QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater
Irrigation Price Review: 2012-17

Volume 2

Barker Barambah
Water Supply Scheme

November 2011

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SUBMISSIONS

Public involvement is an important element of the decision-making processes of the Queensland Competition Authority (the Authority). Therefore submissions are invited from interested parties. The Authority will take account of all submissions received.

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

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

Confidentiality

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

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

Public access to submissions

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

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

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GLOSSARY

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

EXECUTIVE SUMMARY

Direction Notice

The Authority has been directed by the Minister for Finance and The Arts and the Treasurer for Queensland to recommend irrigation prices to apply to particular SunWater water supply schemes 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 Barker Barambah Water Supply Scheme (WSS) for the 2012-17 regulatory period are outlined in Table 1 together with actual prices since 1 July 2006.

Table 1: Prices for the Barker Barambah 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***
Regulated											
Fixed(Part A)	14.60	16.08	18.64	20.16	20.76	21.52	21.09	21.62	22.16	22.71	23.28
Volumetric (Part B)	8.35	9.19	10.64	11.52	11.87	12.29	5.12	5.25	5.38	5 51	5.65
Redgate Relift											
Fixed (Part A)	9.64	12.60	15.96	19.32	22.56	23.36	21.86	22.41	22.97	23.54	24.13
Volumetric (Part B)	24.37	25.08	26.28	27.11	27.93	28.93	12.41	12.72	13.04	13.36	13.69

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

Table 2: Termination Fees ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Channel to River	n.d.	n.d.	n.d.	n.d.	16.99	18.98	0.00	0.00	0.00	0.00	0.00

Note: n.d. - no data. SunWater started publishing termination fees in their Annual Fees & Charges Schedule from 2008-09. Prior to 2008-09, these fees were calculated as needed. 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 shceme specific reports, should be read in conjuction with Volume 1.

Consultation

The Authority has consulted extensively with SunWater and other stakeholders througout 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. BARKER BARAMBAH WATER SUPPLY SCHEME

1.1 Scheme Description

The Barker Barambah Water Supply Scheme (WSS) is located near the town of Murgon. The system consists of the following storages:

(a) Bjelke-Petersen Dam on Barker Creek;

(b) Joe Sippel Weir on Barambah Creek;

(c) Silverleaf Weir on Barambah Creek;

(d) Redgate Diversion Pipeline; and

(e) Redgate Relift Pipeline and Pump Station.

Table 1.1 provides an overview of the key characteristics of the Barker Barambah WSS.

Table 1.1: Key Scheme Information for the Barker Barambah WSS

	Barker Barambah WSS
Business Centre	Bundaberg
Irrigation Uses of Water	Irrigation, mainly broadacre cropping
Urban water supplies	Townships of Murgon, Wondai, Byee and Cherburg
Industrial Water Supplies	Manufacturing and processing

Source: Synergies Economic Consulting (2010).

The Barker Barambah WSS has a total of 161 bulk customers. Medium and high priority water access entitlements (WAE) are outlined in Table 1.2.

Table 1.2: Volume of Water Entitlements in the Barker Barambah WSS

Customer Group	***Irrigation WAE (ML)***	***Total WAE (ML)***
Medium Priority	31,361	32,079
High Priority	0	2,236
Total	**31,361**	**34,315**

Source: SunWater (2011am).

During the 2006-11 price path, 1,638 ML of high priority WAE was allocated on a free basis to South Burnett Regional Council.

Stakeholder Comment

At the second round of consultation, irrigators and Queensland Farmers' Federation (QFF, 2011) questioned how additional allocations have been determined citing the example of SunWater applying a total medium priority allocation of 29,453 ML applied in the last price

path and 32,079 ML in the 2012-17 price paths. There is a concern that the increase in allocations has further undermined water reliability in the scheme.

Authority's Analysis

The Authority notes that the Tier 1 report identified an amount of 29,453 ML of WAE in the regulated section of the scheme and 1,627 ML in the Redgate relift section, giving a total in 2006 of 31,080 ML. This is only slightly lower than the current irrigation WAE of 31,361 ML.

The difference between the total medium priority WAE of 32,079 ML and the irrigation WAE total is 718 ML which is allocation held by SunWater. For the purposes of the current review, the Authority proposes to adopt the updated WAE as provided in SunWater's NSP, which includes SunWater's allocation. The irrigators' share of medium priority WAE is 31,361 ML, of which 1,627 ML is in the Redgate relift section.

The high priority allocation of 2,236 ML is made up of 598 ML of WAE and a further 1,638 ML of free allocation held by South Burnett Regional Council.

1.2 Bulk Water Infrastructure

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

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

Table 1.3: Bulk Water Infrastructure in the Barker Barambah WSS

Storage Infrastructure	*Total Storage Capacity (ML)*	*Age (years)*
Bjelke-Petersen Dam	134,900	23
Joe Sippel Weir	710	29
Silverleaf Weir	620	59

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

The characteristics of the bulk water assets:

(a) Bjelke-Petersen Dam is situated on Barker Creek 1.3 km upstream from where it joins Barambah Creek. It is a referable dam and holds 134,900 ML when full. The dam has two outlets – a river outlet into Barker Creek and the Redgate Relift Pipeline;

(b) Joe Sippel Weir is located on Barambah Creek. It consists of a cascading concrete wall. It holds 710 ML when full;

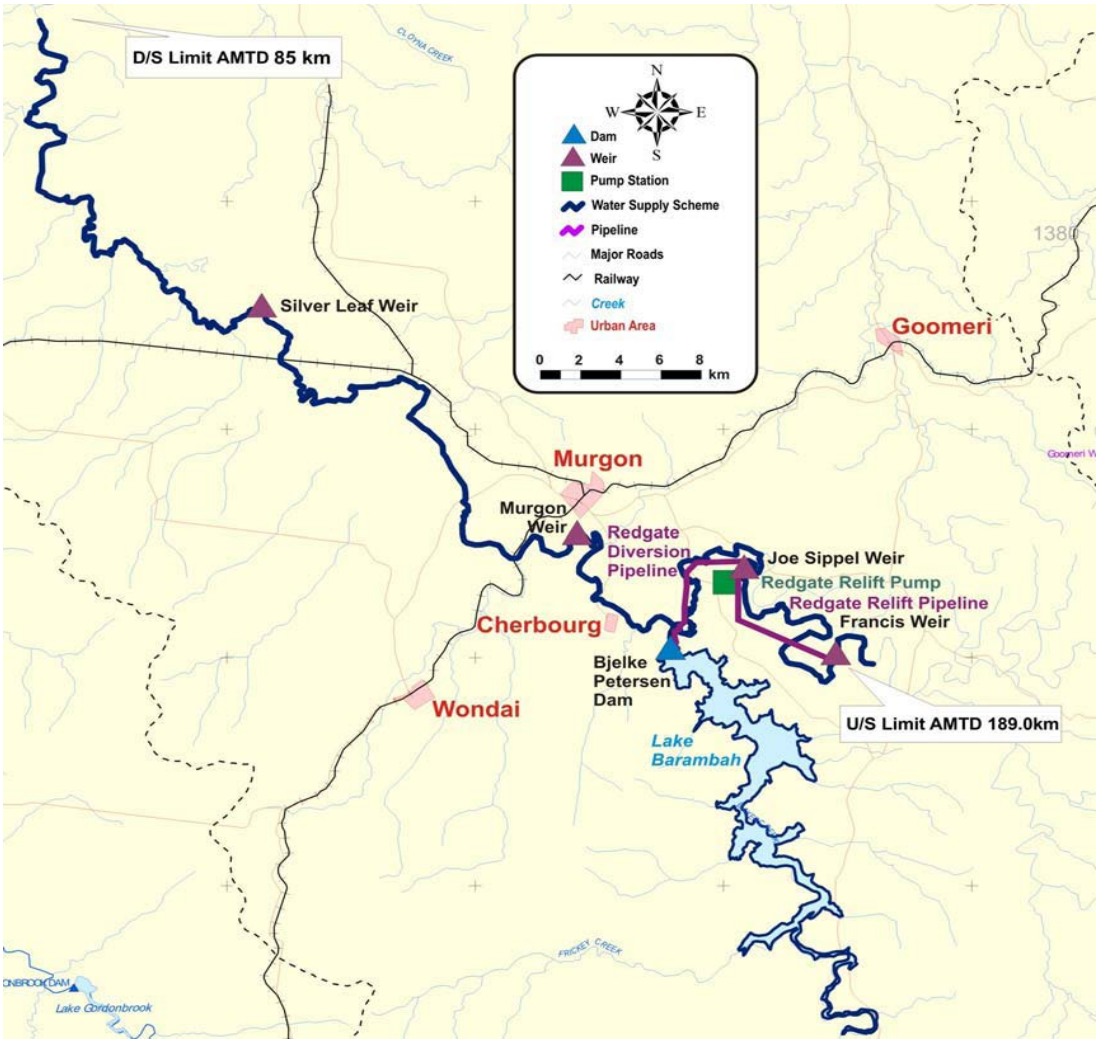
(c) Silverleaf Weir is located on Barambah Creek. The weir is a timber piled, earth and rock structure and holds 620 ML when full;

(d) Redgate Pipeline is a 6.2 km, 900mm diameter reinforced concrete, rubber ring jointed pipeline that transfers water from Bjelke-Peterson Dam to Joe Sippel Weir. The pipeline has a design capacity of 34.5 ML/day. The Redgate Diversion Pipeline is a gravity pipeline. However, a pumping unit is installed on a regulated outlet at Bjelke-Petersen Dam valve house for when the dam level is too low to generate an adequate gravity flow; and

(e) Upper Redgate Re-lift pipeline services customers in the Upper Redgate area by pumping water from the Joe Sippel Weir to the Francis Weir where the water is released. The design capacity of the Upper Redgate Re-lift pipeline is 10 ML/day. The pump used to divert water through the Upper Redgate Re-lift pipeline must be removed when the flow in Barambah Creek exceeds 1,400 ML/day to avoid flooding the pump unit.

Figure 1.1 shows the location of the Barker Barambah WSS and key infrastructure.

Figure 1.1: Barker Barambah WSS Locality Map



Source: SunWater (2011).

1.3 Network Service Plans

The Barker Barambah WSS network service plan (NSP) presents SunWater's:

(a) existing service standards;

(b) forecast operating costs 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 amendments to the original Ministerial Direction of 19 March 2010 and further advices from the Minister of 23 September 2010 and 9 June 2011, these issues are outside the scope of the current investigation and have therefore not been addressed.

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

2. REGULATORY FRAMEWORK

2.1 Introduction

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

During the negotiations that preceded the 2006-11 price paths, Barker Barambah 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 Barker Barambah WSS:

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

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

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

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

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

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

(g) outbreak of noxious weeds.

