QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater
Irrigation Price Review: 2012-17
Volume 2
Chinchilla Weir Water Supply Scheme

November 2011

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

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

SUBMISSIONS

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

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

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

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

Confidentiality

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

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

Public access to submissions

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

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

TABLE OF CONTENTS

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 Chinchilla Weir WSS for the 2012-17 regulatory period are outline in Table 1 together with actual prices since 1 July 2006.

Table 1: Prices for the Chinchilla Weir 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***
River											
Fixed (Part A)	15.84	16.32	17.12	17.64	18.16	18.84	26.28	26.94	27.61	28.30	29.01
Volumetric (Part B)	13.91	14.32	15.01	15.48	15.95	16.52	2.80	2.87	2.94	3.02	3.09

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 conjunction with Volume 1.

Consultation

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

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

1. CHINCHILLA WEIR WATER SUPPLY SCHEME

1.1 Scheme Description

The Chinchilla Weir water supply scheme (WSS) is located near the town of Chinchilla. An overview of the key characteristics of this WSS is provided in Table 1.1.

Table 1.1: Key Scheme Information for the Chinchilla Weir WSS

Business Centre	Toowoomba
Irrigation Uses of Water	Cereal and melons as well as pasture and fodder crops
Urban Water Supplies	The town of Chinchilla

Source: Synergies Economic Consulting (2010)

The Chinchilla Weir WSS has a total of 31 bulk customers. Medium and high priority water access entitlements (WAE) are outlined in Table 1.2.

Table 1.2: Water Access Entitlements

Customer Group	***Irrigation WAE (ML)***	***Total WAE (ML)***
Medium Priority	2,871	2,884
High Priority	0	1,165
Total	**2,871**	**4,049**

Source: SunWater (2011)

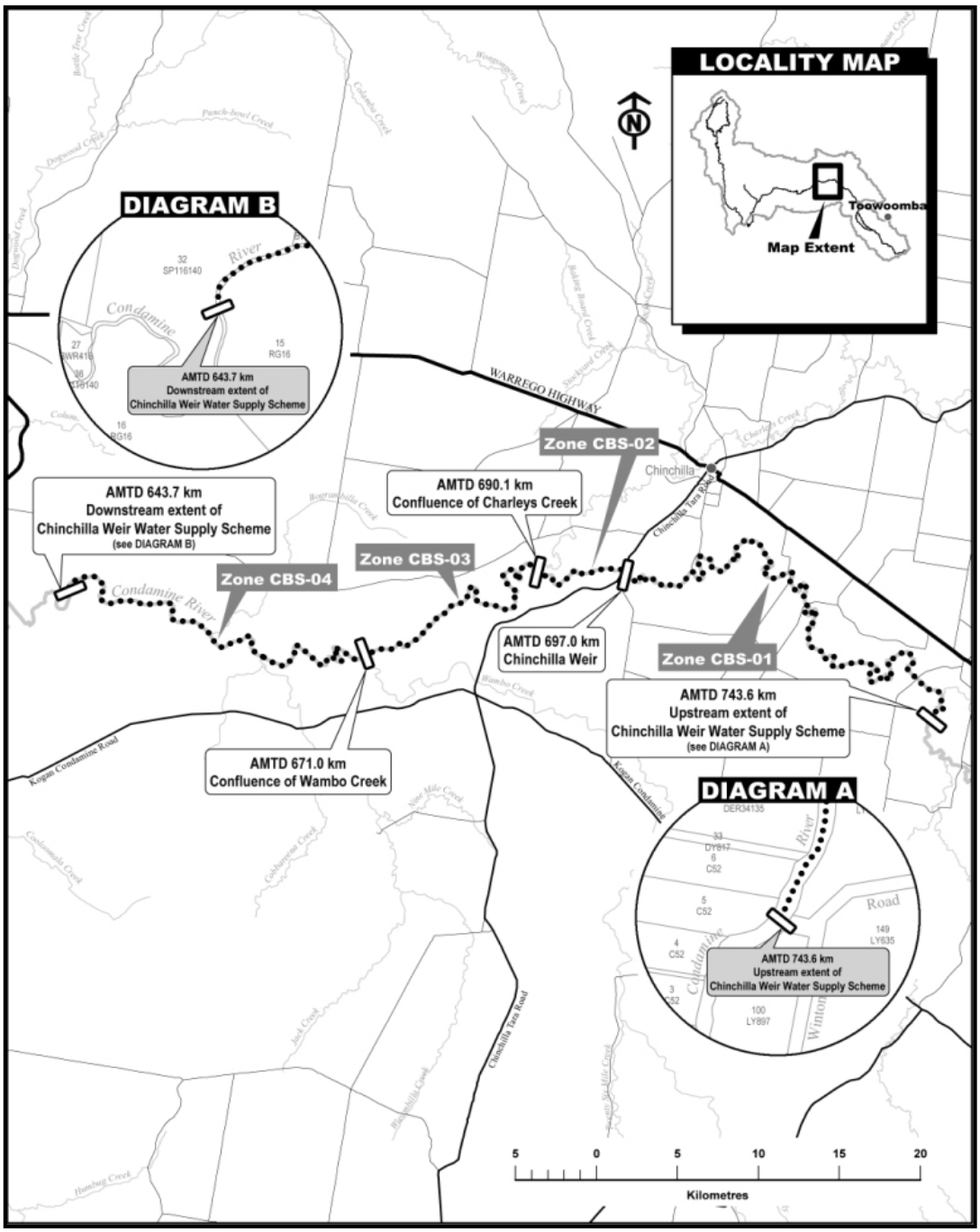
1.2 Bulk Water Infrastructure

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

The sole piece of infrastructure in the scheme is the Chinchilla Weir, completed in 1973. The Chinchilla Weir has a full supply storage capacity of 9,780 ML and is located on the Condamine River, supplying local irrigators upstream and downstream of the weir. Upstream irrigators pump directly from the pond created by the weir and downstream irrigators from the flows regulated by releases from the weir (SunWater, 2011).

The location of the Chinchilla Weir WSS and key infrastructure is shown in Figure 1.1.

Figure 1.1: Chinchilla Weir WSS Locality Map



Source: SunWater (2011)

The Authority notes that the recently announced Chinchilla Beneficial Use Scheme will transport treated coal seam gas water from a water treatment plant established by Queensland Gas Corporation (QGC) to Chinchilla Weir Pipeline.

Although SunWater report that water will be distributed to farmers along the pipeline and within the Condamine River, between the boundaries as the Chinchilla Weir WSS, the project is fully funded by QGC and is beyond the scope of the Authority's review.

1.3 Network Service Plans

The Chinchilla Weir WSS network services plan (NSP) presents SunWater's:

(a) existing service standards;

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

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

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

1.4 Consultation

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

(a) invited submissions from interested parties;

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

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

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

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

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

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

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

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 path, the Chinchilla Weir WSS Tier 2 group indicated that they were in favour of retaining the existing price cap regulatory arrangement. In the 2011-12 interim price period the price cap arrangement was continued.

2.2 Stakeholder Submissions

SunWater

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

(a) possible developments driven by the Murray Darling Basin Plan that is currently being developed. This plan, or subsequent changes over time, may have cost implications for the scheme or change the underlying assumptions used for forecasting;

(b) the introduction of schemes relating to the reduction of greenhouse gases that may have implications for electricity prices, or energy efficiency regulation that results in a net increase in costs;

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

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

(e) metering costs related to changes in regulatory standards and

(f) outbreak of noxious weeds.

Other Stakeholders

Cotton Australia/Queensland Farmers' Federation (QFF) (2011a) questioned SunWater's statement that customers' demand is a risk that cannot be managed by SunWater. Cotton Australia/QFF suggested that managing demand may be best addressed by setting prices based on 20% higher usage than historical averages.

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 WSSs. The proposed allocation of risks and the means for addressing them are outlined in Table 2.1 below.

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

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

Source: QCA (2011)

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

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

The Authority notes Cotton Australia/QFF's proposed method to address demand risk. This proposal would require that the tariffs depart from the underlying costs which allocate volume risk to SunWater which SunWater is not able to manage.

Rather than estimating future demand the Authority recommends that short term volume risks should be assigned to customers through a tariff structure that recovers all fixed costs through fixed charges and variable costs through the volumetric charges. Costs that vary with water use (variable), and may cause volume risk, are addressed in more detail in the chapter on operating expenditures.

To seek to impose an arbitrary risk on SunWater of the magnitude suggested may place an unacceptable level of risk upon SunWater. Moreover, SunWater may simply respond by seeking to reduce costs in a manner which reduces the standard of service at the scheme level. The establishment of a two-part tariff that aligns the costs and prices better manages risk and avoids these complications.

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 costs to variable costs. However, due to the prevailing Government policy that there should be no real price decreases, the Part A fixed charge was set at 65% and Part B variable charges at 35% of total revenues in this scheme.

Stakeholder Submissions

SunWater

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

Other Stakeholders

Cotton Australia/QFF (2011a) submitted that if SunWater charges for 100% of WAE regardless of use (and thus removes all references to storage rental fees), the value of spending money on water use efficiency will be put into question where carryover or continuous accounting is not in place. Cotton Australia/QFF suggested that SunWater should therefore review all scheme rules for the prospect of carryover or continuous accounting and that if SunWater charges for 100% of bulk WAE it should be charged in arrears not in advance as is currently the case.

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 Cotton Australia/QFF submission regarding efficiency, it is noted that efficiency is promoted as:

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

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

(c) in respect of setting tariffs to meet environmental objectives, the Authority notes that the institutional arrangements in Queensland administered by DERM establish the quantum, and allocation of water, between environmental and consumptive use. The Authority has been required to establish prices to recover SunWater's efficient business costs – to seek

to achieve other broader goals would require a clear specification of those goals to enable the Authority to respond with relevant pricing recommendations.

(d) 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

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

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

The volumes of permanent and temporary water traded for the Chinchilla Weir WSS are identified in Table 3.1.

Table 3.1: Permanent and Temporary Water Traded (ML)

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Permanent water traded	0	0	0	0	0	0	0	0
Temporary water traded	30	180	479	501	545	277	823	958

Source: SunWater (2003–2010g) and Queensland Valuation Services (2010)

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

In regard to carry-over or continuous accounting issue raised by Cotton Australia/QFF, the Authority is not aware of anything in the proposed tariff structure which should in principle detract from its effective implementation. In particular, high fixed costs mitigate unnecessary carry-over of allocations.

The Authority further notes that if SunWater charges for 100% bulk WAE in arrears, rather than in advance, the additional financing costs arising from an increased need for working capital will need to be included in prices. Therefore, the Authority proposes to retain the existing arrangements of charging Part A in advance.

The Authority's analysis of whether service delivery costs are fixed or variable is addressed in a subsequent chapter.

3.2 Water Use Forecasts

Introduction

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

In the previous review, up to 25 years of historical data was collated for nominal WAE, announced allocations and volumes delivered. The final water usage forecasts were based on the long term average actual usage level. Where there was a clear trend away from the long term average, SunWater adjusted the forecast in the direction of that trend. Usage forecasts also took into account SunWater's assessment of future key impacts on water usage, such as changes in industry conditions, impacts of trading and scheme specific issues (SunWater, 2006a).

For the Chinchilla Weir WSS, SunWater (2006b) assumed a water usage forecast of 60% of WAE. 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 Resource Operations Plan (ROP).

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

SunWater's usage forecasts in the Chinchilla Weir WSS for 2012-17 are made with regard to historic averages over a seven-year period and the usage forecast applied for the 2006-11 price path. However, SunWater advised that usage of high priority and medium priority irrigation water cannot be separately identified, as holders of high priority WAE also hold medium priority WAE which passes through the same meter.

