authority's Recommended Prices

The Authority's recommended prices to apply to the Lower Mary WSS for 2012-17 are outlined in Table 6.5 together with actual prices since 2006-07. In calculating the recommended prices, a ten-year average irrigation water use has been adopted (see Volume 1).

Table 6.6: Draft Medium Priority Prices for the Lower Mary WSS ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Lower Mary River (Mary Barrage)											
Fixed (Part A)	8.28	8.52	8 92	9.20	9.48	9.84	12.61	12.92	13.25	13.58	13.92
Volumetric (Part B)	8.83	9.09	9 52	9.82	10.12	10.48	1.94	1.98	2.03	2.09	2.14
Lower Mary River (Tinana Barrage & Teddington Weir)											
Fixed (Part A)	11.88	12.48	13.08	13.52	13.92	14.40	14.92	15.30	15.68	16.07	16.47
Volumetric (Part B)	8.48	8.93	9 36	9.65	9 94	10.30	8.57	8.78	9.00	9.23	9.46

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

The Authority's recommended draft termination fees to apply to the Lower Mary WSS during 2012-17 are outlined in Table 6.7, 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; 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 (Volume 1).

Table 6.7: Draft Termination Fees ($/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***
Lower Mary River (Tinana Barrage & Teddington Weir) to Lower Mary River (Mary Barrage)											
Termination fee (inc.GST)	n.d.	n.d.	37.24	37.06	41.90	47.03	187.20	191.88	196.68	201.60	206.64

Note: n.d. - no data. Source: Actual Prices (SunWater, 2011al) and Cost Reflective 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)*
Lower Mary River Distribution	2017-18	Replace Gauging Equipment	13
	2032-33	Replace Gauging Equipment	13
Mary Barrage	2011-12	June 2005 5 Yearly Barrage Inspection - Recomm 13) Replace grating (Design done in 2010)	18
	2013-14	Blast and paint fishway baffle supports	14
	2023-24	Replace BUOYS (4 OFF), SAFETY BUOYAGE SYSTEMS	26
Tinana Barrage	2011-12	SKIN ROCK PROT -D/S LEFT BANK.	59
	2012-13	Maintain access road to Tinana barrage	12
	2013-14	Refurbish: Regular Maintenance concrete skin ovr barrage protection works (Confirm with condition assessment 2012/3)	15
	2018-19	Refurbish: Regular Maintenance concrete skin ovr barrage protection works (Confirm with condition assessment 2012/3)	15
	2019-20	Replace Slide Gate Outlet	10
	2022-23	Maintain access road to Tinana barrage	12
	2023-24	Refurbish: Regular Maintenance concrete skin ovr barrage protection works (Confirm with condition assessment 2012/3)	15
	2024-25	Change Out Gate - replace control gate as required	12
	2028-29	Refurbish: Regular Maintenance concrete skin ovr barrage protection works (Confirm with condition assessment 2012/3)	15
	2032-33	Maintain access road to Tinana barrage	12
	2033-34	Refurbish: Regular Maintenance concrete skin ovr barrage protection works (Confirm with condition assessment 2012/3)	14