Other Stakeholders

Enkelmann (2011a) submitted that irrigators have little option to mitigate low or nil water availability (supply risk) such as has occurred in the last five years. There is no temporary transfer water available in low or nil allocation years. With underground water development under embargo, there is little option to manage the variability of this scheme.

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 those risks are outlined in Table 2.1.

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

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

Source: QCA (2011).

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

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

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

In respect of Enkelmann's comments, the Authority considers that neither customer nor SunWater has the ability to manage volume risk and, under current legislative and contractual arrangements and the Ministerial Direction, customers must bear all efficient costs of supply. These arrangements prevail notwithstanding the volume available for temporary trading although the Authority notes there have been some temporary trades over this period (refer to Table 3.1).

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

During the 2005-06 price negotiations, the Barker Barambah Tier 2 group agreed to accept a tariff structure for the Barker Barambah regulated section of the scheme based on 70% of target revenues being collected from the Part A charge. The Tier 2 group also indicated that it was not in favour of the drought tariff arrangement.

For the Redgate Relift section a tariff structure based on a target revenue mix (including Community Service Obligation (CSO) funding from government) of 84.5% from the Part A charge and 15.5% from the Part B charge was agreed for the commencement of the 2006-11 price path period. Over the period, prices were transitioned to a structure by 2010-11 providing 54% of revenue from the Part A charge and 46% from Part B.

The basis for this transition was not indicated in the Tier 1 report. However, the Tier 1 report stated that the Part A charge was chosen to recover the fixed costs of operating the Redgate Relift section of the scheme (including CSO funding from government) whilst the Part B charge would recover the variable costs of operating the relift section, mainly electricity and pumping costs.

Stakeholder Submissions

SunWater

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

Other Stakeholders

During the first round of stakeholder consultations, stakeholders noted that SunWater has assets across all of Queensland, each experiencing different levels of water availability. The stakeholders suggested that SunWater should seek to recover its costs on a Statewide level rather than on a scheme level each year so that irrigators would not need to pay such a high proportion towards the Part A component.

During the second round of stakeholder consultations irrigators expressed a preference for continuous accounting which they perceive to provide better transparency. Irrigators noted that recovering fixed costs regardless of water usage sends a perverse signal to water users.

Enkelmann (2010) further notes that irrigation customers will find it difficult to pay a very high Part A tariff during extended periods of low to zero supply in drought periods.

Enkelmann (2011a) submitted that the water price should be based on a two-part tariff of 20% Part A and 80% Part B, or 30% Part A and 70% Part B, based on 60% yield on medium priority allocation. Based on $27 ML as a Part A single charge, this would require $5.40 and $36.00 on the 20/80 split and $9.00 and $30.00 on the 30/70 split. Enkelmann (2011a) pointed out the advantages of this pricing as follows:

(a) it allows irrigators to pay the most in water charges in the years they are using water;

(b) water charges are lower when the whole community is greatly impacted by drought;

(c) water use efficiency is enhanced with the higher water charge on water use, rather than fixed charge;

(d) history has shown that very poor returns to the irrigators and the community occurred when high Part A and low Part B charges have been employed. People have pumped water with very marginal returns to try to recover some part of the high Part A charge;

(e) SunWater's business is spread across the State so would not be affected to the same extent as irrigators;

(f) low Part A negates the necessity of rebates under drought and exceptional circumstances; and

(g) Part A rebates [Part A charges refunded to water users under drought and exceptional circumstances] are problematic in that some irrigators receive a full rebate whilst others receive 20-25% rebate, because of the $10,000 rebate cap.

Authority's Analysis

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

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

The Authority considers that the recommended two part tariff promotes efficiency as:

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

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

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

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

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

In response to Enkelmann's submission that argues for a low Part A tariff the Authority notes that this will expose SunWater to volume risk that SunWater is unable to manage. 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) and irrespective of whether there is a drought.

The Authority considers that any rebate arrangements for Barker Barambah WSS in the event of drought and the application of drought relief by Government is a policy matter. Under the Tier 1 arrangements from 2006, Barker Barambah WSS was not one of the schemes that opted for a drought tariff.

Further, where a volumetric charge is relatively low (or zero), it is noted that there are incentives for customers to utilise all of an announced allocation. While some may regard this as excessive, it is generally beneficial from a commercial and public interest perspective to utilise all water capacity available for consumptive purposes. The decision whether to do so is effectively the individual irrigators.

To seek to recover costs on a state-wide rather than scheme specific level would break the nexus between prices and costs necessary for efficient pricing at scheme level. Prices are set on the basis of prudent and efficient costs at scheme level to achieve such efficiencies.

In response to customers preference for continuous accounting raised during the second round of consultation, 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 also recognises that tariff structure 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 Barker Barambah WSS are identified in Table 3.1.

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

	2002-03	***2003-04***	***2004-05***	***2005-06***	***2006-07***	***2007-08***	***2008-09***	***2009-10***
Permanent	0	0	0	175	230	730	25	148
Temporary	5691	2351	4090	3277	1029	257	931	220

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

The Authority's analysis of which service delivery costs are fixed or variable is addressed in a subsequent chapter as are the cost allocation rules.

3.2 Water Use Forecasts

Introduction

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

In the previous review, up to 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 Barker Barambah, the Tier 2 group accepted the Tier 1 recommended irrigation water use forecast of 75% for the calculation of the Part B charges for the Barker Barambah Regulated section and to retain the forecast of 70% in the Redgate Relift segment over the next five-year price path period. The water usage forecast for medium priority water entitlements was 23,229 ML.

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 for 2012-17 are made having regard to historic averages over an eight-year period and the usage forecast applied for the current price path.

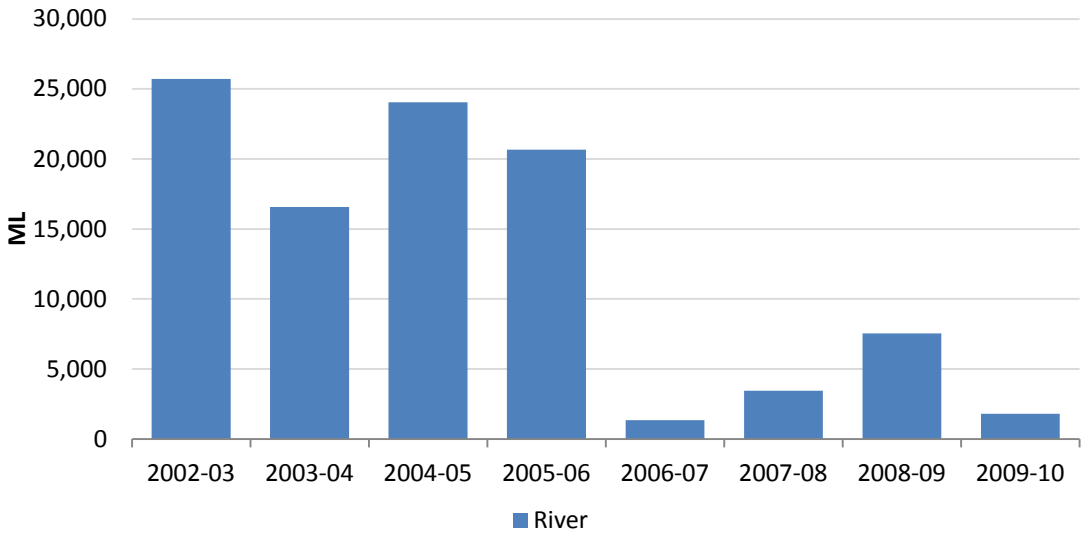
Based on the last eight years observations, SunWater has forecast use as follows:

(a) at a whole scheme level (all sectors) – an average of 37% of total WAE (including SunWater's distribution loss WAE and its other WAE); and

(b) for the irrigation sector only – 60% of irrigation WAE. This compares with the eight year average of 37%. Projected usage is higher than the eight year average due to the impact of the past drought.

Figure 3.1 shows historic usage information for the Barker Barambah 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 Barker Barambah WSS



Source: SunWater (2011).

Other Stakeholders

Enkelmann (2010) suggests that using long term history to base a fixed Part A of such proportion of charges is unacceptable.

Authority's Analysis

As noted in Volume 1 report, and in response to Enkelmann, the Authority does not consider 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 previous SunWater Irrigation Price Paths Final Report (SunWater, 2006b) nominated two tariff groups for the Barker Barambah WSS:

(a) Barker Barambah – Redgate Relift; and

(b) Barker Barambah – Regulated.

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

In accordance with the Ministerial Direction, the Authority will adopt these two tariff groups.

3.4 Free Water Allocations

Previous Review

In the previous price review, the Barker Barambah Tier 2 group requested that the Final Report notes that irrigators are unhappy with the extent of high priority urban water users that does not attract its share of lower bound costs. This arises as SunWater is obligated to supply certain water to urban authorities at no charge as these allocations represent pre-existing entitlements recognised in the *Water Act 2000* (Water Act) when the scheme was developed.

Water Licences were granted to Cherbourg, Murgon and Wondai prior to the formation of Barker Barambah WSS. The Murgon Council constructed a weir in the 1950s to provide the water supplies to the town while Wondai and Cherbourg took water directly out of the Barambah Creek. Upon completion of the Bjelke-Petersen Dam in 1998, the supply of water to these townships became part of the Barker Barambah WSS.

The townships of Cherbourg, Wondai and Murgon were granted water allocations in 2005. The following high priority water allocations were granted:

(a) Cherbourg 250 ML/a;

(b) Murgon 1,038 ML/a; and

(c) Wondai 350 ML/a.

Under Section 1117A of the Water Act a water allocation holder, who previously held an authority to take water from a weir owned by the holder of the water allocation, is excluded from paying water storage and delivery charges. Section 109 of the *Water Regulation 2002* specifies that this provision applies to the supply contract between SunWater and South Burnett Regional Council. Hence, SunWater is legislatively prohibited from collecting a charge for the storage and delivery of water that relates to the 1,038 ML/a water allocation held by the South Burnett Regional Council (formerly Murgon Council).

While this provision of the Water Act only relates to the 1,058 ML water allocation previously held by Murgon Council, SunWater supplies 1,638 ML of free water allocations in the Barker Barambah WSS.

Submissions

Participants at the first round of stakeholder consultations were of the view that the South Burnett Regional Council is not charged by SunWater for some/all of its high priority extraction. Irrigators should not have to pay the costs associated with this extraction.

At the second round of consultation, stakeholders questioned whether the costs of investigation into securing Murgon supply are being recovered from irrigators.

Authority's Analysis

Pre-existing rights to free water should be maintained where they continue as part of current legislation, agreement or Government policy. Neither SunWater nor customers with pre-existing right to free water should bear these costs.

SunWater's current practice is that all other allocation holders bear the costs that would otherwise be apportioned to free allocations.