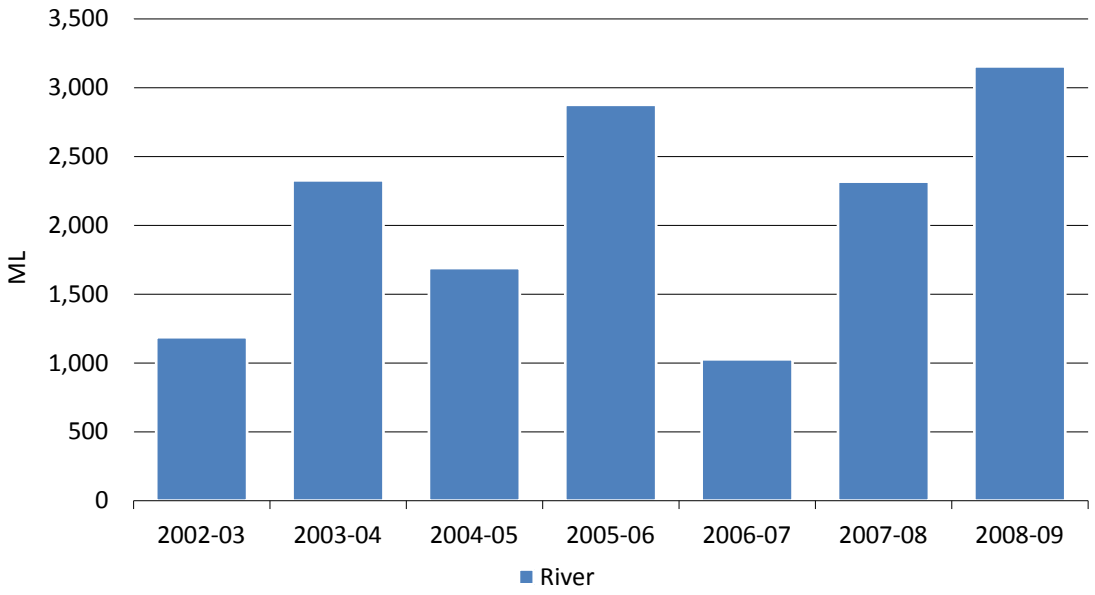
Based on the last seven years observations, SunWater has forecast use as follows:

(a) at a whole scheme level (all sectors) – an average of 51% of total WAE (including SunWater's WAE); and

(b) for the irrigation sector only – an average of 55% of irrigation WAE. This compares with the use assumption adopted in the 2006-11 price paths of 60% of WAE.

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

Figure 3.1: Water Usage for the Chinchilla Weir WSS



Source: SunWater (2011)

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

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

3.3 Tariff Groups

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

The 2006-11 SunWater Irrigation Price Paths Final Report (SunWater, 2006b) nominated one tariff group, the River tariff group, for the Chinchilla Weir WSS.

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

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

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).

Issues

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

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

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

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

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

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

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

(d) the methodology to calculate the renewals annuity.

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

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

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

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

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

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

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

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

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

SunWater submitted that the opening balance for the Chinchilla Weir WSS was $51,000.

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

4.3 Past Renewals Expenditure

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

Submissions

SunWater

SunWater (2011) submitted actual renewals expenditure for the Chinchilla Weir WSS for 2006-11 (Table 4.1) in real (2010-11 dollar) terms. 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 for this period that was approved for the 2005-06 review.

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	-	3	43	24	5

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

Other Stakeholders

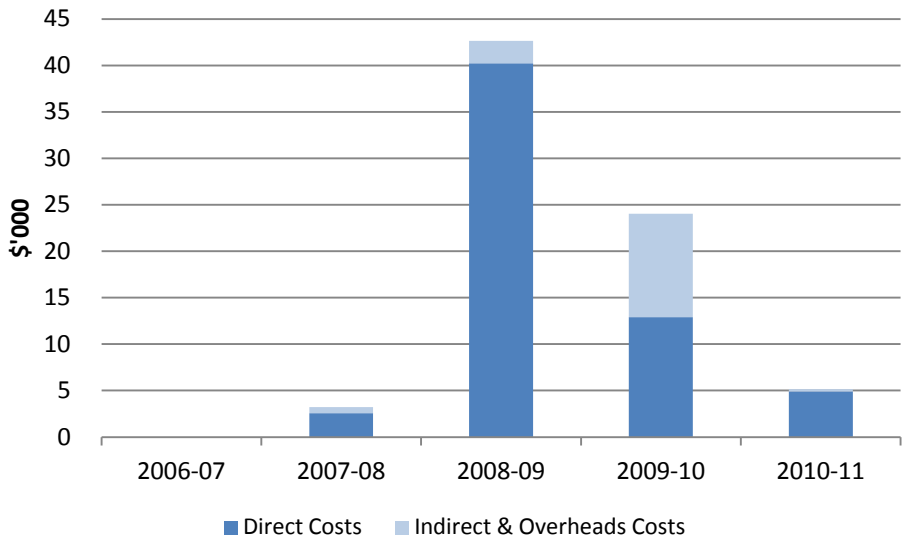
No other stakeholders have commented on this these items.

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)



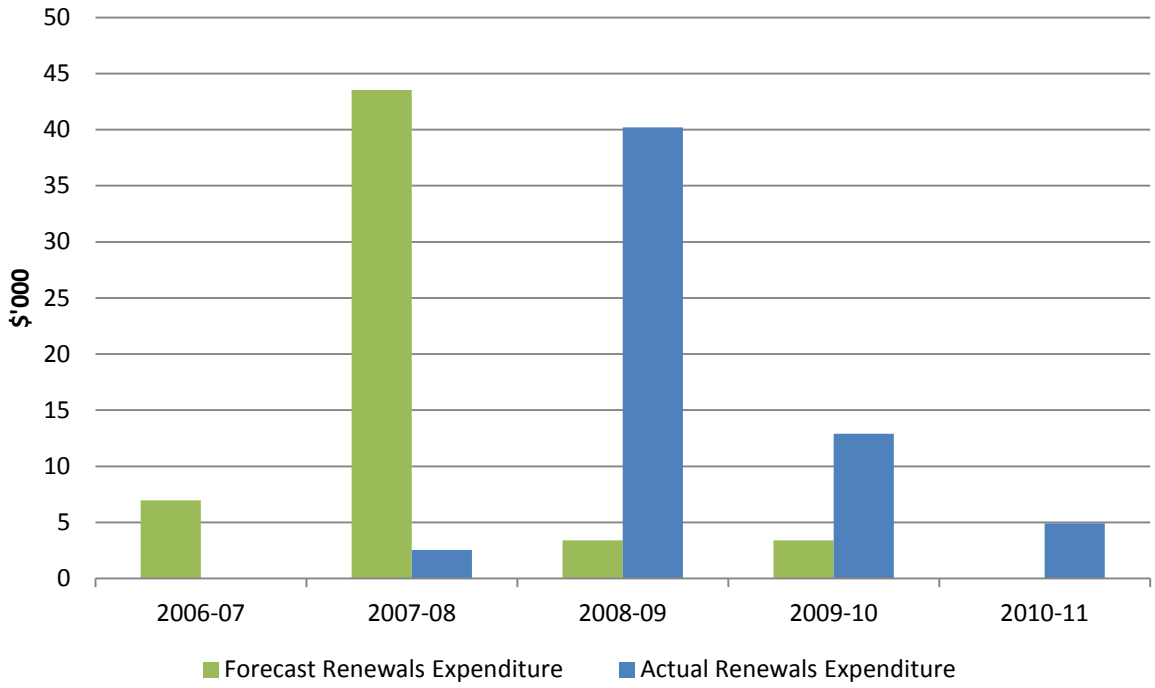
Source: Indec (2011d)

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 Chinchilla Weir WSS for 2006-11 is shown in Figure 4.2.

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



Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011.
Source: Forecast (Indec, 2011), Actual (SunWater, 2011k)

Actual renewals expenditure was approximately $4,000 (direct costs) above that forecast over the period.

GHD was appointed to review the prudency and efficiency of past renewals projects.

In the absence of forecast renewals expenditure for 2006-11 from SunWater (at the time of GHD's review), GHD sought to identify variances between annually budgeted and actual expenditure for certain projects.

GHD reported that over the past five years SunWater has completed two projects, to purchase a data-logger and install a buoy line for the Chinchilla Weir. However, due to information deficiencies GHD was unable to conclude on the prudency and efficiency of past renewals expenditure.

Conclusion

The Authority notes GHD's finding that there was insufficient information to review the past renewals expenditure items for this scheme. As noted in Volume 1, after a consideration of all its consultants' reviews, the Authority has applied a 10% saving to non-sampled and sampled items for which there was insufficient information.

In total, the Authority recommends that past renewals expenditure be adjusted as summarised in Table 4.2.

Table 4.2: Review of Past (Direct) Renewals Expenditure 2006-11 (Real $)

Item	*Date*	*SunWater*	*Authority's Findings*	*Recommended*
Past Renewals Items	Various	Various	Insufficient Information	10% saving applied

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

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 $103,000 for the Chinchilla Weir 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 matter.

Authority's Analysis

Based on the Authority's assessment of the prudency and efficiency of past renewals expenditure, the recommended opening ARR balance for 1 July 2011 for the Chinchilla Weir WSS is $110,000.

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

(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 for the period consistent with the Authority's recommendations detailed in Volume 1.

To establish the closing ARR balance as at 30 June 2012 of $107,000, 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 their current approach, including:

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

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

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's proposed 2011-16 renewals expenditure for the Chinchilla Weir WSS in real (2011 dollar) terms 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*
Chinchilla Weir	18	-	-	38	164

Source: SunWater (2011)

The major item incorporated in the above estimates is to replace the gate valve in the Left Bank outlet works with an actuated butterfly valve because of the existing valve's condition. The gate valve is scheduled to be replaced in 2016 at an estimated cost of $123,000.

The major expenditure items from 2016-17 are:

(a) five year comprehensive dam inspection as required by law at Chinchilla Weir at an estimated cost of $10,000 in 2024-25; and

(b) refurbishment and painting of external pipeline for LH conduit at Chinchilla Weir at $18,000 in 2027-28.

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

Other Stakeholders

Participants at the Round 1 consultation considered that if there were major refurbishments associated with the Chinchilla Weir and this meant significant increases in prices, then this would be of great concern to irrigators.