SunWater is legislatively required to supply 1,638 ML to South Burnett Regional Council without charge to the council. Neither SunWater nor customers with a continuing right to free water should bear these costs.

On the basis of advice from SunWater, the additional amount of 598 ML of high priority allocation is available on a goodwill basis and has no legislative provision. This amount is in effect a legacy arrangement. In these circumstances, the costs are borne by SunWater in the form of diminished revenues.

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 services 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 2007-12 was prudent and efficient. This affects the opening ARR for the 2013-17 regulatory period;

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

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

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

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

(d) the methodology to calculate the renewals annuity.

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

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

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

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

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

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

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

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

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

SunWater submitted that the opening balance for the Barker Barambah WSS was negative $384,000.

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 Barker Barambah WSS for 2006-11 (Table 4.1). This expenditure included indirect and overhead costs which are subject

to a separate review by the Authority (see Chapter 5). SunWater advised that it was unable to provide the forecast renewals expenditure (approved for the 2005-06 review) for this period.

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Past (Actual) Renewals Expenditure	123	150	86	162	337

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

Other Stakeholders

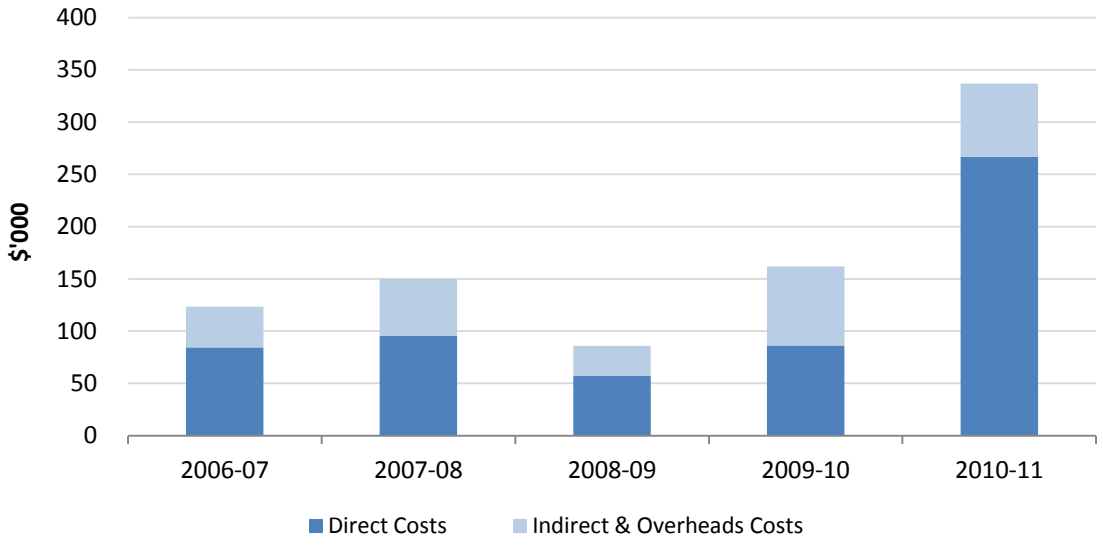
No other stakeholders have commented on these items.

Authority's Analysis

Total Renewals Expenditure

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

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



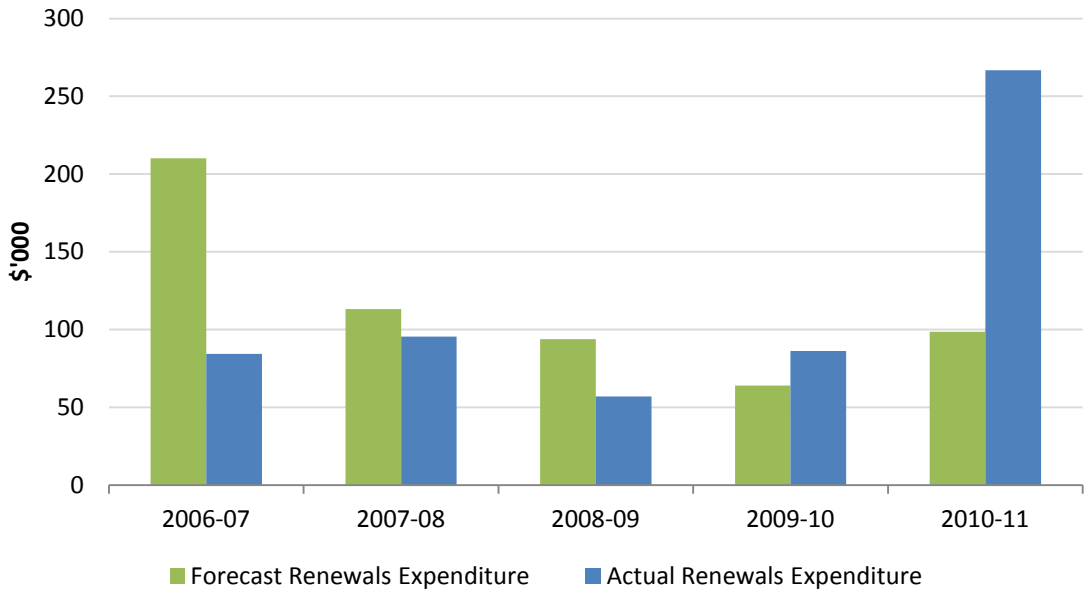
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011.
Source: Indec (2011d).

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 Barker Barambah 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) and Actuals SunWater (2011k).

Actual renewals expenditure was $10,000 (direct costs) higher than forecast over the period. Aurecon was appointed to review the prudency and efficiency of past renewals expenditures.

Aurecon's analysis addressed total costs including indirect costs and overheads.

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

(a) no indication of the Board approved budget for all projects in 2007;

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

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

Aurecon noted that total expenditure exceeded the Board approved budget by 40%. Aurecon sought details of items that exceeded $10,000. This accounted for 64% of the total renewal expenditure, and identified the following significant items, by year:

(a) 2006-07 – replacement of six airvalves on the Redgate Pipeline ($14,343), meter replacement ($35,723) and Silverleaf Weir inspection ($10,231);

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

(b) 2007-08 – Bjelke-Petersen Dam five-yearly inspection ($54,391), upper Redgate replacement of electrical controls and cabling ($35,179);

(c) 2008-09 – repair of left embankment toe and reinstatement of rock mattress at Joe Sippel Weir ($20,779), repair to Redgate diversion pipeline ($18,016), design reconfiguration of inlet screen for outlet works at Silverleaf Weir ($17,459), replacement of discharge valve at Joe Sippel Weir ($14,702), replacement of deteriorated timber at Silverleaf Weir ($11,085);

(d) 2009-10 – options analysis for long term replacement of Silverleaf Weir ($30,936), repair of concrete works at Silverleaf Weir ($50,889), modify stairwell to float well for gauging stations at Ficks Crossing and Stonelands ($39,281), peer review of comprehensive risk assessment of Bjelke-Petersen Dam ($28,357); and

(e) 2010-11 – 10-yearly crane inspections at Bjelke-Petersen Dam ($45,651, work in progress), supply and install safety buoys ($22,629) and 10-yearly winch inspection for Upper Redgate Pump Station ($8,855).

Aurecon noted that for the 2009-10 projects, the peer review of the comprehensive risk assessment for Bjelke-Petersen Dam did not have a Board approved budget. The repair of concrete works for Silverleaf Weir of $50,889 exceeded a Board budget of $38,055.

Due to Aurecon's inability to undertake a field investigation and difficulties obtaining data from SunWater within limited timeframes, Aurecon was only able to undertake a desktop review of the historical renewal expenditure items.

Through its detailed field investigation at Bundaberg and the Lower Mary, Aurecon found that the processes engaged (i.e. identification of need through condition assessments, timing, scoping and tendering for the engagement of external contractors) indicated a structured and efficient process. However, substantial indirect and overhead costs were also incorporated, which greatly distorted the perceived value for money outcome achieved by the activity. Where variations were made to renewal activity budgets, substantiated reasoning and justification was found for these projects.

Conclusion

The Authority's scheme consultants were not able to review past renewals expenditure in sufficient detail to identify whether any of the items were not prudent or efficient.

On the basis of Aurecon's analysis, the Authority is unable to conclude on the prudency and efficiency of the past five years' renewals expenditure. The Authority notes that:

(a) the total cost over-run over the five-year period including indirect and overhead was $225,000 (in nominal terms). This was 40% over the target expenditure for lower bound costs. However, when indirect and overhead are excluded, actual renewals expenditure for the 2006-11 were reasonably close to the forecast, with only a $10,000 (in 2010-11 dollars) cost over-run;

(b) expenditure generally comprises a large number of small items. Only two items exceeded $50,000;

(c) one item ($28,357 for a peer review risk assessment) did not have a Board approved budget, and only one project exceeded the Board approved budget by a substantial amount ($50,889 compared to $38,055 for repair of concrete works on Silverleaf Weir); and

(d) five items were underspent, but many of these are work in progress.

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

In the absence of a recommendation from Aurecon, the Authority has not adjusted the past expenditure except for the 10% general cost reduction. Investigations are continuing prior to the Final Report.

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

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

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

4.4 Opening ARR Balance (at 1 July 2012)

Stakeholder Submissions

SunWater

SunWater indicated that the renewals opening ARR balance as at 1 July 2011 was negative $1,011,000 for the Barker Barambah 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

Enkelmann (April 2011) and QFF (2011) observed that the scheme has a significant ongoing negative renewals balance and expressed concern that the cause of the negative balance has not been fully explained by SunWater.

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 Barker Barambah WSS is negative $940,000.

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

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

(b) adding 2006-11 renewals annuity revenue;

(c) subtracting 2006-11 renewals expenditure; and

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

To establish the closing ARR balance as at 30 June 2012 of negative $1,326,000, 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.

In relation to Enkelmann's comment, the Authority notes that the ARR was already substantially negative in 2006, and since, there has been significant unbudgeted expenditure in the scheme.

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 expenditure being defined as one which accounts for 10% or more in present value terms of total forecast renewals expenditure; and

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

The Authority recognises that more detailed planning approaches will incur costs, but this should result in a net benefit as forecasts of renewals expenditure will become more accurate.

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's proposed 2011-16 renewals expenditure for the Barker Barambah WSS is presented in Table 4.3 as provided in its NSP (submitted prior to the Government's announced interim prices for 2011-12).

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

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Barker Barambah River Distribution	103	-	-	-	-
Bjelke-Petersen Dam	77	-	184	6	14
Joe Sippel Weir	12	-	-	-	-
Redgate Diversion Pipeline	-	-	-	-	12
Silverleaf Weir	367	42	-	-	-
Upper Redgate Pump Station	-	-	-	-	2
Total	**558**	**42**	**184**	**6**	**28**

Source: SunWater (2011).

The major items incorporated in the above estimates are:

(a) the manufacture/installation of the inlet structure at Silverleaf Weir at an estimated cost of $337,000 in 2011-12. The new inlet structure will replace the current structure which is no longer safe to access, has been lost through corrosion and has a gate with an upstream sealing face so that water leaks around the edges of the gate; and

(b) the five-year Dam Comprehensive Inspection Study at Bjelke-Petersen Dam at an estimated cost of $105,000 in 2013-14.

The major renewals expenditure items from 2016-17 include:

(a) 10-year crane inspection at Bjelke-Petersen Dam at an estimated cost of $119,000 in 2020-21 and 10-yearly thereafter;

(b) replacement of cables and cableways at Bjelke-Petersen Dam at an estimated cost of $327,000 in 2021-22;

(c) replacement of hydraulic switchgear system at Bjelke-Petersen Dam at an estimated cost of $194,000 in 2031-32;

(d) replacement of switchboard No. 2 outlet works at Bjelke-Petersen Dam at an estimated cost of $162,000 in 2019-20;

(e) replacement of water level recorder at Bjelke-Petersen Dam at an estimated cost of $153,000 in 2033-34;

(f) 20-year Dam Safety Review Study at Bjelke-Petersen Dam at an estimated cost of $121,000 in 2023-24; and

(g) replacement of structure, 100mm air valve at Redgate Diversion Pipeline at an estimated cost of $196,000 in 2035-36.

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

Other Stakeholders

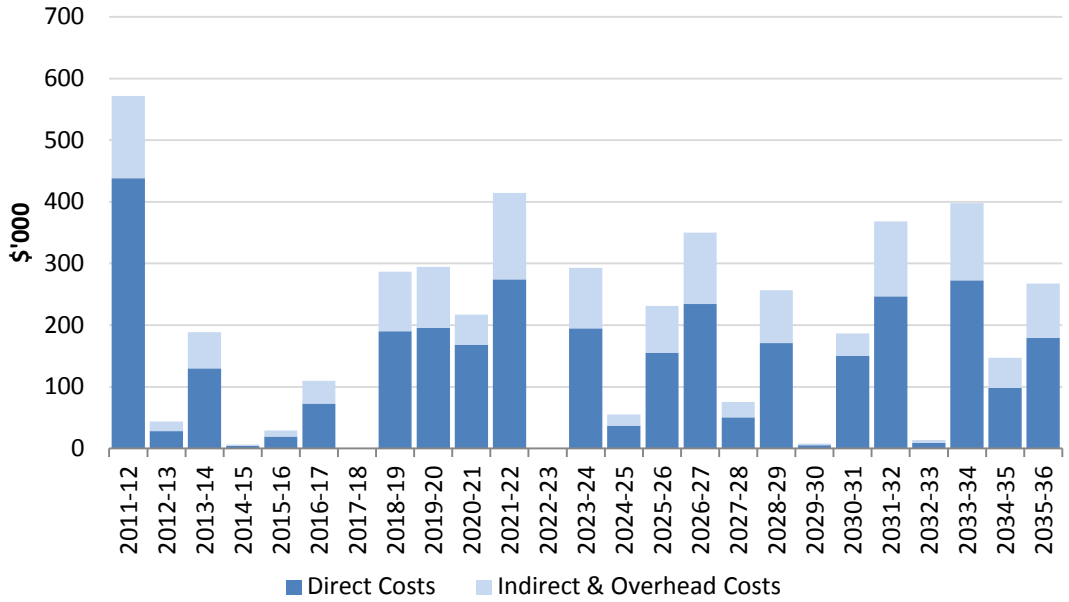
During the second round of consultations (2011), irrigators noted that further analysis is required of the forward renewals program to assess prudency and efficiency, as the scheme has an unexplainable significant ongoing negative renewals balance.

Authority's Analysis

Total Costs

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

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



Source: SunWater (2011am).

Item Review

Aurecon and SKM have reviewed the prudency and efficiency of a sample of items. Aurecon and SKM assessed the efficiency of the total costs of renewals items, that is, including indirect and overhead costs.

Item 1: Silverleaf Weir – Manufacture/Install Inlet Structure

SunWater

SunWater advised that this renewals item is for the replacement of a current structure which is no longer safe to access, has been lost through corrosion and has a gate with an upstream sealing face so that water leaks around the edges of the gate. This item is forecast to cost $337,000 in 2011-12.

Other Stakeholders

No other stakeholders have commented on this item.

Aurecon's Review

From the engineering report provided by SunWater, Aurecon examined the proposed works, including detailed engineering plans of the work to be undertaken, and a cost schedule for the works to be done.

Aurecon's view is that the unit rates for key inputs were commercially comparable and that an allowance of approximately 15% for materials and equipment that were incorporated into the costing is common practice in major projects. Aurecon noted that SunWater advised that the initial cost was amended after the scope of works upon which it was based was changed. However, SunWater did not provide a copy of the revised scope of works and costing to Aurecon.

Based on a desktop review of the material presented, Aurecon assessed the expenditure as prudent and efficient.

SKM's Review

SKM reviewed the total cost for the renewals item, based on SunWater's Systems, Applications and Product (SAP) Works Management System (WMS) which identified a cost of $314,918 for the relevant elements of the capital expenditure.

SunWater has allocated a standard run to failure asset life of 80 years and a refurbishment period of 20 years. SKM considered both the run to failure asset life and refurbishment period to be appropriate for this asset type.

(a) Available Information

SKM reviewed SunWater's SAP-WMS, and asset condition and risk assessment policy and procedures on the basis of documentation identified in Table 4.4.

Table 4.4: Documentation Reviewed Specific to the Silverleaf Weir Inlet Structure Refurbishment

Document No.	*Document Name*	*Document Title*	*Date*
1106884	1106884 – v1-7 – H6 - Silverleaf Weir Inlet Structure	Barker Barambah Water Supply – Silverleaf Weir - New Inlet Structure	22 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.

SKM indicated that SunWater has applied its risk evaluation method to this asset to determine that the asset has a Workplace Health and Safety (WHS) risk that has a critical consequence rating (score 100). Together with a likelihood of occurrence score of 20, this results in an overall risk score of 2000 which places this asset in a 'high' risk category, reducing the run to failure asset life from 80 years to 50 years and the refurbishment period from 20 years to 13 years.

SKM noted that once the WHS issue has been addressed, the overall risk category reduces to medium with run to failure asset life reduced to 70 years and the refurbishment period to 18 years. SKM considered the reduction in the run to failure asset life and refurbishment period based on 'medium' risk category to be appropriate and conforms with good industry practice.

Based on its construction date and adjusted replacement period of 70 years, the replacement of this asset is projected to be in 2018-19. The scope of works proposed provides for removal of the existing outlet gate and re-installation of it as part of the inlet structure.

SKM noted that the latest condition assessment undertaken in 2010 does not conform to SunWater's policy and procedures as it is a desktop assessment. A high level condition score of '2' (minor defects) was applied at the time of the assessment together with a comment 'Timber cribs in poor condition: Outlet needs reconfiguring: access issues – no public safeguards'.

SKM noted that the proposed scope of works to install a new inlet structure to enable isolation of the intake structure, dewatering of the outlet works and cleaning of the trash screens has been implemented by SunWater in the past with minor adoptions to suit. SKM considered that the design has addressed the WHS concerns raised, cost effective and therefore appropriate.

Based on the 2010 condition assessment score of 2 and in accordance with SunWater's policies of addressing the work within the next fiscal year, SKM considered the timing of this replacement to be prudent.

On the understanding that SunWater's policies for identifying risk and assessing asset condition have been followed, SKM concluded that the need for this work has been demonstrated; therefore the inclusion of this renewals item in the renewals value is prudent.

(c) Efficiency Evaluation

For asset refurbishment works where the planned refurbishment date is less than five years hence from the planning date, SunWater's planning team draw on actual costs for similar activities undertaken recently or from a zero based budgeting approach in absence of recent project data. SKM noted that SunWater Planning has drawn on costing from various projects to develop the cost estimate.

Given the volume of renewals items that SunWater's planning team are engaged with at any point in time, SKM considered this approach to be reasonable and in accordance with good industry practice, where the management of a large portfolio of assets is concerned.

SKM reviewed the rates provided by SunWater and considered these rates to be efficient. SKM developed a cost estimate making use of the rates and information provided by SunWater. Table 4.5 presents a cost estimate for the installation of the inlet structure at Silverleaf Weir.

Table 4.5: Replacement Cost – Silverleaf Weir outlet works

No	*Description*	*Amount ($)*
1	**DIRECT COST**	
1.1	Access and Cofferdam	24,000
1.2	Demolition	8,000
1.3	Piling	15,900
1.4	Concrete Works	62,500
1.5	Metal Works	94,500
1.6	Hydraulics	18,560
2	**SUB-TOTAL A**	**223,460**
3	Preliminary and General at 17% of Sub-Total A	37,990
4	**SUB-TOTAL B**	**261,450**
5	INDIRECT COST	105,030
6	**TOTAL**	**366,480**

Source: SKM (2011).

SKM considered that the proposed cost is low compared to that developed by SKM and is therefore efficient.

Authority's Analysis

The Authority notes that the total cost (including direct and indirect) submitted by SunWater for this renewals item ($337,000) does not equate to the amount reviewed by SKM ($314,918). 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.

The Authority recommends that the renewals expenditure proposed by SunWater for the manufacturing/installation of inlet structure at Silverleaf Weir be included, on the basis that there is a need for a response to the problems identified, and that the forecast costs are judged to be efficient.

Item 2: Bjelke-Petersen Dam – Replace Cables, Cableways

SunWater

This renewals item is for the replacement of current cables which have a life of 35 years – consistent with SunWater's adopted asset lives – and have been in existence since 1986 and is forecast to cost $327,000 in 2021-22.

Other Stakeholders

No other stakeholders have commented on this item.

Aurecon's Review

The SAP records provided indicate that a scoping study is planned in 2020-21 at a cost of $10,000 to review the need for replacement of cables and cableways. Aurecon noted that depending on the outcomes of this study, the replacement project may be pushed out by a couple of years.

SunWater also provided an extensive Bill of Materials (BoM) for the proposed replacement works, along with forecast unit rates for inputs (predominantly cable and cable conduit). SunWater has used the Cardno (2008) study to inflate all BoM that was based upon a pre-2000 valuation for electrical assets to a 2007-08 valuation by using an indexation of 2.13.

Aurecon noted that it has not been provided with a breakdown of the proposed expenditure but assume that it is based on the indexed BoM, project management fees, possibly a percentage for contingency costs (to cover over-runs for material cost inputs and contractor expenses), and possibly other overhead items.

Based on a desktop review of the information provided, Aurecon assessed the expenditure as prudent and efficient based on the comparative analysis undertaken of the unit charge rates used for key material inputs.