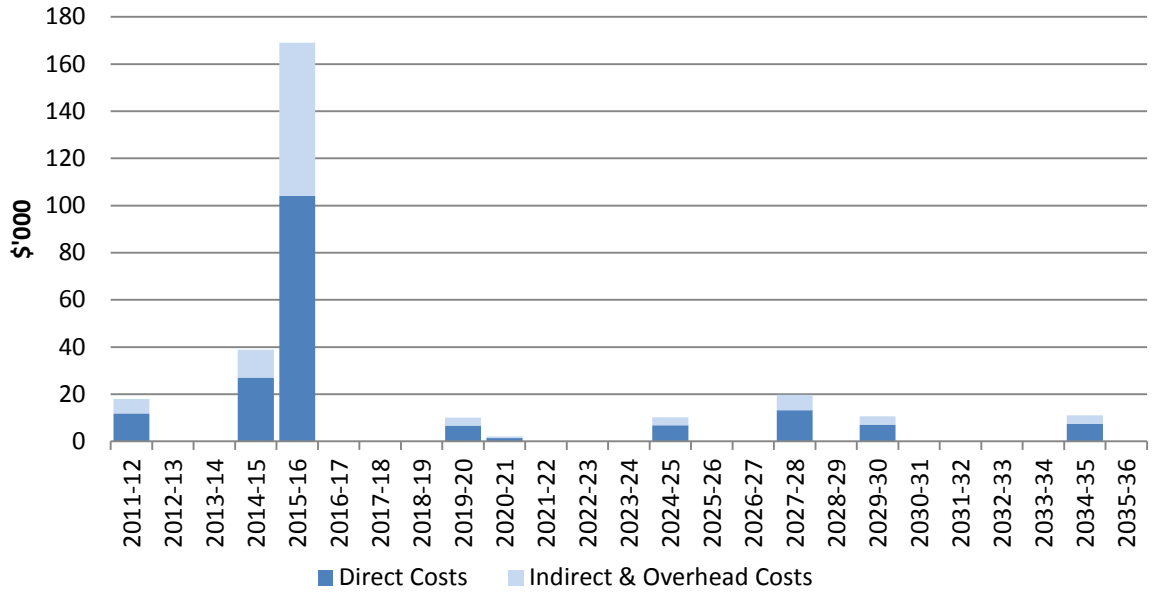
Authority's Analysis

Total Costs

SunWater's proposed renewals expenditure for 2011-36 for the Chinchilla Weir WSS is shown in Figure 4.3. This reflects the most recent renewals information provided by SunWater to the Authority in September 2011, and differs from the NSP. The Authority has identified the direct

cost component of this expenditure. The indirect and overheads component of expenditure relating to these projects are further reviewed in Chapter 5 – Operating Costs.

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



Source: SunWater (2011am).

Item Review

GHD reviewed the prudency and efficiency of the total costs (including indirect and overhead costs) of a sample of items.

As noted in Volume 1, GHD adopted a different approach to the other scheme consultants and undertook a high level process review of a large number of projects rather than a more detailed review of a smaller number of projects.

GHD found SunWater's asset planning process to generally meet good industry practice (as did the other consultants in general). Nevertheless, as a result of the lack of detailed review of any specific renewals expenditure items, the Authority has applied a general 10% cost saving to SunWater's proposed renewals expenditure items reviewed by GHD alone.

The Authority also requested that SKM review an additional item. The assessed future renewals projects are discussed below.

Item 1: Chinchilla Weir Renewals Projects 2011-12 to 2015-16

SunWater

SunWater proposed the following renewal projects for the Chinchilla Weir (Table 4.4).

Table 4.4: Chinchilla Weir Renewals Expenditure 2011-12 to 2015-16 (Real $'000)

Facility	*Description*	*Driver*	*2011-12*	*2014-15*	*2015-16*
Chinchilla Weir	09CHW01- replace: HW gauge w/ level sensor	age		27.96	
Chinchilla Weir	14CHWXX - decommission RH conduit and values	condition			41.49
Chinchilla Weir	Replace 300 Gate Valve D/S	condition	17.58		
Chinchilla Weir	Replace Butterfly Valve (Replaces existing Gate Valve)	condition			122.89

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

Other Stakeholders

No other stakeholders have commented on these items.

GHD's Review

GHD stated that the majority of the expenditure from 2011-12 to 2015-16 is forecast for the replacement of the gate valve number 3 (see Item 2 below) and the decommissioning of valve number 2 at the Chinchilla Weir in year 2016. GHD reviewed the decommissioning of valve number 2 in SunWater's SAP PM information system.

GHD concluded that the need and timing of the renewals works listed in Table 4.4 is generally supported by condition appraisals and risk assessments.

However, GHD stated that without a detailed scope of works, bill of materials (BOM) and quantities and details of the unit rates used to calculate the estimates, the costs could not be fully reviewed.

Authority's Analysis

The Authority notes that GHD found there was insufficient information to conclude on the efficiency of costs.

The butterfly valve was subsequently able to be assessed in more detail by SKM as noted below.

Item 2: Purchase Butterfly Valve for Chinchilla Weir

SunWater

According to SunWater's Systems, Applications and Products (SAP) Works Management System (WMS), the gate valve was initially installed in 1973 as part of the original construction of the Chinchilla Weir. SunWater has proposed expenditure in its NSP of $122,890 for the purchase and installation of a butterfly valve in 2015-16.

Other Stakeholders

No other stakeholders have commented on this item.

GHD's Review

GHD reviewed the replacement of the gate valve number 3 in SunWater's SAP Plant Maintenance (PM) information system. GHD concluded that the need and timing of the works is supported by condition appraisals and risk assessments.

GHD considered it to be a reasonable estimate of the probable cost based on typical engineering cost estimates for this size valve, although the labour (48%) and contractor (20%) costs appeared to be high in relation to materials (20%) and plant (12%). However, as above, GHD stated that without a detailed scope of works, bill of materials and quantities and details of the unit rates used to calculate the estimates, the costs could not be fully reviewed.

SKM's Review

(a) Available Information

SKM reviewed SunWater's SAP-WMS, and asset condition and risk assessment policy and procedures. SunWater's SAP-WMS proposed expenditure of $100,000 for the purchase and installation of the butterfly valve.

The Authority notes that the total cost (including direct and indirect) submitted by SunWater for this renewals item ($122,890) does not equate to the amount reviewed by SKM ($100,000). As discussed in Volume 1, 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.

Table 4.5: Documentation Reviewed on the Butterfly Valve for Chinchilla Weir

Document No.	*Document Name*	*Document Title*	*Date*
1108982	1108982-v1A Chinchilla Weir Valve Replacement	Chinchilla Weir Water Supply – Chinchilla Weir – Purchase Butterfly Valve (Replace existing gate valve) (CHW-CHIN-VLV-VLV3)	8 August 2011

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 as such.

SKM viewed the WMS record for this asset. The record confirms that the asset has been in service since 1973.

SunWater has applied its risk evaluation method to this asset. A risk assessment was undertaken in October 2005. Two scenarios were considered and are presented in Table 4.6.

Table 4.6: Results from SunWater's Risk Assessment, 2005

Risk	*Valve stuck open*	*Valve stuck shut*
Comment	Upstream valves cannot be serviced, Chinchilla town water supply.	
WH&S	low	low
Environmental risks	low	low
Business risks	moderate	low

Source: SKM (2011)

The highest risk is assessed as 'Production/Operations', with a consequence of 'Critical'. The comments added suggested that failure of the valve would lead to SunWater not being able to service the upstream valves resulting in an impact on the Chinchilla town water supply.

SunWater's risk consequence table included the following comments for critical production/operations risks "*Total loss of storage resulting in major flooding and/or long term loss of supply. Certain crop failure on a large scale. Failure of supply to urban or industrial sectors resulting industry closure or significant reduction in production. Need to establish alternative urban supplies*". The recorded comment suggests that failure of the valve in the open position will affect the Chinchilla town water supply and therefore may result in the need to establish an alternative supply to this area. Without further knowledge of the system, SKM were unable to assess whether this risk rating is appropriate. However, it should be noted that downgrading this risk from 'Critical' to 'Major' would still result in a risk assessment level of 'Moderate'.

Based on the above condition assessment and SunWater's processes, SKM considered that application of a risk based asset life of 35 years is appropriate.

Two condition assessments have been undertaken, the first in March 2005 and the latest in January 2009. This is within SunWater's condition assessment frequency of every five years.

SKM noted that the risks for workplace health and safety (WHS) is classed as 'Low' (based on a consequence = insignificant). However, two WHS problems were identified within the provided documentation (1108982-v1A Chinchilla_Weir_Valve_ Replacement) as part of the justification for the provision of an actuator for the valve.

The maximum condition of the asset in 2009 was a four for 'External Coating / Surface / Bolts'. However, the condition assessment also contains a ranking of 'N/A' for 'Operation' and associated comment of 'Unable to Operate', also a ranking of 'N/A' for 'Function' and associated comment of 'Not Known'.

The provided documentation (1108982-v1A Chinchilla_Weir_Valve_ Replacement) suggests that "*the combined comments of 'Valve stuck open' and 'Unable to Operate' suggest that the valve has failed (condition 6) and should have been replaced earlier than planned in 2016*". SKM were unable to identify the "*Valve stuck open*" comment in the condition assessment. SKM therefore considered that there may have been confusion between the risks assessed above, and the condition assessment profile.

The condition assessment does not indicate whether the inability to operate the valve was due to the valve failing or other circumstances (e.g. lack of access or equipment). If the valve had been stuck open or been unable to be operated due to a fault with the valve, it should have

received a condition assessment score of six (asset has failed and is not operable), not a ranking of 'N/A'. Either the form was incorrectly completed, or SunWater interpretation of the information contained in the form is incorrect.

In the absence of information clarifying what the assessor intended to record, SKM were unable to support the statement that the valve has failed.

The provided documentation (1108982-v1A Chinchilla_Weir_Valve_ Replacement) contains a table of the recommended replacement date (Table 4-2). There is a minor error in the table. Table 4-2 notes that the valve has been in operations since 1972, whereas SAP states July 1973. Based on the asset risk and maximum condition score, Table 4-2 indicates that the value should be replaced in 2023-24. SunWater proposed replacement of the valve is 2015-16, due to concerns within the condition assessment, as discussed above. Based on SKM's concerns of the interpretation of the condition assessment, SKM were unable to confirm that bringing forward the timing of the replacement of the valve is prudent.

Whilst the 2023-24 replacement date still falls within the current annuity period of 25 years, restating its replacement date as 2023-24 will impact on the actual amount, due to greater discounting.

SKM recommended that the condition assessment is reviewed to confirm the existing condition of the valve. If the valve is inoperable, the condition assessment score for operations and function should be revised to a 6. This would result in a new recommended replacement year, that is, that the valve should be replaced as soon as is reasonably practical.

SKM noted that it is intended to replace the existing gate valve with a butterfly valve. Within the Refurbishment and Maintenance Planning data, the frequency for replacement for the future butterfly valve is stated as 25 years. SunWater has allocated a standard run to failure asset life of 80 years and a refurbishment period of 20 years for butterfly valves. Following SunWater's procedures and allowing for a medium risk (as per the risk assessment), a risk based asset life of 70 years should be applied.

SKM noted that while this makes little difference to the proposed replacement in 2015-16 (which as stated above is subject to confirmation of condition) this does affect the future planned replacement of the valve, which is scheduled for 2049-50, and associated renewals costs. If the replacement date of the initial valve is set at 2015-16, according to SunWater's procedures, the valve should not be replaced again until 2085-86, some 36 years later then currently scheduled for the valve.

SKM recommended that the dates for future replacement are reviewed. SKM further recommended that SunWater investigates opportunities to allow for automatic updating of data fields in SAP-WMS, to reduce the potential for errors caused by manually entering data fields. It is possible that some of the data errors above are a result of updates, which have not fully carried through to all sections of SAP.

Options Evaluation

SKM proposed to replace the existing manual valve with an actuated valve. The main reason is to provide SunWater with cost effective control and reliable operation of the valve. The valve is currently operated by Chinchilla Council under SunWater's instruction. A fee is paid to the council per operation of the valve. This arrangement has been made as the cost of SunWater operators travelling to Chinchilla to regularly operate the valve is excessive.

However, historically there has been resistance on the part of the council to release water from the weir, especially given the recent prolonged drought that has seriously threatened Chinchilla

Council's water security. SKM have been advised that directions to release water from the weir required to meet SunWater's obligations under Interim Resource Operations Licence (IROL) generally result in debate between SunWater and Chinchilla Council. This problem is likely to cause SunWater to breach requirements of the Resource Operation Plan (ROP) once it comes into force. Requirements for passflows at the weir under the ROP are understood to be more onerous than under the IROL. There is no provision for delaying releases while decisions are made under the ROP and there is a requirement to adjust flows on a daily basis under the ROP.

In addition to the above issues, two WHS problems have been identified by SunWater:

(a) the work required to operate the valve is excessive, with potential to cause back injuries to operators; and

(b) access to the valve is dangerous. Operators are required to traverse a steep uneven river bank and then walk across slippery wet concrete.

Based on the daily requirements to adjust flows, the expense associated with SunWater operators travelling to Chinchilla to regularly operate the valve, the historical issues with Chinchilla Council operating the valve, and the identified WHS issues, SKM considered the proposed installation of an actuator is reasonable.

Two options have been considered for actuation of the valve:

(a) install a manual hydraulic actuator at the weir so that the valve can be operated from the top bank; and

(b) install a remote control actuation system for the valve.

The first option still requires an operator to visit the site. A net present value (NPV) analysis has been undertaken based on analysis of releases from the weir made over the previous six years, which showed that the valve is adjusted approximately 20 times per year. A reasonable rate of $300 per operation has been used. This rate of operation is likely to increase with introduction of the ROP.

On the basis of the NPV analysis, SKM agreed that remote actuation of the valve is the most cost effective option.

SKM recommended that a detailed review is undertaken of the replacement of the gate valve with a butterfly valve. Butterfly valves may experience problems in raw water applications where there are high volumes of sediment, which may result in problems with the valve sealing. In order to resolve this, the valve may be mounted in the horizontal position. Based on the photograph within SAP, it appears the valve is installed in a chamber. SunWater will need to confirm that there is sufficient room within the chamber to install the butterfly valve and actuator.

Whilst a butterfly valve is likely to be significantly cheaper at this size than a gate valve, this cost saving is likely to be offset by the need to modify existing pipe work to allow for the dimensions of the butterfly valve.

Conclusion on Prudency Evaluation

Following SunWater's procedures for risk and condition assessment, the valve is due for replacement in 2023-24, therefore the current proposed replacement of the valve in 2015-16 is not considered prudent. Therefore whilst it is prudent to include the cost of the valve within the current annuity period of 25 years, it should be replaced in 2023-24.

SKM recommended that the condition assessment is reviewed to confirm the existing condition of the valve. If the valve is inoperable, the condition assessment score for operations and function should be revised to a 6, this would result in a recommendation for the valve should be replaced as soon as is reasonably practical.

SKM recommended that the WHS risks are reviewed and updated if necessary to reflect the WHS risks identified within the provided documentation.

SKM further recommended that the dates for future replacement are reviewed, and that the replacement period is updated from 25 years to 70 years, or as appropriate based on the updated risk profile.

Efficiency Evaluation

The process used by SunWater to establish future renewals item replacements/refurbishments cost are detailed in the main body of SKM's report.

The project costs have been derived from a document prepared by the Ipswich regional manager during February 2008 (An extract of Hummingbird Document 604708 has been included in 1108982-v1A Chinchilla_Weir_Valve_Replacement). The cost estimate for this work is presented in Table 4.7.

Table 4.7: Cost Estimate for Chinchilla Weir Valve Replacement ($'000, 2007-08)

Cost Item	*Cost*	*Comment*
Replacement of valve	60	Including a new valve, labour and crane hire
GSM Remote Operation Equipment (20yr Life)	7	
Power Supply	10	
Rotork	12	
Total	**89**	

Source: SKM (2011)

Allowing for additional costs associated with the consumer price index (CPI), SunWater has allowed for $100,000 in the current estimate. SKM noted that this equates to an allowance of 6% for CPI (assuming costs are escalated over two years to 2009-10 costs). This is considered to be high. However, SKM also noted that this figure may contain some allowances for rounding.

Renewal/Replacement Project Cost Evaluation

Based on SKM's recent project experience, SKM have obtained quotations from Tyco for large diameter valves (Table 4.8).

Table 4.8: Quotations from Tyco for Large Diameter Valves ($'000, 2009-10)

Cost Item	*Cost*	*Comment*
900mm Gate Valve	83.5	900 FL RS CC Fig 400 16:1 G/BX including a Rotork actuator
900mm Butterfly Valve	22.0	F627PQ 403S AD including a Rotork actuator

Source: SKM (2011)

In addition to the materials costs above, there will be a need to supply and install specials and flexible couplings, as well as labour and crane hire costs.

Based on SKM's project experience and typical rates from Rawlinsons, SKM estimated the costs to be just below $70,000. SKM considered that, given the low value of the difference in expenditure and uncertainties within the estimating process, the sum proposed by SunWater was not unreasonable, and it could be considered for inclusion.

For the proposed 2049-50 works, i.e. the next replacement of the valve, SKM reviewed the BOM costs and agreed that the correct procedure has been used to calculate the costs, but noted that the stated BOM costs are based on the replacement of a gate valve not a butterfly valve, which at this size will be cheaper. The cost estimate costs for the supply of a gate valve is $93,500, compared to $31,900 for the supply of a butterfly valve. If this valve is changed to a butterfly valve, it is likely that it will be replaced by a butterfly valve in future. Future costs should also be allowed for the refurbishment and replacement of the actuator.

Summary and Conclusions

Following SunWater's procedures for risk and condition assessment, the Chinchilla gate valve is due for replacement in 2023-24. Based on the condition assessment presented, SKM were unable to ascertain whether the valve has failed, therefore the current proposed replacement of the valve in 2015-16 was not considered prudent. The item should be deferred to 2023-24.

SKM recommended that the condition assessment is reviewed to confirm the existing condition of the valve. If the valve is inoperable, the condition assessment score for operations and function should be revised to a 6. This would result in a new recommended replacement year of 2004-05, i.e. that the valve should be replaced as soon as is reasonably practical.

SKM recommended that the WHS risks are reviewed and updated if necessary to reflect the WHS risks identified within the provided documentation.

SKM further recommended that the dates for future replacement are reviewed, and that the replacement period is updated from 25 years to 70 years, or as appropriate based on the updated risk profile.

SKM estimated a cost of $70,000, and given the low value of the difference in expenditure and uncertainties within the estimating process, the sum proposed by SunWater was not unreasonable.

SKM recommended that future replacement costs are reviewed, although noted that these are outside of the current annuity period.

Authority's Analysis

The Authority accepts SKM's recommendation that this project is prudent but replacement should be deferred to 2023-24.

The Authority notes that SKM have independently estimated the cost of this item at $70,000. In comparing the SKM estimate to SunWater's cost estimate in the SAP of $100,000, SKM have concluded that while SunWater's estimate may not be efficient it may not necessarily be unreasonable.

However, the Authority notes that the total cost of this item as proposed by SunWater for inclusion in renewals expenditure is $122,890 in 2015-16, and this estimate materially differs from that reviewed by SKM due to differences in the application of indirect and overhead costs in the SAP-WMS as compared to those submitted in the NSP.

Given SKM's advice, the Authority considers the expenditure for this item as proposed for inclusion in renewals expenditure for pricing purposes of $122,890 to be prudent and efficient, with the timing of the works being deferred until 2023-24 instead of 2015-16.

Item 3: Chinchilla Weir Renewals Projects from 2015-16

SunWater

SunWater proposed a range of renewals project beyond 2015-16 (Table 4.9) in real terms as at 2010-11.

Table 4.9: Chinchilla Weir Renewals Expenditure Beyond 2015-16 (Real '000)

Facility	*Description*	*Year*	*Cost*
Chinchilla Weir	Study: 5yr Dam Comprehensive Inspection	2019-20	$10
Chinchilla Weir	Replace 150 Gate Valve U/S	2020-21	$2
Chinchilla Weir	Study: 5yr Dam Comprehensive Inspection	2024-25	$10
Chinchilla Weir	Refurbish: Chinchilla Weir - refurbish/ Painting of external pipework for LH conduit	2027-28	$18
Chinchilla Weir	Study: 5yr Dam Comprehensive Inspection	2029-30	$10
Chinchilla Weir	Study: 5yr Dam Comprehensive Inspection	2034-35	$10

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

Other Stakeholders

No other stakeholders have commented on these items.

GHD's Review

GHD reported that the majority of the expenditures over the remaining 20 years are five-yearly dam inspections, replacement of smaller valves based on remaining useful life and refurbishments/repainting of the conduit.

GHD concluded that the forecast renewals expenditure was efficient and prudent based on the predicted useful life of the assets.

Authority's Analysis

As noted above, the Authority has applied a general 10% cost saving to renewals items reviewed by GHD.

Conclusion

In summary, various projects for the Chinchilla Weir WSS were sampled. Of these:

(a) GHD considered that the need and timing of proposed expenditure items for 2012-16 is prudent, but that insufficient information was provided to conclude on efficiency of costs;

(b) SKM was able to conduct a detailed review of purchased butterfly valve for Chinchilla Weir, which it concluded was prudent and efficient but should be deferred to 2023-24; and

(c) the Authority has applied a general 10% saving to renewals expenditure after 2015-16.

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.

Therefore, the Authority recommends that forecast renewals expenditure be adjusted as shown in Table 4.10.

Table 4.10: Review of Forecast Renewals Expenditure 2011-36 (Real $'000)

Item	*Year*	*SunWater*	*Authority's Findings*	*Recommended*
Sampled Projects				
1. Various projects from 2011-12 to 2015-16		87	Prudent, but insufficient information was provided to conclude on efficiency of costs.	10% saving applied*
2. Butterfly valve for Chinchilla Weir	2015-16	123	Prudent and efficient but deferred to 2024	123
3. Various projects from 2015-16		60		10% saving applied
Non Sampled Projects				10% saving applied

*Note: * Except for the butterfly valve proposed for 2016 which has been adjusted as per Item 2. Source: SunWater (2011), GHD (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

No other stakeholders have commented on this matter.

Authority's Analysis

In Volume 1, the Authority noted that customers and their representative groups had concerns about the lack of involvement in the planning of future renewals expenditure.

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 Chinchilla Weir bulk water infrastructure were apportioned between priority groups using converted nominal water allocations. The WPCF for the Chinchilla Weir WSS was 2:1; that is, one ML of high priority WAE was considered equivalent to 2 ML of medium priority WAE.

Stakeholder Submissions

SunWater

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

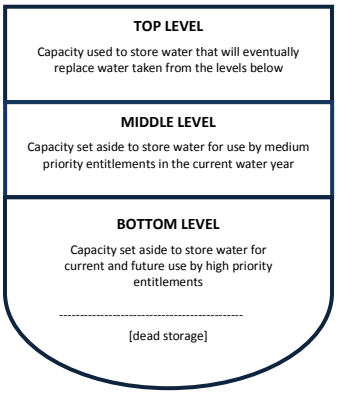
SunWater submitted that, in general, the HUF allocates a greater proportion of capital costs per ML to high priority WAE. Specifically, the HUF methodology takes into account water sharing rules, critical water sharing arrangements (CWSAs) and other operational requirements that typically give high priority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

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

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

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

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 Chinchilla Weir WSS are summarised in

. The HUFs for this scheme (SunWater, 2010d) are 12% for medium priority and 88% for high priority.

[1] 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.