Authority's Analysis

The Authority recommends that the renewals expenditure proposed by SunWater for the replacement of cables and cableways at Bjelke-Petersen Dam be included, on the basis that there is a need for a response to the problems identified, and that the forecast costs are judged to be efficient.

Conclusion

In summary, two items for the Barker Barambah WSS were sampled. Both the sampled items were considered prudent and efficient and have been retained as forecast expenditure.

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

In total, the Authority recommends the renewals expenditure be adjusted as noted in the table below.

Table 4.6: Review of Forecast Renewals Expenditure 2011-36 ($'000)

Item	*Year*	*SunWater ($000)*	*Authority's Findings*	*Recommended ($000)*
Sampled Items				
1. Silverleaf Weir – 09BBAo5 Manufacture/Install Inlet Structure	2011-12	337	Prudent and efficient	337
2. Item 2: Bjelke-Petersen Dam – Replace Cables, Cableways	2021-22	327	Prudent and efficient	327
Non-Sampled Items				10% saving applied

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

4.6 SunWater's Consultation with Customers

Submissions

SunWater

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

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

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

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

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

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

4.7 Allocation of Headworks Renewals Costs According to WAE Priority

Previous Review

For the 2006-11 price path, the renewals costs for the Barker Barambah bulk water infrastructure were apportioned between priority groups using converted nominal water allocations. The conversion to medium priority WAE was determined by a water pricing conversion factor (WPCF) of 2.5:1; that is, one ML of high priority WAE was considered equivalent to 2.5ML 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 Headworks Utilisation Factor (HUF).

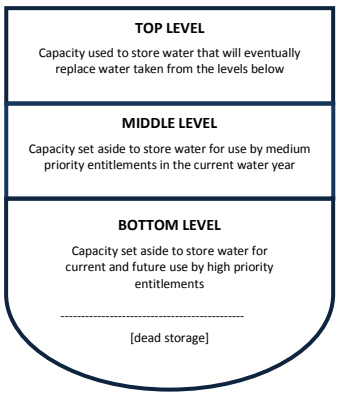
SunWater submitted that, in general, the HUF allocates a greater proportion of capital costs per ML of high priority WAE. Specifically, the HUF methodology takes into account water sharing rules, Critical Water Sharing Arrangements (CWSAs) and other operational requirements that typically give high priority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

SunWater (2010d) submitted a detailed guide on the HUFs methodology, outlining its derivation and application for each scheme. This methodology, discussed in detail in 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[2].

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.

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



Step 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 in the same proportion.

The parameters used for determining the HUFs for the Barker Barambah WSS are summarised in Table 4.7. The HUFs for this scheme (SunWater, 2010d) are 75% for medium priority and 25% for high priority.

Table 4.7: Application of HUFs Methodology

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

Nominal Group	(ML)	HUF Group	(ML)
Medium Priority	32,079	MP_A	32,079
High Priority	2,236	HP_A	2,236

STEP 2: ROP Conversion Factor Adjustment

Conversion Factor: ROP_{CF}	N/A
Maximum volume that can be converted to HP: $HP_A max$	2,236
Corresponding volume of MP: $MP_A min = MP_A-(HP_A max-HP_A)*ROP_{CF}$	32,079

STEP 3: Water Sharing Rules & Operational Requirements

Water Sharing Rules	
Volume below which MP not available: MP_0AA	11,245
Volume above which max. MP available: $MP_{100}AA$	73,169
CWSAs and other operational requirements	
Likely increase in volume effectively reserved for HP: MP_0	12,000
Likely increase in min. storage before maximum MP available: MP_{100}	73,169
Key Dam Level Measures	
Full Supply Level: FSV_{hwks}	136,190
Dead Storage Level: DSL_{hwks}	1,122

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 = 53,506; HP_2 = 9,515	7%	MP_{2u} = 3,963; HP_{2u} = 705
Middle: $min\{(MP_{100}-MP_0),(FSV_{hwks}-MP_0)\}$	MP_1 = 61,169	45%	MP_{1u} = 27,510
Bottom: $MP_0 - DSV_{hwks}$	HP_1 = 10,878	88%	HP_{1u} = 9,562

STEP 5: Calculation of HUFs for each Water Entitlement Group

HUF Formula	HUF Group	Nominal Group
MP_A: $(MP_{1u}+MP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ = (27,510+3,963) / (27,510+9,562+3,963+705)	HUF_{mp} = 75%	Medium Priority = 75%
HP_A: $(HP_{1u}+HP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ = (9,562+705) / (27,510+9,562+3,963+705)	HUF_{hp} = 25%	High Priority = 25%

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

Other Stakeholders

Enkelmann (2010) submitted that water charges should reflect the lowered reliability caused by CWSA. Enkelmann further suggested that the annual safe yield of Bjelke-Petersen Dam is only 75% before any Medium Priority access because the Bjelke-Petersen Dam has a safe yield of 16,000 ML/yr, and the CWSA places a High Priority of 8,000 ML (double the original amount)

plus a floor of 12,000 ML before allocation can be announced. Enkelmann (2011) recommends that the Government return on investment charges should be reflected in the charges to the High Priority sector.

Enkelmann (2011, April) submitted that the HUF approach reflects the impact of high priority allocations and recent adjustments to secure high priority supply. Enkelmann cited the surrender of 2122 ML of allocation to secure Murgon's supply needs as further evidence of adjustments to secure urban reliability needs. Enkelmann submitted that the Authority should take this proposal into account in the assessment of the HUF.

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. For the Barker Barambah WSS, the changes resulted in the HUF_{mp} value rising from 75% to 76%, and the HUF_{hp} value falling from 25% to 24% (Table 4.8).

Table 4.8: Revised HUF Calculations

STEP 4: Hydrologic performance of headworks storage

Storage Layer	Storage Capacity (ML)	Prob. of Utilisation	Utilised Capacity (ML)
Top			
Initial	MP2= 53,506; HP2= 9,515	7%	MP2u= 3,963; HP2u= 705
Revised*	MP2= 58,914; HP2= 4,107	no change	MP2u= 4,364; HP2u= 304
Middle	MP1= 61,169	45%	MP1u= 27,510
Bottom	HP1= 10,878	88%	HP1u= 9,562

STEP 5: Calculation of HUFs for each Water Entitlement Group

	Initial	Revised	Nominal Group
HUF_{mp}	75%	76%	Medium Priority = 76%
HUF_{hp}	25%	24%	High Priority = 24%

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

The Authority estimates that based on the HUF methodology, the conversion for medium priority to high priority would be 4.5:1. This compares with the Water Pricing Conversion Factor of 2.5:1 used for 2006-11 price paths. Further, the Authority notes that under the HUF approach, medium priority irrigators will now pay 76% of the cost of renewals whereas previously medium priority irrigators paid 85%.

In response to issue raised by Enkelmann, the HUF approach ensures that the current water sharing arrangements are taken into account, at least in regard to sharing of renewals costs. High priority WAE holders account for 6.52% of total WAE, but meet 24% of renewals costs.

In relation to the voluntary surrender of 2122 ML of medium priority allocation, SunWater advised that this was already incorporated into the HUF approach, in terms of the CWSA already in place (Table 4.7).

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 Barker Barambah WSS, the recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.9. 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 4.9: Barker Barambah WSS Renewals Annuity ($'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Total SunWater	131	130	134	115	164	273	274	269	270	268	268
Total Authority	131	130	134	115	164	239	242	235	237	234	233
High Priority	-	-	-	-	-	-	53	52	52	51	51
Medium Priority	-	-	-	-	-	-	189	183	185	182	182

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

5. OPERATING COSTS

5.1 Background

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

Issues

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

(a) the scope of operating activities for this scheme;

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

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

(d) the most appropriate methodologies for assigning operating costs to service contracts[3] and to different priority customer groups (within each service contract).

5.2 Total Operating Costs

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

Non-direct costs are classified as either:

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

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

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

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

(a) a Service Manager and are 41 staff are located at the Bundaberg office and are responsible for the day-to-day water supply management and for delivery of the programmed works for all users in the region. Five operational staff are located at Boondooma Dam;

(b) service provision relates to:

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

(i) water delivery – scheduling and releasing bulk water from storages, surveillance of water levels and flows in the river, and quarterly meter reading; 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***
Bjelke-Petersen Dam	Yes	Yes	Yes	Yes
Joe Sippel Weir	Yes	Yes	Yes	No
Silverleaf Weir	No	Yes	Yes	No

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

The Burnett Basin ROP was amended in March 2010 by DERM. The ROP now contains many new scheme operation and management rules, some of which have led to additional responsibilities and increased compliance costs for SunWater as the Resource Operations Licence (ROL) holder. The most significant rules affecting routine operations include:

- implementation of new arrangements to manage environmental, stock and domestic water and flow event management rules;
- additional water quality monitoring (field work, collection of data, collation and submission of monitoring reports) to meet DERM's Water Monitoring Data Collection Standard;

(ii) dam safety – as Bjelke-Petersen Dam is a referable dam under the *Water Act 2000*. SunWater is required to have a program in place to minimise the risk of dam failure, which involves documenting, recording and reporting on dam safety. Audits and thorough inspections are carried out annually.

Routine dam safety inspections are carried out monthly at Bjelke-Petersen Dam. Weir safety inspections are carried out quarterly. Specific dam safety inspections are required at Bjelke-Petersen Dam, which include monitoring of embankments, piezometers, seepage and the general condition of the storages as defined in the dam surveillance specification. They also include condition inspections to identify and plan maintenance requirements and to provide information for management planning of water delivery assets;

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

(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 facilities to private operators or Government. The recreation facilities at Bjelke-Petersen Dam continue to be operated and maintained by SunWater (the cost of which is outlined further below);

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

(g) most of the electricity costs for this scheme/system relate to the Redgate relift pump station.