Table 4.11: Application of HUFs Methodology

STEP 1: Water Entitlement Groups (DERM's Water Allocation Register)			
Nominal Group	**(ML)**	**HUF Group**	**(ML)**
Medium Priority	2,884	MP_A	2,884
High Priority	1,165	HP_A	1,165
STEP 2: ROP Conversion Factor Adjustment			
Conversion Factor: ROP_{CF}			N/A
Maximum volume that can be converted to HP: $HP_A max$			1,165
Corresponding volume of MP: $MP_A min = MP_A-(HP_A max-HP_A)*ROP_{CF}$			2,884
STEP 3: Water Sharing Rules & Operational Requirements			
Water Sharing Rules			
Volume below which MP not available: $MP_0 AA$			N/A
Volume above which max. MP available: $MP_{100} AA$			N/A
CWSAs and other operational requirements			
Likely increase in volume effectively reserved for HP: MP_0			6,757
Likely increase in min. storage before maximum MP available: MP_{100}			9,780
Key Dam Level Measures			
Full Supply Level: FSV_{hwks}			9,780
Dead Storage Level: DSL_{hwks}			120
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: $\min\{(MP_{100}-MP_0),(FSV_{hwks}-MP_0)\}$	$MP_1= 3,023$	24%	$MP_{1u}= 724$
Bottom: $MP_0 - DSV_{hwks}$	$HP_1= 6,637$	78%	$HP_{1u}= 5,147$
STEP 5: Calculation of HUFs for each Water Entitlement Group			
Formula		**HUF Group**	**Nominal Group**
MP_A: $(MP_{1u}+MP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ = (724+0) / (724+5,147+0+0)		HUF_{mp} = 12%	Medium Priority = 12%
HP_A: $(HP_{1u}+HP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ = (5,14+0) / (724+5,147+0+0)		HUF_{hp} = 88%	High Priority = 88%

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

Other Stakeholders

No other stakeholders have commented on this matter.

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 in the Chinchilla Weir 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 18.15:1. This compares with the WPCF of 2:1 used for 2006-11 price paths. The HUF for the Chinchilla WSS apportions 12% of renewals costs to medium priority WAE compared to 55% under the previous water pricing conversion factor.

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 Chinchilla Weir WSS the recommended renewals annuity for the 2012-17 regulatory period in real terms as at 2010-11 is shown in Table 4.12. The table shows the total renewals annuity recommended by the Authority and the component amounts for high and medium priority customers. Also presented for comparison is SunWater's total renewals annuity for 2006-11 and SunWater's proposed total annuity for 2012-16. SunWater did not submit a disaggregation between high and medium priority customers.

Table 4.12: Chinchilla Weir WSS Renewals Annuity* (Real $'000)

	Actual						***Recommended***				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Total SunWater	6	6	8	8	7	10	9	9	9	9	9
Total Authority	-	-	-	-	-	-	4	4	4	4	4
High Priority	-	-	-	-	-	-	3	3	3	3	3
Medium Priority	-	-	-	-	-	-	1	1	1	1	1

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

5. OPERATING COSTS

5.1 Background

Ministerial Direction

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

Issues

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

(a) the scope of operating activities for 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; and

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

5.2 Total Operating Costs

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

Non-direct costs are classified as either:

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

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

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

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

(a) there are no direct employees for the scheme, which is serviced from Pittsworth. A Senior Operator is located at the Pittsworth depot and is responsible for the day to day water supply management and delivery of the programmed works;

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

(b) service provision relates to:

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

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

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

(i) the ROP and Resource Operations Licence (ROL) – 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	*Monthly Monitoring requirements*			
	Inflow	*Head Water*	*Tail Water*	*BGA*
Chinchilla Weir	No	Yes	Yes	Yes

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

(ii) dam safety – routine inspections are carried out quarterly on the Chinchilla Weir. They also include annual condition inspections to identify and plan maintenance requirements and to provide information for management planning of water delivery assets;

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

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

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

(e) SunWater has sought to transfer the management and cost of recreation activities to private operators or Government; and

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

Previous Review

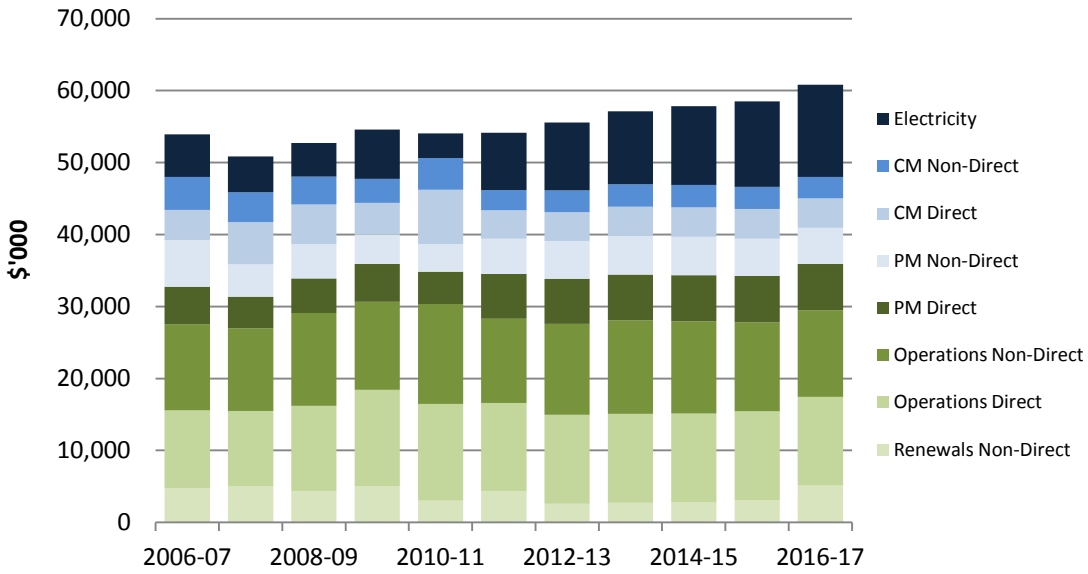
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

Stakeholder Submissions

SunWater

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

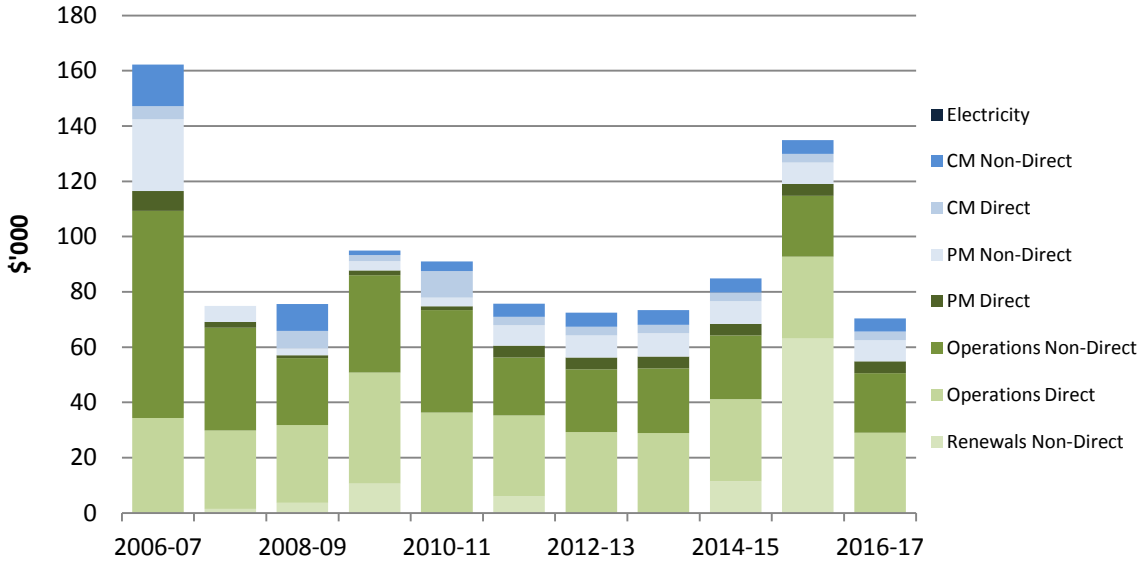
Figure 5.1: SunWater's Total Operating Costs (Real $'000)



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, 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 Chinchilla Weir WSS (all sectors) is shown in Figure 5.2 and Tables 5.1 and 5.2.

Figure 5.2: Total Operating Costs – Chinchilla Weir 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, 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	109	66	52	75	73	50	52	52	53	52	51
Electricity	0	0	0	0	0	0	0	0	0	0	0
Preventive maintenance	33	8	3	5	5	12	12	13	12	12	12
Corrective maintenance	20	0	16	4	13	8	8	8	8	8	8
Renewals non-direct	0	1	4	11	0	6	0	0	11	63	0
Total operating costs	**162**	**75**	**76**	**95**	**91**	**76**	**72**	**73**	**85**	**135**	**70**

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, 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	28	15	16	21	19	18	18	18	18	18	18
Electricity	0	0	0	0	0	0	0	0	0	0	0
Contractors	3	2	5	9	7	5	5	5	5	5	5
Materials	1	3	2	1	3	2	2	2	2	2	2
Other	14	11	13	13	18	12	12	11	12	12	11
Non-direct	116	44	40	51	44	39	36	37	48	98	34
Total Operating Costs	**162**	**75**	**76**	**95**	**91**	**76**	**72**	**73**	**85**	**135**	**70**

Note: Renewals direct costs are discussed in the previous chapter. Non-direct costs include the non-direct operating costs allocated to renewals. Totals vary from NSP due to the inclusion of renewals non-direct costs, SunWater's revised approach to insurance, 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 the operating costs for this scheme averaged $88,000 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 $68,000 per annum.

Other Stakeholders

No other stakeholders have commented on this matter.

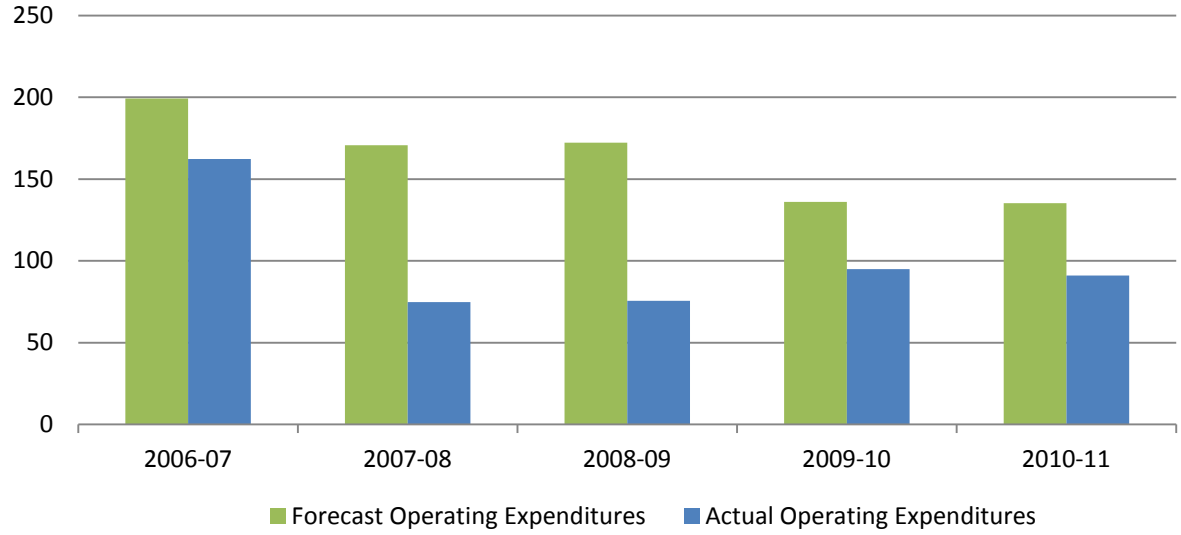
The Authority's Analysis

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 notes 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 Chinchilla Weir WSS is shown in Figure 5.3 below. For this scheme, SunWater's actual operating costs were less than Indec's forecast efficient operating costs by $315,000 over the period.

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



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

Indec has not, however, inferred from its analysis that SunWater should alter its costs over the 2012-17 regulatory period to the level of efficient costs determined for 2011. 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 is detailed in Volume 1.

As noted above, SunWater categorises non-direct costs as either overheads or indirect costs.

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 estimated 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 total direct labour costs (DLCs) be used to allocate non-direct costs between service contracts.

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	27,831	25,097	25,872	24,579	25,152	23,770	23,512	24,244	24,055	23,708	25,089
Chinchilla Weir	116	44	40	51	44	39	36	37	48	98	34

Source: SunWater (2011ap)

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

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

Deloitte was unable to draw any definitive conclusions from an attempt to benchmark against Pioneer Valley Water Board (PVWater) and other Australian rural water service providers. Deloitte noted that PVWater's non-direct costs were higher than those of SunWater as a

percentage of total operating costs – but that there are differences between PVWater and SunWater which made the comparisons unreliable.[3]

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

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

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

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

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

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

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

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

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

The Authority's recommended level of non-direct costs to be recovered from the Chinchilla Weir 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.

[3] For example, PVWater have only four FTE staff. For the benchmarking exercise, PVWater needed to estimate the proportions of staff time spend on administration versus operations and maintenance activities, which varies 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.

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	116	44	40	51	44	39	36	37	48	98	34
Authority	-	-	-	-	-	-	35	36	46	55	36

Source:SunWater 2011ap

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

5.4 Direct Costs

Introduction

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

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

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

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

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

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

Stakeholder Submissions

SunWater

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

SunWater's forecast direct operating expenditure by activity is set out in Table 5.6 below. These estimates reflect the SunWater's most recent positions and differ from the NSP.

Table 5.6: 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	34	28	28	40	36	29	29	29	30	30	29
Electricity	0	0	0	0	0	0	0	0	0	0	0
Preventive maintenance	7	2	1	2	1	4	4	4	4	4	4
Corrective maintenance	5	0	6	2	10	3	3	3	3	3	3
SunWater Direct Operating Costs	**46**	**30**	**36**	**44**	**47**	**37**	**37**	**36**	**37**	**37**	**36**

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

Table 5.7: 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	28	15	16	21	19	18	18	18	18	18	18
Electricity	0	0	0	0	0	0	0	0	0	0	0
Contractors	3	2	5	9	7	5	5	5	5	5	5
Materials	1	3	2	1	3	2	2	2	2	2	2
Other	14	11	13	13	18	12	12	11	12	12	11
SunWater Direct Operating Costs	**46**	**30**	**36**	**44**	**47**	**37**	**37**	**36**	**37**	**37**	**36**

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

Authority's Analysis

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

GHD noted that there were substantial information deficiencies relating to the information provided by SunWater. GHD reported that sampling was not possible due to the level of aggregation in SunWater's SAP-WMS. GHD also reported that, where possible, information was gathered via direct interviews and information sessions with analysis undertaken of the information made available. Comparisons against published benchmarks were made, where possible.

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.

GHD'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, workplace health and safety compliance, 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. Actual past and estimated future operating cost of the recreational facility is approximately $2,500 per annum.

Other Stakeholders

Participants at the Round 1 consultation (May 2010) enquired as to whether Western Downs Regional Council maintaining recreational facilities at Chinchilla Weir at a cost to SunWater is an appropriate arrangement.

Authority's Analysis

GHD's Review

GHD considered that the required compliance activity for the weir asset accounts for the majority of the cost of this scheme. The business risk assigned to the scheme by SunWater and the compliance requirements will require a frequent inspection and maintenance regime.

GHD further considered that given the expectations for compliance with Australian and Queensland Government regulation and initiatives, the management water allocations, and corrective and preventive maintenance, are considered efficient. GHD stated that SunWater has forecast the required expenditure using the current cost requirements as the basis. Considering the regulatory requirements are unlikely to change, the management and administration costs of this scheme would be consistent with the actual expenditure incurred in the current price period. GHD stated that allowing for anomalies such as floods, the method for calculating the forecast using actual historical cost is considered robust.

GHD advised that efficiency gains for this scheme could be achieved with the implementation of electronic water ordering through Integrated Voice Recognition (IVR) or the SunWater Online solution. SunWater has indicated, when questioned, that customers in this scheme are not willing to pay for these services. Considering the low volumes allocated to this scheme this is considered reasonable.

GHD did not recommend any adjustment to SunWater's proposed operations costs for this scheme.

SunWater's Response

SunWater submitted that the costs of implementing electronic water ordering systems are significant as they must be set up and tailored to each water supply scheme. SunWater does not believe the costs, given the small customer base, would be justified. SunWater further submitted that GHD did not provide any supporting data about the cost savings that would arise from implementing these systems to support their findings. However, SunWater noted that GHD did not recommend any adjustment to costs.

Conclusion

The Authority notes that GHD did not recommend any adjustment to costs, although GHD considered that electronic water ordering could result in efficiency gains. SunWater responded that the costs of doing so would not be justified for this scheme.

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

In response to stakeholder concerns regarding recreational costs, the Ministerial Direction requires that irrigation prices recover recreation management costs. The Authority is not aware of any specific costs related to recreational facilities in this scheme that could be considered inefficient.

Further, SunWater's forecast average annual operations costs are lower than the average over 2006-11.

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

Item 2: Preventive and Corrective 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 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.

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

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

Other Stakeholders

No other stakeholders have commented on these items.

Authority's Analysis

GHD's Review

GHD noted that preventive and corrective maintenance is forecast as a 60%/40% ratio. GHD considered that this is consistent with the requirements for weed management, compliance inspections and reactive responses as required.

GHD stated that assessment of the distribution of preventive to corrective maintenance is problematic and would usually be conducted against system losses, unaccounted for water and non-revenue water evaluating reductions in these loses against the maintenance expenditure. GHD stated that the complication of natural watercourses used as the transport mechanism, actions by other irrigators, and so on, makes it extremely difficult to make this assessment. However, GHD, applying engineering and operational management judgement, considered this ratio to be reasonable.

Dams and weirs are generally long-lived assets that combined with appropriate periodic maintenance programs can be retained in service indefinitely. The maintenance and inspection program is relatively static from year to year. GHD considered the forecast provided by SunWater reflects a static program of work to maintain the assets in this scheme.

GHD did not recommend any adjustment to SunWater's proposed preventive and corrective maintenance costs for this scheme.

Conclusion

In Volume 1, the Authority accepted 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.

The Authority notes that GHD did not recommend any specific adjustment to costs.

Item 3: Electricity

Stakeholder Submissions

SunWater

SunWater advised that there are no electricity costs for this scheme.

Other Stakeholders

No other stakeholders have commented on this item.

Authority's Analysis

The Authority notes that there are no electricity costs for this scheme.

Item 4: Other – Materials and Contractors

Stakeholder Submissions

SunWater

Materials and contractor costs are based on the quantities required in the work instructions for the scheme. SunWater advised that the unit cost of materials and contractors are based on current unit costs, with adjustments made where those costs are expected to change in real terms. Materials and contractors costs are direct costs associated with operations, corrective and preventive maintenance activities.

Other Stakeholders

No other stakeholders have commented on these items.

Authority's Analysis

GHD's Review

GHD considered the contactor and materials costs to be appropriate. This consideration is made with the understanding that SunWater no longer maintains machinery such as backhoes in the region as the use of the equipment did not justify this. SunWater therefore relies on contractors. GHD also considered materials to be appropriate. SunWater has advised the main expense in this cost line is for poisons for weed management.

GHD advised that SunWater currently engages Western Downs Regional Council to open the valve on the weir, constituting approximately half of the forecast contractor expenditure. SunWater advised GHD that the round trip for a SunWater team member to undertake this task would take five hours. On this basis, GHD considered that utilising contract labour, the Western Downs Regional Council in this case, is the most efficient means of managing the asset. This is accounted for in the contractor cost element in the forecast.

GHD did not recommend any specific adjustment to SunWater's proposed materials and contractors costs for this scheme.

Conclusion

The Authority notes that GHD did not recommend any specific adjustment to costs.

Item 6: Cost Escalation

As noted in Volume 1, the Authority's consultants were required to examine the appropriateness of SunWater's proposed cost escalation methods.

Direct Labour

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

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

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

Direct Materials and Contractors

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

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

Other Direct Costs

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

Non-direct costs

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

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Chinchilla Weir WSS is set out in Table 5.8.

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 5.8: 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	29	29	30	30	29	28	28	28	28	28
Electricity	0	0	0	0	0	0	0	0	0	0
Preventive maintenance	4	4	4	4	4	4	4	4	4	4
Corrective maintenance	3	3	3	3	3	3	3	3	3	3
Direct Operating Costs	**37**	**36**	**37**	**37**	**36**	**35**	**36**	**36**	**36**	**36**

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

5.5 Cost Allocation According to WAE Priority

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

Previous Review

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

Stakeholder Submissions

SunWater

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

Other Stakeholders

Participants at the Round 1 consultation identified that the Chinchilla township originally provided significant funds to the weir's construction. They considered that although the weir was originally built to support irrigation development and to provide water for the Chinchilla township, the primary use of the Chinchilla Weir is currently not for irrigation but to provide water to the township, and the town is growing. The participants suggested that any allocation of costs should reflect the reliance of Chinchilla on the scheme.

Participants at the Round 1 consultation considered that due to the level of water harvesting, Chinchilla Weir is not required for irrigation, suggesting that it only represents a back-up option. They proposed that cost implications need to be considered including allocation via conversion factors.

Authority 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 Chinchilla Weir 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 5.9. The Authority's recommended operating costs are set out in Table 5.10. These tables include renewals and non-direct costs.

Table 5.9: SunWater's Proposed Operating Costs for Activity by Type (Real '000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	11	11	11	11	11
Materials	2	2	2	2	2
Contractors	5	5	5	5	5
Other	11	11	12	11	11
Non-direct	23	23	23	22	22
Preventive Maintenance					
Labour	4	4	4	4	4
Materials	0	0	0	0	0
Contractors	0	0	0	0	0
Other	0	0	0	0	0
Non-direct	8	8	8	8	8
Corrective Maintenance					
Labour	3	3	3	3	3
Materials	1	1	1	1	1
Contractors	0	0	0	0	0
Other	0	0	0	0	0
Non-direct	5	5	5	5	5
Electricity	0	0	0	0	0
Total	**72**	**73**	**73**	**72**	**70**

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	11	11	11	11	11
Materials	1	2	2	2	2
Contractors	5	5	5	5	5
Other	11	11	11	11	11
Non-direct	22	23	22	21	20
Preventive Maintenance					
Labour	4	4	4	4	4
Materials	0	0	0	0	0
Contractors	0	0	0	0	0
Other	0	0	0	0	0
Non-direct	8	8	8	7	7
Corrective Maintenance					
Labour	2	3	3	3	3
Materials	0	1	1	1	1
Contractors	0	0	0	0	0
Other	0	0	0	0	0
Non-direct	5	5	5	5	4
Electricity	0	0	0	0	0
Total	**70**	**71**	**70**	**68**	**67**

Source: QCA (2011)

6. DRAFT PRICES

6.1 Background

Ministerial Direction

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

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

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

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

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

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

The Ministerial Direction also requires that:

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

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

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

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

Previous Review

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

For this scheme, prices over 2006-11 increased in real terms to achieve lower bound costs in 2006-07, and were increased by CPI thereafter. 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 Chinchilla Weir 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 Chinchilla Weir 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	167	75	75	87	94	76	77	78	78	77	75
Renewals Annuity	6	6	8	8	7	10	9	9	9	9	9
Operating Costs	162	73	72	84	91	70	72	73	73	72	70
Revenue offsets	-1	-5	-4	-5	-4	-4	-4	-4	-4	-4	-4
Authority's Total Costs	-	-	-	-	-	-	70	71	70	68	67
Renewals Annuity	-	-	-	-	-	-	4	4	4	4	4
Operating Costs	-	-	-	-	-	-	70	71	70	68	67
Revenue offsets	-	-	-	-	-	-	-4	-4	-4	-4	-4
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: SunWater (2011ap) and QCA (2011)

6.4 Fixed and Variable Costs

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

SunWater submitted that all of its operating costs are fixed in the Chinchilla Weir 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 bulk schemes, Indec considered 93% of costs would be fixed and 7% variable. However Indec proposed that scheme-specific tariff structures should be applied to reflect the relevant scheme costs.