Previous Review

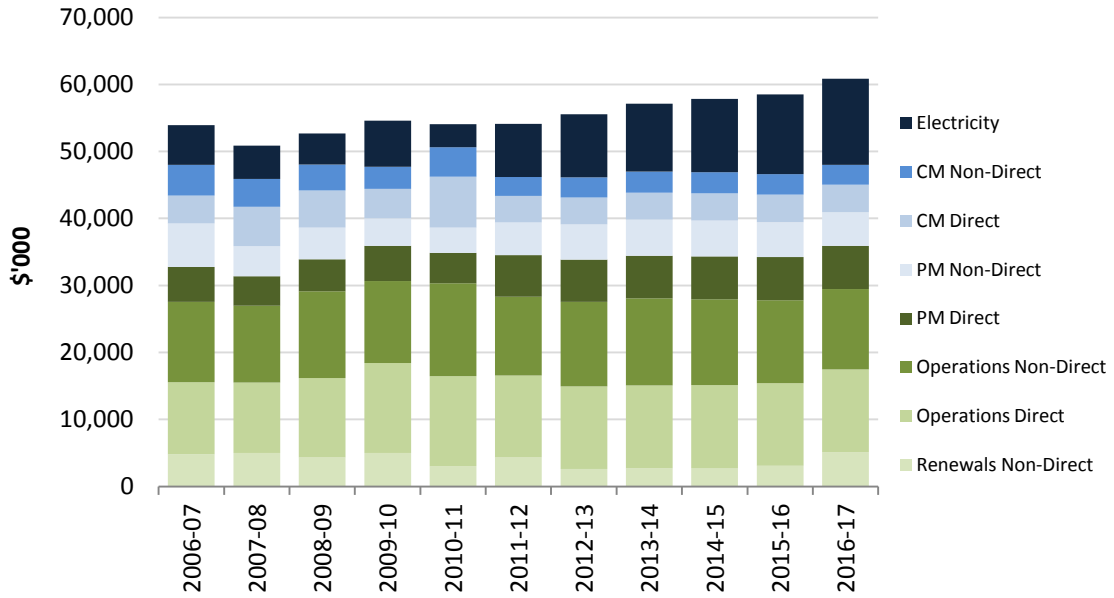
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

Stakeholder Submissions

SunWater

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

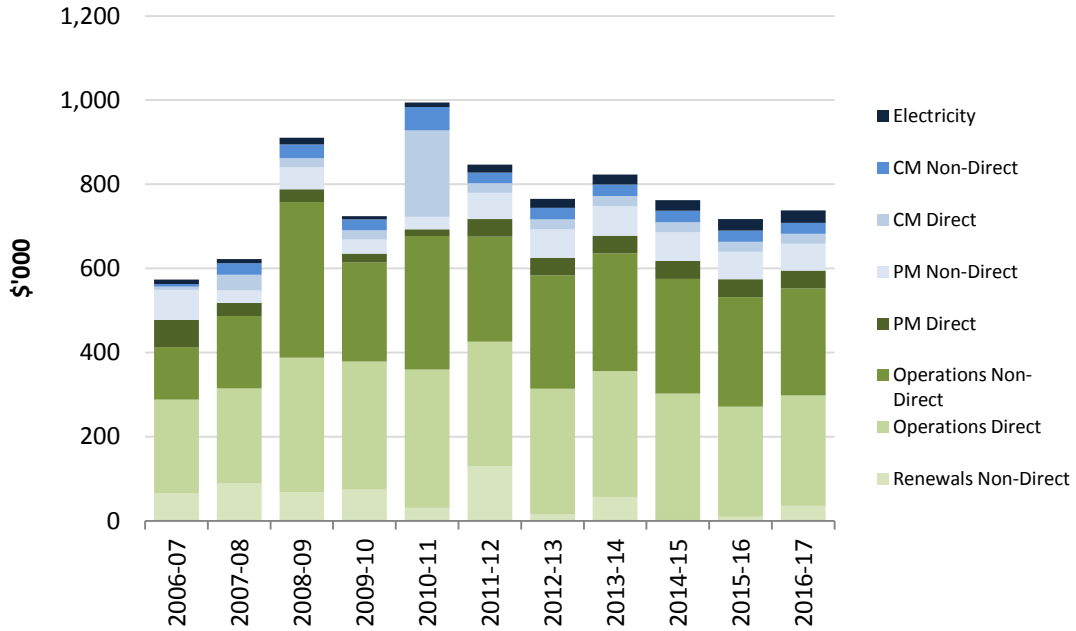
Figure 5.1: SunWater's Total Operating Costs (Real $'000) – All Service Contracts



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

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

Figure 5.2: Total Operating Costs (Real $'000) – Barker Barambah WSS



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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	347	398	689	540	646	546	568	579	573	522	516
Electricity	11	10	16	7	10	18	22	24	25	28	30
Preventive maintenance	136	61	83	54	45	104	110	112	111	108	107
Corrective maintenance	14	65	54	48	261	48	51	52	51	50	50
Renewals non-direct	66	89	68	75	31	130	15	57	2	10	36
Total	**574**	**622**	**910**	**724**	**994**	**846**	**766**	**823**	**763**	**718**	**738**

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	127	119	175	148	162	179	181	181	181	181	181
Electricity	11	10	16	7	10	18	22	24	25	28	30
Contractors	34	44	24	41	242	47	47	48	49	11	11
Materials	21	23	16	8	23	18	19	19	19	19	19
Other	114	108	158	150	123	117	117	117	117	117	117
Non-direct	268	319	522	371	434	467	379	434	371	361	380
Total	**574**	**622**	**910**	**724**	**994**	**846**	**766**	**823**	**763**	**718**	**738**

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

In its NSP, SunWater submitted that bulk water operating costs for this scheme averaged $626,000 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 2012-16 are $710,000 million per annum.

Other Stakeholders

At the second round of consultation, stakeholders questioned whether previous efficiency initiatives by SunWater have been fully implemented.

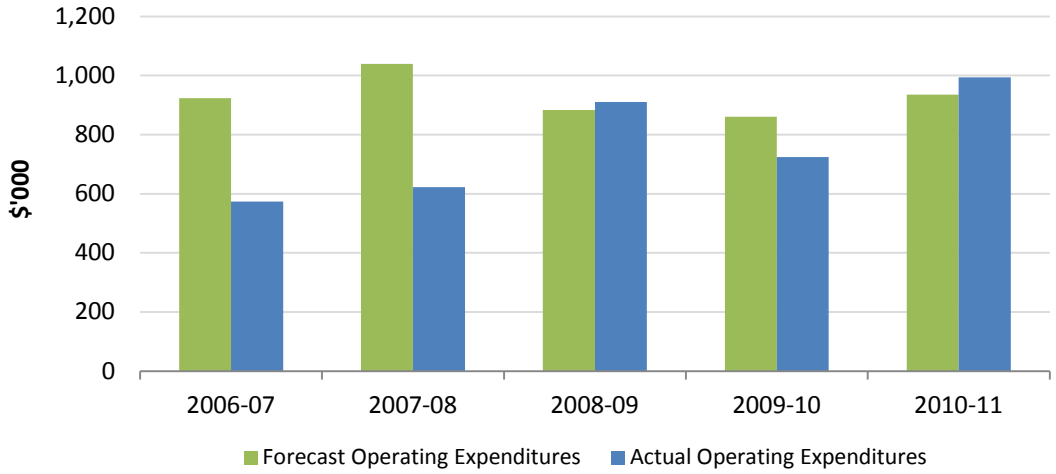
Authority's Analysis

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

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

In 2011, the Authority engaged Indec to assess whether SunWater achieved the cost savings forecast in 2005-06. A comparison of forecast and actual operating costs for the Barker Barambah WSS is shown in Figure 5.3. For this scheme, actual operating costs are below those originally forecast.

Figure 5.3: Forecast and Actual SunWater Operating Expenditure 2006-11



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, as either indirect or overhead costs, is detailed in Volume 1.

Previous Review

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

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

Stakeholders

SunWater

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

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

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

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	27,831	25,097	25,872	24,579	21,130	23,770	23,512	24,244	24,055	23,708	25,089
Barker Barambah	268	319	522	371	434	467	379	434	371	361	380

Source: SunWater (2011ap).

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

Other Stakeholders

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 dollars) per annum in finance, human resources, information technology, and health, safety, environmental and quality areas (for the whole of SunWater).

Deloitte was unable to draw any definitive conclusions from an attempt to benchmark against Pioneer Valley Water Board (PVWater) and other Australian rural water service providers. Deloitte noted that PVWater's non-direct costs were higher than those of SunWater as a percentage of total operating costs – but that there are differences between PVWater and SunWater which made the comparison unreliable.[4]

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

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

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

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

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

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

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

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

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

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

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	268	319	522	371	434	467	379	434	371	361	380
Authority							369	415	350	336	347

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' operating costs were forecast using this classification. The nature of these activities and costs are identified further below.

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

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

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

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

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

Stakeholder Submissions

SunWater

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

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	223	226	320	304	328	296	299	300	300	262	262
Electricity	11	10	16	7	10	18	22	24	25	28	30
Preventive Maintenance	65	31	31	20	16	42	42	42	42	43	43
Corrective Maintenance	8	37	21	22	206	23	23	24	24	24	24
Total	**306**	**304**	**389**	**354**	**560**	**379**	**386**	**389**	**392**	**357**	**359**

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

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	127	119	175	148	162	179	181	181	181	181	181
Electricity	11	10	16	7	10	18	22	24	25	28	30
Contractors	34	44	24	41	242	47	47	48	49	11	11
Materials	21	23	16	8	23	18	19	19	19	19	19
Other	114	108	158	150	123	117	117	117	117	117	117
Total	**306**	**304**	**389**	**354**	**560**	**379**	**386**	**389**	**392**	**357**	**359**

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

Authority's Analysis

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

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

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

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

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

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

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

(f) retrieving information regarding individual assets was difficult.

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

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

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

(a) attain greater operating efficiency;

(b) achieve greater transparency;

(c) facilitate future price reviews; and

(d) promote more meaningful stakeholder engagement.

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

Item 1: Operations

Stakeholder Submissions

SunWater

Operations relate to the day-to-day operational activity (other than maintenance) enabling water delivery, customer management, asset management planning, financial and ROP reporting, WHS compliance, 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. SunWater noted that recreation facilities at Bjelke-Petersen Dam continue to be operated and maintained by SunWater.

Table 5.8: Recreational Facility Costs (Real $'000)

	2011-12	***2012-13***	***2013-14***	***2014-15***	***2015-16***
Recreational Facility Cost	71	37	37	37	42

Source: SunWater (2011).

Other Stakeholders

At the second round of consultation, stakeholders:

(a) contended that further analysis is required of the significant growth in labour costs since 2007-08;

(b) questioned the increase in the scheme management and scheduling costs during an extended period of very low supply;

(c) questioned whether recreation costs should be covered by local government, noting the dam is a significant regional recreation facility.

Authority's Analysis

Aurecon's Review

Aurecon reviewed SunWater's operations costs in more detail as shown in Table 5.9. Particular observations by Aurecon were that:

(a) operations costs comprise between 70% and 87% of total operating costs; and

(b) cost items in the 'other' category included insurance ($75,000 in 2010-11), land tax ($14,000) and rates ($7,000).

Table 5.9: Operations Expenditure by Type (Real $'000)

Type	*Actuals*				*Forecast*	*Forecast*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Labour	78	88	142	117	130	131	131	131	132	131
Materials	9	7	5	2	3	3	3	3	3	3
Contractors	31	28	17	35	41	41	42	42	43	5
Other	105	103	155	149	108	113	112	112	112	112
Total Direct Costs	*223*	*226*	*320*	*304*	*282*	*288*	*288*	*288*	*290*	*251*
Indirects	38	66	207	102	113	288	288	288	290	251
Overheads	87	106	163	134	134	112	129	137	130	122
Total	**348**	**398**	**689**	**540**	**529**	**535**	**554**	**563**	**559**	**506**

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

Aurecon summarised operations costs by activity for the four years 2006-07 to 2009-10 (Table 5.10).