For Chinchilla Weir WSS, Indec recommended 90% of costs should be fixed and 10% variable under optimal management. The Authority notes that this ratio differs from the current tariff structure which reflects the recovery of 65% of costs in the fixed charge and 35% 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	63	64	62	61	60
High Priority	43	44	43	42	41
Medium Priority	20	20	20	19	19

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

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

Variable Costs

Variable costs are allocated to all users on the basis of water use. Volumetric tariffs are calculated using SunWater's forecast usage data, based on the eight year historical average water use 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 65.9% 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. These

prices (Table 6.3) have not been adjusted to reflect the Queensland Government's pricing policies (see below).

Table 6.3: Medium Priority Prices for the Chinchilla Weir 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***
River											
Fixed (Part A)	15.84	16.32	17.12	17.64	18.16	18.84	6.90	7.08	7.25	7.43	7.62
Volumetric (Part B)	13.91	14.32	15.01	15.48	15.95	16.52	2.80	2.87	2.94	3.02	3.09

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 arising from 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 (see Table 6.4).

For this scheme, current revenues are above the level required to recover prudent and efficient costs (Table 6.4). Therefore, the Authority is required to recommend prices that maintain revenues in real terms for the 2012-17 regulatory period.

Table 6.4: Comparison of Current Prices and Cost-Reflective Prices

Tariff and Priority Group	*2010-11 Prices (indexed to 2012-13)*		*Irrigation WAE (ML)*	*Water Use (ML)*	*Current Revenue*	*Revenue from Cost-Reflective Tariffs*	*Difference*
	Fixed	*Variable*					
River	$19.08	$16.76	2,871	1,467	$79,357	$23,926	$55,430

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

6.8 The Authority's Recommended Prices

The Authority's recommended prices to apply to the Chinchilla Weir WSS for 2012-17 are outlined in Table 6.5, together with actual prices since 2006-07. In calculating the recommended prices, a 10-year average irrigation water use has been adopted (see Volume 1).

Table 6.5: Draft Medium Priority Prices for the Chinchilla Weir 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***
River											
Fixed (Part A)	15.84	16.32	17.12	17.64	18.16	18.84	26.28	26.94	27.61	28.30	29.01
Volumetric (Part B)	13.91	14.32	15.01	15.48	15.95	16.52	2.80	2.87	2.94	3.02	3.09

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

6.9 Impact of Recommended Prices

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

REFERENCES

Anderson, B. (2010). Submission re: Irrigation Prices for SunWater Schemes: 2011-16, September.

Australian Competition and Consumer Commission (ACCC). (2008a). W*ater Charge (Termination Fees) Rules Final Advice*. Canberra: Commonweath of Australia.

Australian Competition and Consumers Commission (ACCC). (2008b). *Water Market Rules.* Canberra: Commonwealth of Australia.

Australian Competition and Consumers Commission (ACCC). (2010). *Water Charge (Infrastructure) Rules (WCIR).* Canberra: Commonwealth of Australia.

Australian Sugar Milling Council (ASMC). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Avondale Water Board (AWB). (2010). Submission re: Irrigation Prices for SunWater Schemes: 2011-16, April.

Baldwin, N. S. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.

Biggs, J. (2011). Submission re: Irrigation Prices for SunWater Cunnumulla Weir Scheme, April.

Bowen Broken Water Supply Scheme Irrigators. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Boyne River Irrigator Advisory Committee. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

Boyne River Irrigator Advisory Committee. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Bundaberg Fruit and Vegetable Growers Cooperative Ltd. (BFVG). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

Bundaberg Fruit and Vegetable Growers Cooperative Limited (BFVG). (2010b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.

Bundaberg Regional Irrigators Group (BRIG). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Bundaberg Regional Irrigators Group (BRIG). (2010b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, September.

Bundaberg Regional Irrigators Group (BRIG). (2010c). Submission re: Nodal Pricing, September.

Bundaberg Regional Irrigators Group (BRIG). (2010d). Submission re: Extended Water Pricing Consultation Period, November.

Bundaberg Regional Irrigators Group (BRIG). (2010e). Submission re: Irrigation Prices for Bundaberg Schemes 2011 to June 2016 on Issues Papers Released as at November 2010, November.

Bundaberg Regional Irrigators Group (BRIG). (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, February.

Bundaberg Regional Irrigators Group (BRIG). (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, March.

Bundaberg Regional Irrigators Group (BRIG). (2011c). Submission re: Irrigation Prices for the Bundaberg Scheme 2011 to June 2016 Following the Bundaberg Visit by Aurecon Representatives March 2011, March.

Bundaberg Regional Irrigators Group (BRIG). (2011d). Submission re: Irrigation Prices for SunWater Schemes 2011-16 Bundaberg Scheme, April.

Bundaberg Sugar. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

Burdekin River Irrigation Area Committee. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.

Burdekin River Irrigation Area Committee. (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, March.

Burdekin River Irrigation Area Committee. (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Canegrowers Isis Limited. (2010a). Submission re: Bundaberg Isis Irrigation Scheme, August.

Canegrowers Isis Limited. (2010b). Submission re: The Progress of the Bundaberg - Isis Irrigation Scheme, August.

Canegrowers Isis Limited. (2010c). Submission re: Water Pricing Options for the Bundaberg WSS, August.

Canegrowers Isis Limited. (2011). Submission re: Bundaberg Water Supply Scheme and Distribution System Network Service Plans, April.

Canegrowers Proserpine Limited. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Canegrowers. (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, February.

Canegrowers. (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, March.

Canegrowers. (2011c). Submission re: Irrigation Prices for Sunwater Schemes 2011-16, April.

Central Downs Irrigators Ltd. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

Central Highlands Cotton Growers and Irrigators Association (CHCGIA). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Central Highlands Cotton Growers and Irrigators Association (CHCGIA). (2010b). Submission re: Issues Paper, August.

Childers and District Fruit and Vegetables Growers Association. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

Commonwealth of Australia 2011, *Of drought and flooding rains - Inquiry into the impact of the Guide to the Murray-Darling Basin Plan*, House of Represenatives Standing Committee on Regional Australia, Canberra, May

Cooinda Cotton Co. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, July.

Cooinda Cotton Co. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Cotton Australia. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.

Cotton Australia/QFF. (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, February.

Cotton Australia/QFF. (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Council of Australian Governments (COAG). (1994). *Report of the Working Group on Water Resource Policy: Communique.* Canberra: Council of Australian Governments.

Council of Australian Governments (COAG). (2004). *Intergovernmental Agreement on a National Water Initiative.* Canberra: Council of Australian Governments.

Council of Australian Governments (COAG). (2010). *National Water Initiative Principles.* Canberra: Council of Australian Governments.

Cronin, S. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Dawson Valley Irrigators Group. (2010). Submission re: Irrigation Prices for SunWater Scheme 2011-16, July.

Department of Natural Resources and Water (DNRW). (2008). *Submission to Water Charge Rules Issues Paper for Charges Payable to Irrigation Infrastructure Operators*. Brisbane: Department of Natural Resources and Water.

Deloitte. (2011). SunWater Administration Cost Review Phase 2. A Consultancy Report Prepared for the Queensland Competition Authority, March.

Economic Regulation Authority (ERA). (2007). Inquiry on Harvey Water Bulk Water Pricing, April.

Economic Regulation Authority (ERA). (2009). Inquiry into Tariffs of the Water Corporation, Aqwest and Busselton Water, August.

Enkelmann, P. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Enkelmann, P. (2011a). Submission from the Murgon Meeting of the 14 April 2011, April.

Enkelmann, P. (2011b). Submission re: Irrigation Water Prices 2011-16, April.

Enkelmann, P. (2011c). Submission re: Water Pricing for Barker Barambah Water Supply Scheme, April.

Essential Services Commission (ESC). (2008). 2008 Water Price Review: Regional and Rural Businesses' Water Plans 2008-13 and Melbourne Water's Drainage and Waterways Water Plan 2008-13, June.

Essential Services Commission of South Australia (ESCOSA). (2010). Inquiry into the 2010-11 Metropolitan and Regional Potable Water and Sewerage Pricing Process: Final Report, October.

Eton Irrigators Advisory Committee. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Eton Irrigators Advisory Committee. (2011a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, March.

Eton Irrigators Advisory Committee. (2011b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Francis, P., & Francis, M. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16 - Three Moon Creek Water Supply Scheme, April.

Frontier Economics. (2008). Termination Fees and Landholder Considerations. A Consultancy Report Prepared for the Australian Competition and Consumers Association, October.

Gilbert and Sutherland. (2011). Quality Assurance Assessment of a Review of SunWater's Headworks Utilisation Factors Methodology. A Consultancy Report Prepared for the Queensland Competition Authority, March.

Growcom. (2010). Submission re: Segmented Water Pricing in Bundaberg, September.

Hetherington, M. and Hetherington, K. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Hinchliffe, G., Hinchliffe, P., & Farmer, G. (2011). Submission re: Network Service Plan - Lower Fitzroy Water Supply Scheme, April.

Hubert, J. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Independent Competition and Regulatory Commission (ICRC). (2008). Water and Wastewater Price Review: Final Report and Price Determination, April.

INDEC. (2011a). SunWater Water Supply Schemes 2011-16 Price Paths: Audit and Review of SunWater's Business Operating Model (BOM). A Consultancy Report Prepared for the Queensland Competition Authority, March.

INDEC. (2011b). SunWater Water Supply Schemes 2011-16 Price Paths: Review of SunWater Pricing Model - Step 1. A Consultancy Report Prepared for the Queensland Competition Authority, March.

Independent Pricing and Regulatory Tribunal (IPART). (2010a). Review of Bulk Water Charges for State Water Corporation: Water-Final, June.

Independent Pricing and Regulatory Tribunal (IPART). (2010b). Review of Prices for the Water Administration Ministerial Corporation, July.

Independent Pricing and Regulatory Tribunal (IPART). (2011). Review of Prices for the Water Administration Ministerial Corporation, February.

Isis Central Sugar Mill. (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

Isis Central Sugar Mill. (2010b). Submission re: Water Pricing Options, September.

Isis Sugar Partnership. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.

Kelsey Creek Water Board. (2011). Submission re: Irrigation Prices for SunWater Schemes, April.

Lower Boyne River Irrigators. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

Lower Burdekin Water. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Lower Burdekin Water. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.

MacDonald, K. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Macintyre Brook Irrigators Association. (2011). Submission re: SunWater Price Path Issues Regarding the Macintyre Brook Scheme, April.

Mackay Canegrowers Limited and Mackay Sugar Limited. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Mackay Irrigation Stakeholders. (2010). Submission re: Irrigations Prices for SunWater Schemes 2011-16, November.