Table 5.10: Operations Expenditure by Activity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*
Customer Management	14	-	-	29
Workplace H&S	3	0	0	5
Environmental Management	25	4	1	7
Water Management	-	27	46	33
Scheme Management	98	107	215	249
Dam Safety	9	20	54	49
Schedule /Deliver	159	166	306	99
Metering	2	41	56	43
Facility Management	33	32	11	26
Other	4	1	0	0

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

Significant items included:

(a) water management – activities related to announcement of water allocations, water quality monitoring and sampling, blue-green algae management, SDL readings, shoreline inspections, monitoring of groundwater levels and salinity levels, bore measurements and preparation of data for NRMW and SunWater. Contractors are used for water quality monitoring. SunWater noted that 2007 was a transition year in switching from the previous internal trade model to the new BOM, giving rise to comparability problems with line items;

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

(c) dam safety – routine monthly dam inspections, monitoring of embankments, piezometers, seepage surveillance, compliance documentation and reporting;

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

(e) metering – activities related to the reading of customer water meters; and

(f) facility management – activities related to the maintenance of recreational facilities [at Bjelke-Petersen Dam].

Aurecon noted stakeholders have raised the issue that there are more cost effective strategies to avoid reading sleeper[5] meters each quarter by SunWater staff. In response to Aurecon's questions, SunWater confirmed that that only one additional meter has been installed since 2009 and that metering costs has actually decreased by $43,000 in 2009-10.

Aurecon noted that this possibly indicates that SunWater has identified substantial labour efficiencies in reading meters. Further, Aurecon noted that quarterly meter reading is a statutory requirement.

Aurecon noted that SunWater advised that a number of weir safety inspections costs that were previously recorded under Dam Safety are now incorporated in Preventive Maintenance activity for the forecast price path. Three activities are identified totalling $4,500 (direct labour expense) are most likely to have been reallocated from Dam Safety to Preventive Maintenance (2010-16).

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

[5] Sleeper is a term that is used to describe a water entitlement holder in a scheme that does not utilise that entitlement. This can be for a number of reasons, for example, properties may have changed hands and the new owner no longer farms. Farming practices may have changed and there is no longer full utilisation of the water entitlements held or the price of commodities in a particular year does not lend to planting in that year.

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

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

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

Due to the above data limitations, Aurecon was unable to validate fully the prudency and efficiency of operations costs.

Conclusion

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

In relation to recreation costs, the Authority notes that the Ministerial Direction requires that the Authority set prices to recover prudent and efficient recreation management costs. The Authority notes that Aurecon did not recommend any adjustments to SunWater's recreation costs. The Authority is not aware of any particular recreation costs that are inappropriate.

The Authority notes that Aurecon was unable to validate the prudency and efficiency of SunWater's operations costs due to insufficient information. Aurecon did not recommend any adjustment to forecast operations costs. The Authority notes that the consultants engaged to review operations costs in other SunWater schemes (Halcrow (2011), GHD (2011) and Arup (2011)) also did not recommend any adjustment to operations costs.

The Authority has not made any specific adjustments to SunWater's proposed operations costs.

Item 2: Preventive Maintenance

Stakeholder Submissions

SunWater

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

Preventive maintenance includes:

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

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

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

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

Other Stakeholders

No other stakeholders have commented on this item.

Authority's Analysis

Aurecon's Review

Aurecon observed that:

(a) in 2010-11, 60% of preventive maintenance costs were indirect costs and overheads, 32% was accounted for by labour and 4% by material. The 2010-11 cost structure was used as a basis for 2012-16;

(b) the total cost of labour at $33,000 in 2010-11 was well above that incurred for 2007-08 to 2009-10 (average $18,100);

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

(d) although preventive maintenance may be expected to follow water use to some degree, preventive maintenance costs show a consistent correlation with water use only for 2008-10; and

(e) weed control activities around the storage structures (Bjelke-Petersen Dam, Joe Sippel Weir and Silverleaf Weir) and access roads varied from approximately $15,000 (2009-10) to $33,000 (2008-09).

    Weed control costs were significant in terms of labour input. Considering that it is a bulk river system, weed control costs would be expected to be minimal, with the possible exception of land based weed control around the bulk assets and access roads.

Aurecon noted the differences between 2007 observations and later years (possibly due to the error due to change in the business model used). However, SunWater advised that 2007 was a transition year in which the previous internal trade model was removed and the new BOM model developed and implemented in 2008. This causes difficulties in comparability over this time period.

Aurecon noted that SunWater's proposed labour costs for preventive maintenance of $30,019 in 2010-11 are informed by a study by PB in 2010. PB proposed that for 2010-11, a total of 546 hours would be required at a cost of $30,019 for condition monitoring and servicing. This included the 184 hours of new monitoring and servicing activities not previously recorded within the Barker Barambah Bulk WSS system. SunWater's forecast labour costs were based on the average of the previous four years.

Aurecon identified historical preventive maintenance between 2006-07 and 2009-10 at an average of 346 hours (noting that the 2006-07 data may include substantial error due to retro-fitting of historical data into the new business model) and labour rates at an average of $43/hour.

Aurecon noted that the 2010-11 hourly labour rate adopted by PB ($55/hour) exceeded SunWater's actual costs in 2009-10 ($37/hour), possibly due to an assumption by PB of the utilisation of more senior SunWater staff.

Aurecon recommended that the 530 hours of labour be budgeted at $45/hour at a total cost of $23,850 for these activities (346 being the average between 2006-07 and 2009-10 and 184

additional hours recommended by SunWater). Aurecon further recommended that an allowance of $6,600 should be provided for the labour input to weed control activities, based on a 10% mark-up of the four-year average of these costs.

In total for labour for monitoring and weed control, Aurecon recommended that the $33,000 estimate projected by SunWater be revised to $30,450.

Aurecon's analysis results in a reduction of $2,550 in total preventive maintenance, to be applied to each year of the next pricing period.

SunWater's Response

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

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

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

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

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

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

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

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

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

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

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

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

Conclusion

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

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

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

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

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

For this scheme, the Authority has therefore reduced SunWater's estimates by $2,550 in line with Aurecon's findings.

Item 3: Corrective Maintenance

Stakeholder Submissions

SunWater

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

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

SunWater identifies two types of corrective maintenance activities:

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

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

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

Typical corrective maintenance examples on drains and channels are:

(a) erosion repairs;

(b) flow meter repairs and replacements;

(c) removing weed blockages;

(d) repairing regulating gates, pumps and control systems; and

(e) repairing pipe leaks and seals on offtake gates.

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

Other Stakeholders

No other stakeholders have commented on this item.

Authority's Analysis

Consultant's Review

Aurecon noted the difficulty in forecasting corrective maintenance costs, and that SunWater's approach of using historical expenditure as a basis for forecasting is commonly used by other water utilities. Ignoring the cost recorded for 2006-07 due to the gross under-reporting of cost due to the transition into the new BOM, the annual average direct cost (2007-08 to 2009-10) was $27,000 (excluding indirect costs and overheads). This compares to SunWater's forecast of $24,000 for the period starting at 2010-11.

However, based on the historical data provided by SunWater and comparative analysis of historical expenses against forecast costs for 2011 (2012-16), Aurecon viewed SunWater's proposed corrective maintenance direct costs for Barker Barambah WSS as prudent and efficient.

SunWater's Response

SunWater did not submit any response on this item.

Conclusion

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

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

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

Item 4: Electricity

Stakeholder Submissions

SunWater

SunWater submitted that the electricity costs for the scheme mostly relate to the Redgate relift pump station. SunWater submitted 0.8% of electricity cost is attributed to Joe Sippel Weir, 55.9% to 'Value House & TWS' and 44.3% to Upper Redgate Relift Pump Station.

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

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

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

Other Stakeholders

No other stakeholders have commented on this item.

Authority's Analysis

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

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

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

The Authority has adjusted SunWater's proposed electricity costs as set out in Table 5.13 below.

Item 5: Cost Escalation

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

Direct Labour

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

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

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

Direct Materials and Contractors

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

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

Other Costs

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

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Barker Barambah WSS is set out in Table 5.11.

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 5.11: 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	299	300	300	262	262	289	290	290	254	254
Electricity	22	24	25	28	30	19	19	20	21	22
Preventive Maintenance	42	42	42	43	43	41	41	41	42	42
Corrective maintenance	23	24	24	24	24	23	23	23	23	23
Direct Operating Costs	**386**	**389**	**392**	**357**	**359**	**372**	**374**	**375**	**340**	**341**

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).

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

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

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

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

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

The effect for the Barker Barambah 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 5.12. The Authority's recommended operating costs are set out in Table 5.13.

Table 5.12: SunWater's Proposed Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	133	133	133	133	133
Materials	42	43	43	5	5
Contractors	6	6	6	6	6
Other	117	117	117	117	117
Non-direct	269	279	273	260	254
Preventive Maintenance					
Labour	34	34	34	34	34
Materials	2	2	2	2	2
Contractors	6	6	6	6	6
Other	0	0	0	0	0
Non-direct	67	70	68	65	64
Corrective Maintenance					
Labour	14	14	14	14	14
Materials	3	3	3	3	3
Contractors	7	7	7	7	7
Other	0	0	0	0	0
Non-direct	27	28	27	26	26
Electricity	22	24	25	28	30
Total	**750**	**767**	**760**	**708**	**702**

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	129	130	131	132	133
Materials	6	6	6	6	6
Contractors	41	41	41	5	5
Other	113	112	112	111	110
Non-direct	262	268	258	241	232
Preventive Maintenance					
Labour	33	33	34	34	34
Materials	5	6	6	6	6
Contractors	2	2	2	2	2
Other	0	0	0	0	0
Non-direct	66	67	64	61	58
Corrective Maintenance					
Labour	13	13	13	13	14
Materials	7	7	7	7	7
Contractors	3	3	3	3	3
Other	0	0	0	0	0
Non-direct	26	27	26	24	23
Electricity	19	19	20	21	22
Total	**726**	**735**	**723**	**666**	**655**

Source: QCA (2011).

6. DRAFT PRICES

6.1 Background

Ministerial Direction

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

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

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

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

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

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

The Ministerial Direction also requires that:

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

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

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

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

Previous Review

In the 2006-11 price paths, real price increases over the five years were capped at $10/ML for relevant schemes (including the Redgate Re-lift Segment). The cap applied to the sum of Part A and Part B real prices. In each year of the price path, the prices were indexed by the consumer price index (CPI).

For the regulated part, prices over 2006-11 increased in real terms to achieve lower bound costs in 2009-10, and were maintained in real terms 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 Barker Barambah 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 Barker Barambah 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	628	644	949	737	1,110	970	1,005	1,017	1,011	957	951
Renewals Annuity	131	130	134	115	164	273	274	269	270	268	268
Operating Costs	508	533	842	649	963	716	750	767	760	708	702
Revenue Offsets	-11	-20	-28	-28	-17	-19	-19	-19	-19	-19	-19
Authority's Total Costs							950	952	942	882	869
Renewals Annuity							242	235	237	234	233
Operating Costs							726	735	723	666	655
Revenue offsets							-19	-19	-19	-19	-19
Return on Working Capital							1	1	1	1	1

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

6.4 Fixed and Variable Costs

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

SunWater submitted that all of its operating costs are fixed in the Barker Barambah 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;

(g) 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 Barker Barambah WSS, Indec considered 90% of costs should be fixed and 10% variable under recommended management approach. The Authority notes that this ratio differs from the current tariff structure which reflects the recovery of 70% of costs in the fixed charge and 30% of costs in the volumetric charge and for Redgate Re-lift section 54% of costs in the fixed charge and 46% of costs in the volumetric charge.

In general, the Authority accepts Indec's recommended tariff structure, for the reasons outlined in Volume 1. However, for this particular scheme, there are adjustments to the Redgate Re-lift section required to reflect the cost allocation set out in Chapter 3 – Pricing Framework.

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	**842**	**845**	**836**	**783**	**772**
High Priority	153	153	152	144	142
Medium Priority	689	691	684	638	630

Source: QCA (2011).

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

Variable Costs

Variable costs are allocated to all users on the basis of water use. Volumetric tariffs are calculated based on SunWater's eight-year historical water usage data for all sectors. However, consistent with SunWater's assumed typical year for operating cost forecasts, the Authority has removed from the eight years of data, the three lowest water-use years for each service contract. Accordingly, to determine the volumetric charge, the Authority has assumed historical total water use for all sectors to be 55.1% 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: Prices for the Barker Barambah 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*
Regulated											
Fixed (Part A)	14.60	16.08	18.64	20.16	20.76	21.52	20.98	21.50	22.04	22.59	23.16
Volumetric (Part B)	8.35	9.19	10.64	11.52	11.87	12.29	5.12	5.25	5.38	5.51	5.65
Redgate Relift											
Fixed (Part A)	9.64	12.60	15.96	19.32	22.56	23.36	20.98	21.50	22.04	22.59	23.16
Volumetric (Part B)	24.37	25.08	26.28	27.11	27.93	28.93	12.41	12.72	13.04	13.36	13.69

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

Table 6.4: Termination Fees ($/ML)

	Actual Prices						*Cost-Reflective Prices*				
	2006-07	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Channel to River	n.d.	n.d.	n.d.	n.d.	16.99	18.98	0.00	0.00	0.00	0.00	0.00

Note: n.d. - no data. SunWater started publishing termination fees in their Annual Fees & Charges Schedule from 2008-09. Prior to 2008-09, these fees were calculated as needed. Source: Actual Prices (SunWater, 2011al) and Recommended Prices (QCA, 2011).

6.7 Queensland Government Pricing Policies

As noted above, the Queensland Government has directed that:

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

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

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

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

Authority's Analysis

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

The Authority has calculated these current revenues using the relevant 2010-11 prices, current irrigation WAE and the five-year average (irrigation only) water use during 2006-11 (Table 6.5).

For this scheme, current revenues are above the level required to recover prudent and efficient costs for each tariff group (Table 6.5).

Therefore, the Authority is required to recommend prices that maintain revenues in real terms for the 2012-17 regulatory period for each tariff group.

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

Tariff Group	*2010-11 Prices (indexed to 2012-13)*		*Irrigation WAE (ML)*	*Water Use (ML)*	*Current Revenue*	*Revenue from Cost Reflective Tariffs*	*Difference*
	Fixed	*Variable*					
Regulated	21.81	12.47	29,719	2,998	685,592	638,788	46,804
Redgate Relift	23.70	29.34	1,642	166	43,771	36,494	7,277

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

6.8 The Authority's Recommended Prices

The Authority's recommended prices to apply to the Barker Barambah WSS for 2012-17 are outlined in Table 6.6, 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 6.6: Draft Prices for the Barker Barambah 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*
Regulated											
Fixed (Part A)	14.60	16.08	18.64	20.16	20.76	21.52	21.09	21.62	22.16	22.71	23.28
Volumetric (Part B)	8.35	9.19	10.64	11.52	11.87	12.29	5.12	5.25	5.38	5 51	5.65
Redgate Relift											
Fixed (Part A)	9.64	12.60	15.96	19.32	22.56	23.36	21.86	22.41	22.97	23.54	24.13
Volumetric (Part B)	24.37	25.08	26.28	27.11	27.93	28.93	12.41	12.72	13.04	13.36	13.69

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

The Authority has recommended a termination fee of zero should be applied in this scheme. In this scheme, there is no difference in the cost-reflective fixed charges between the two tariff groups (see Volume 1).

Table 6.7: Termination Fees ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Channel to River	n.d.	n.d.	n.d.	n.d.	16.99	18.98	0.00	0.00	0.00	0.00	0.00

Note: n.d. - no data. SunWater started publishing termination fees in their Annual Fees & Charges Schedule from 2008-09. Prior to 2008-09, these fees were calculated as needed. Source: Actual Prices (SunWater, 2011al) and Recommended Prices (QCA, 2011).

6.9 Impact of Recommended Prices

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

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APPENDIX A: FUTURE RENEWALS LIST

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

Asset	*Year*	*Description*	*Value ($'000)*
Barker Barambah River Distrib	2011-12	Replace Recorder	69
		Replace Gstn Recorder	34
	2026-27	Replace Recorder	71
		Replace Gstn Recorder	35
Bjelke-Petersen Dam	2011-12	11BBAXX REFORM ACCESS ROAD TO D/S WALL	34
		Safe Operation of Inlet Tower Ladders.	24
		Remove vegetation from discharge channel	12
	2013-14	Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2013)	105
		Refurbish trashracks	36
		Construct earth drain - D/S Rec. 6.2a	22
		Construct earth drain - D/S Rec 3.2(a)	20
	2016-17	Replace Hydraulic Winch	14
		Refurbish hoist - ropes & painting	12
	2018-19	Replace Water Level Recorder	154
		Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2013)	103
		Study: Options analysis into replacement of all Switchboards scheduled in 2020	15
	2019-20	Replace Switchboard No.2 Outlet Wks	162
		Replace Switchboard No.3 Control Con.	43
		Replace Switchboard No.4 Hydraulic	38
		Replace Switchboard No.1 Embk Distrib.	30
		Replace Switchboard No.5 Inlet Tower	11
	2020-21	11BBAXX 10Y CRANE INSPECTION	119
		Replace Public Toilet Block	37
		Study: Review need for replacement of cables and cableways in 2021	12
		Replace Electrical Installations	11
	2021-22	Replace Cables & Cableways	327
		Refurbish Outlet Pipe - repaint exposed part	31
	2023-24	Study: 20yr Dam Safety Review (by 1 Dec 2023)	121
		Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2013)	103
		Replace Town Water Supply Pump 2	37
	2024-25	Refurbish Bgte - Repaint & seal - MS fabricated plug	18
		Refurbish hoist - ropes & painting	12
	2025-26	Refurbish Valve - including hydraulic actuation	60
		Refurbish Baulks 2003 Dam Safety Inspection	36

Asset	*Year*	*Description*	*Value ($'000)*
		Recommendation 6.2a - patch paint & annodes - Moved out in March 04 by PB - Was R/1002	
		Replace Picnic Shelter	35
	2026-27	Refurbish Metal Work - handrails & barriers (gal)	60
		Refurbish Metalwork - access ladders, platforms, rails etc	60
		Replace Town Water Supply Pump 1	37
		Refurbish Valve - 751 cone patch painting -Refer dam safety report from 2003 recommendation 8.3a	30
	2027-28	Replace Marker Buoys	39
		Refurbish Valve - including hydraulic actuation	30
	2028-29	Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2013)	103
	2030-31	11BBAXX 10Y CRANE INSPECTION	118
		Refurbish Regulating Valve No.1	23
	2031-32	Replace Hydraulic Switchgear System	194
		Refurbish Metalwork - access ladders, platforms, rails etc	60
	2032-33	Refurbish hoist - ropes & painting	12
	2033-34	Replace Water Level Recorder	153
		Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2013)	103
		Refurbish trashracks	37
		Refurbish fill and drain line pipework - internal & external paint	12
		Replace Sump Pump	11
	2034-35	Replace Trashracks	87
		Refurbish Fill and Drain Line Valves - replace if required. 2005 DS Rec. Page 16	30
Bjelke-Petersen Wtp	2016-17	Replace Water Treatment Plant	12
Joe Sippel Weir	2011-12	Study: 5yr Dam Comprehensive Inspection	12
	2016-17	Study: 5yr Dam Comprehensive Inspection	12
	2021-22	Study: 5yr Dam Comprehensive Inspection	12
	2026-27	Study: 5yr Dam Comprehensive Inspection	12
	2031-32	Study: 5yr Dam Comprehensive Inspection	12
	2033-34	Refurbish Pipe (450)	24
Redgate Diversion Pipeline	2016-17	Replace Air Valve, 100Mm	14
	2025-26	Replace Valve, 600Mm Butf And Electric Actuator	62
	2028-29	Replace Scour Outlet 4700.19M	30
		Replace Scour Outlet 3522.19M	30
		Replace Scour Outlet 321.76M	30
		Replace Scour Outlet 1256.03M	30
	2031-32	Study: Condition assessment to determine condition and future refurbishment program (with operator)	12
	2035-36	Replace Structure, 100Mm Air Valve	196

Asset	*Year*	*Description*	*Value ($'000)*
Silverleaf Weir	2011-12	09BBA05 MANUFACTURE/INSTALL INLET STRUC	337
		Study: 5yr Dam Comprehensive Inspection	18
		REFURB ROCK PITCHING Silverleaf	12
	2012-13	Review drawings: produce a full set of 'As-builts'; prepare full asset hierarchy(Comp Insp Report 4b	42
	2016-17	Study: 5yr Dam Comprehensive Inspection	18
	2021-22	Study: 5yr Dam Comprehensive Inspection	18
	2026-27	Study: 5yr Dam Comprehensive Inspection	18
	2031-32	Study: 5yr Dam Comprehensive Inspection	18
Upper Redgate Pump Station	2020-21	11BBA07 10Y WINCH INSPECTION	22
	2024-25	Replace Motor, 55Kw Elec Weg	13
	2030-31	11BBA07 10Y WINCH INSPECTION	22
	2031-32	Replace Control	20
		Replace Cable	12