Mackenzie, R. A. (2010a). Submission re: Rate of Return, June.

Mackenzie, R. A. (2010b). Submission re: Postage Stamp Prices, June.

Mackenzie, R. A. (2010c). Submission re: Standard Supply Contracts, September.

Mareeba Dimbulah Irrigation Area Council (MDIAC). (2010). Submission re: Irrigation Prices for SunWater Schemes, November.

Mareeba Dimbulah Irrigation Area Council (MDIAC). (2011). Submission re: Irrigation Prices for SunWater Schemes, April.

Maryborough Sugar Factory (MSF). (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.

Maryborough Sugar Factory (MSF). (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

McColl, D. (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

McColl, D. (2010b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.

McGuigan, B. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

McLellan, P., & McLellan, B. (2011). Submission re: Irrigation Prices for SunWater Scheme 2011-2016, April.

Millar, C. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.

National Water Commission. (2008). N*ational Performance Report 2006-07: Rural Water Service Providers.* Canberra: Australian Government.

NERA Economic Consulting. (2010a). Form of Price Control: SunWater Water Supply Schemes. Issues Paper Prepared for the Queensland Competition Authority, August.

NERA Economic Consulting. (2010b). Single or Multiple Rate of Return: SunWater. A Consultancy Report Prepared for the Queensland Competition Authority, August.

NERA Economic Consulting. (2011). Cost of Capital for Water Infrastructure Company. A Consultancy Report Prepared for the Queensland Competition Authority, March.

O'Brien MP, J. (2010). Submission re: Irrigation Prices fo SunWater Schemes 2011-16, June.

Office for Water Security. (2010). *Water for Good.* Adelaide: Government of South Australia.

Otto, N., & Otto, M. (2011). Submission re: Irrigation Prices for SunWater Schemes, April.

Parsons Brinckerhoff (2010), Provisions of Services for Costing SunWater's Work Instructions. A Consultancy Report Preparef for SunWater, October.

Pioneer Valley Water Co-operative Limited. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Pioneer Valley Water Co-operative Limited. (2011a). Submission re: SunWater Network Service Plan - Pioneer River Water Supply Schemes, February.

Pioneer Valley Water Co-operative Limited. (2011b). Submission on Consultants Draft Report on Pioneer WSS Network Service Plan, April.

Pioneer Valley Water Co-Operative Limited. (2011c). Submission on Consultants Draft Report on SunWater Administration Cost Review, April.

PriceWaterHouseCoopers (PwC). (2010a). Pricing Principles and Tariff Sructures for SunWater's Water Supply Schemes. Issues Paper Prepared for the Queensland Competition Authority, September.

PriceWaterHouseCoopers (PwC). (2010b). Allocating Capital Costs of Bulk Water Supply Assets. Issues Paper Prepared for the Queensland Competition Authority, September.

Productivity Commission. (2011). *Australia's Urban Water Sector (Draft Report)*. Canberra: Commonwealth of Australia.

Proserpine District Canegrowers Cooperative Limited and Proserpine Co-operative Sugar Milling Association Limited. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.

Queensland Competition Authority (QCA). (2000). Statement of Regulatory Pricing Principles for the Water Sector, December.

Queensland Competition Authority (QCA). (2002). Gladstone Area Water Board: Investigation of Pricing Practices, September.

Queensland Competition Authority (QCA). (2005). Gladstone Area Water Board: Investigation of Pricing Practices - Final Report, March.

Queensland Competition Authority (QCA). (2010). Gladstone Area Water Board: Investigation of Pricing Practices, July.

Queensland Farmers' Federation (QFF). (2010a). Submission re: Irrigation Prices for SunWater Schemes 2011-16, July.

Queensland Farmers' Federation (QFF). (2010b). Submission re: Irrigation Prices for SunWater Schemes 2011-16, November.

Queensland Valuation Services (QVAS). (2010). Permanent Water Trade.

Robertson MP, Hon Stephen. (2010a). Submission re: Nodal Pricing Arrangements, September.

Robertson MP, Hon Stephen. (2010b). Submission re: Assets Associated with Bulk Water Supply Service, September.

Roth, R. (2011). Submission re: Irrigation Prices for Sunwater Schemes 2011-16 - Three Moon Creek, March.

SAHA. (2010). Renewals Annuity or a Regulatory Depreciation Allowance: SunWater's Water Supply Schemes 2011-16 Price Paths. Issues Paper Prepared for the Queensland Competition Authority, September.

SAHA. (2011). Assessment of SunWater's Administration Costs. A Consultancy Report Prepared for the Queensland Competition Authority, January.

Simpson Farms. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

SP Exports. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, August.

St George Irrigators. (2010). Perspectives on Pricing of Irrigation Water in Queensland 2011-2016, July.

St George Irrigators. (2011). St George Water Supply Scheme, Network Service Plan, 2012-2016, April.

Stewart, D. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.

Strathdee, B. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, May.

SunWater. (2003). *SunWater Annual Report 2002-03*. Brisbane: SunWater Limited.

SunWater. (2004). *SunWaterAnnual Report 2003-04*. Brisbane: SunWater Limited.

SunWater. (2005). *SunWater Annual Report 2004-05*. Brisbane: SunWater Limited.

SunWater. (2006a). Statewide Irrigation Pricing Working Group: Tier 1 Report. Brisbane, April: SuinWater Limited.

SunWater. (2006b). *SunWater Irrigation Price Paths 2006-07 to 2010-11: Final Report*. Brisbane: SunWater Limited, September.

SunWater. (2006c). *SunWater Annual Report 2005-06*. Brisbane: SunWater Limited.

SunWater. (2007). *SunWaterAnnual Report 2006-07*. Brisbane: SunWater Limited.

SunWater. (2008). *SunWater Annual Report 2007-08*. Brisbane: SunWater Limited.

SunWater. (2009). SunWater Annual Report 2008-09. Brisbane: SunWater Limited

SunWater. (2010a). QCA Review of Irrigation Prices: Public Submission Letter, May.

SunWater. (2010b). QCA Review of Irrigation Prices: Service Framework Background Paper. Brisbane, May.

SunWater. (2010c). QCA Review of Irrigation Prices: Contributed Assets Background Paper, May.

SunWater. (2010d). QCA Review of Irriagtion Prices: Headworks Utilisation Factors Technical Report, September.

SunWater. (2010e). QCA Review of Irrigation Prices: Bulk Water Asset Valuation, October.

SunWater. (2010f). QCA Review of Irrigation Prices: Asset Management Planning Methodology Paper, October.

SunWater. (2010g). *SunWater Annual Report 2009-10.* Brisbane: SunWater Limited.

SunWater. (2011). Chinchilla Weir Water Supply Scheme Network Service Plan, January.

SunWater. (2011a). QCA Review of Irrigation Prices: Centralised Costs Background Paper, January.

SunWater. (2011b). QCA Review of Irrigation Prices: Cost Forecasting Assumptions Background Paper, January.

SunWater. (2011c). QCA Review of Irrigation Prices: Renewals Annuity Background Paper, January.

SunWater. (2011d). QCA Review of Irrigation Prices: Pricing Principles and Tariff Structures January.

SunWater. (2011e). QCA Review of Irrigation Prices: Form of Regulation, January.

SunWater. (2011f). QCA Review of Irrigation Prices: Review and Adjustment Triggers Supplementary Information, February.

SunWater. (2011g). QCA Review of Irrigation Prices: Allocation of Centralised Costs Supplementary Information, February.

SunWater. (2011h). QCA Review of Irrigation Prices: Electricity Costs Background Paper, February.

SunWater. (2011i). QCA Review of Irrigation Prices: Water Distribution Entitlements Supplementary Information, February.

SunWater. (2011j). QCA Review of Irrigation Prices: Bulk Water Price Differentiation Supplementary Submission, February.

SunWater. (2011k). QCA Review of Irrigation Prices: Customer Involvement in Renewals Expenditure Supplementary Background Paper, February.

SunWater. (2011l). QCA Review of Irrigation Prices: Weighted Average Cost of Capital - Renewals Annuity Background Paper, February.

SunWater. (2011m). QCA Review of Irrigation Prices: Pumping Cost Reconciliation, February.

SunWater. (2011n). QCA Review of Irrigation Prices: WAE Reconciliation, February.

SunWater. (2011o). QCA Review of Irrigation Prices: Storage Rental Fees, March.

SunWater. (2011p). QCA Review of Irrigation Prices: Pricing of Distribution Losses, March.

SunWater. (2011q). QCA Review of Irrigation Prices: Estimated Flood Damage Letter, March.

SunWater. (2011r). QCA Review of Irrigation Prices: Metering and Price Model Letter, March.

SunWater. (2011s). QCA Review of Irrigation Prices: Tariff Groupings, March.

SunWater. (2011t). QCA Review of Irrigation Prices: Revenue Analysis, March.

SunWater. (2011u). QCA Review of Irrigation Prices: Electricity - Actual vs 2006 IPR Forecast, March.

SunWater. (2011v). QCA Review of Irrigation Prices: Water Harvesting Usage Summary, April.

SunWater. (2011w). QCA Review of Irrigation Prices: Headworks Utilisation Factors, Critical Periods and Bulk Water Supply Capital Cost Allocatoon, April.

SunWater. (2011x). QCA Review of Irrigation Prices: Headworks Utilisation Factors Addendum, May.

SunWater. (2011y). QCA Review of Irrigation Prices: Service Delivery Strategies, May.

SunWater. (2011z). QCA Review of Irrigation Prices: Service Delivery Paper, May.

SunWater. (2011aa). QCA Review of Irrigation Prices: Drainage Data, April.

SunWater. (2011ab). QCA Review of Irrigation Prices: Response to Pioneer Valley Water Board Submission on the Pioneer River Water Supply Scheme - Network Services Plan, May.

SunWater (2011ac). QCA Review of Irrigation Prices: Administration Costs for Bundaberg Groundwater, June.

Synergies Economic Consulting. (2010). Rural Water Pricing Business and Scheme Overview. A Consultancy Report to the Queensland Competition Authority, January.

Tableland Canegrowers Ltd and Mareeba District Fruit and Vegetable Growers Association Inc. (2010a). Submission re: Key Issues on Irrigation Prices for Mareeba-Dimbulah Water Supply Scheme, July.

Tableland Canegrowers Ltd and Mareeba District Fruit and Vegetable Growers Association Inc. (2010b). Submission re: Tiered Pricing, August.

Tanner, J., & Tanner, S. (2011). Submission re: Irrigation Prices fro SunWater Schemes 2011-16, May.

Thomas, W. A. (2011). Submission re: Principles Relevant to Recovering Long-Run Average Costs of SunWater Schemes, April.

Voss, A. (2011). Submission re: Irrigation Prices for SunWater Schemes 2011-16, April.

Water Act 2000 (Qld).

Water Act 2007, No. 137 (Cwlth).

Water Regulation 2002 (Qld).

Water Supply (Safety and Reliability) Act 2008 (Qld).

Weir, T. (2010). Submission re: Irrigation Prices for SunWater Schemes 2011-16, July.

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

APPENDIX A: FUTURE RENEWALS LIST

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

Asset	*Year*	*Description*	*Value ($'000)*
Chinchilla Weir	2011-12	Replace 300 Gate Valve D/S	18
	2014-15	09CHW01-REPLACE: HW Gauge w/ Level Senso	28
	2015-16	REPLACE: Purchase Butterfly Valve (Replaces existing Gate Valve)	123
		14CHWXX DECOMISSION RH CONDUIT & VALVES	41
	2027-28	Refurbish: Chinchilla Weir - refurbish/ Painting of external pipework for LH conduit	18