QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater
Irrigation Price Review: 2012-17

Volume 2

Bowen Broken Rivers
Water Supply Scheme

November 2011

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SUBMISSIONS

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

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

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

Confidentiality

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

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

Public access to submissions

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

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

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GLOSSARY

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

EXECUTIVE SUMMARY

Ministerial Direction

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

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
River – Medium Priority											
Fixed (Part A)	8.08	8.32	8.72	9.00	9.28	11.60	10.63	10.90	11.17	11.45	11.73
Volumetric (Part B)	12.71	13.08	13.71	14.14	14.57	15.09	5.88	6.03	6.18	6.34	6.50

Note: 2011-12 prices include the interim increase of $2/ML in addition to the consumer price index (CPI). 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 applies to all schemes.

Volume 2, which comprises scheme specific reports, should be read in conjunction with Volume 1.

Consultation

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

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

1. BOWEN BROKEN RIVERS WATER SUPPLY SCHEME

1.1 Scheme Description

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

Table 1.1: Key Scheme Information for the Bowen Broken Rivers WSS

	Bowen Broken Rivers
Business Centre	Mackay
Irrigation Uses of Water	Supplies farms downstream of Bowen River Weir
Urban water supplies	Water is supplied to the towns of Collinsville/Scottsville, Glenden and Moranbah.
Industrial Water Supplies	Supplies several mines and the Collinsville Power station, as well as to Eungella Water Pipeline. There are a number of small users taking water from pipelines who are also SunWater customers.

Source: Synergies Economic Consulting (2010).

The Bowen Broken Rivers WSS has a total of 51 bulk customers with both medium and high priority water access entitlements (WAEs) (Table 1.2).

Table 1.2: Water Access Entitlements

Customer Group	***Irrigation WAE (ML)***	***Total WAE (ML)***
Medium Priority	5,676	5,676
High Priority	0	33,254
Total	5,676	38,930

Note: There are 286ML of High Priority WAE held by stock and domestic customers off the Collinsville Pipeline. The Authority has not reviewed costs or prices for pipeline customers. Source: SunWater (2011).

1.2 Bulk Water Infrastructure

The bulk water service involves 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 Bowen Broken Rivers WSS

Storage Infrastructure	***Capacity (ML)***	***Age (years)***
Eungella Dam	112,400	42
Bowen River Weir	2,361	28
Gattonvale Offstream Storage	5,232	6

Source: SunWater (2011).

The characteristics of the bulk water assets are:

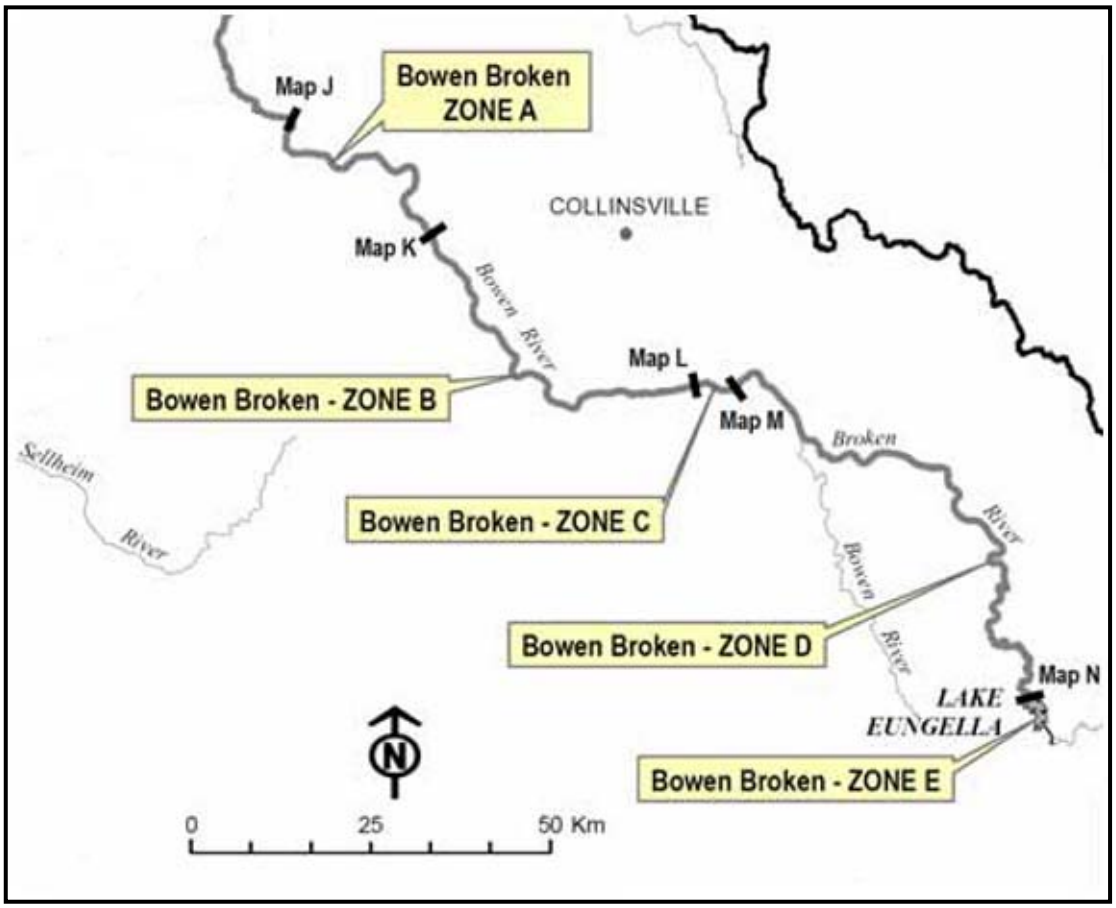
(a) Eungella Dam is situated on the Broken River, approximately 40 km west of the township of Eungella and 133 km west of Mackay;

(b) Bowen River Weir is located on the Bowen River about 88 km downstream from Eungella Dam. The weir was constructed to capture flows from the Bowen and Broken Rivers as well as releases from Eungella Dam; and

(c) the Gattonvale Offstream Storage is located upstream of the Bowen River Weir. Its purpose is to augment the Bowen River Weir storage. The Gattonvale Offstream Storage incorporates a river pump station. The Resource Operations Plan (ROP) specifies that pumping may start when the flow in the Bowen River exceeds 1,037 ML/day at the Myana Gauging Station, but must stop when it drops to 750 ML/day at the Bowen River Weir. The pump station has a nominal capacity of 250 ML/day, but this increases as the river level rises.

The location of the Bowen Broken Rivers WSS and key infrastructure is shown in Figure 1.1.

Figure 1.1: Bowen Broken Rivers WSS Locality Map



Source: SunWater (2011).

1.3 Network Service Plans

The Bowen Broken Rivers WSS network service plan (NSP) presents SunWater's:

(a) existing service standards;

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

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

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

1.4 Consultation

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

(a) invited submissions from interested parties;

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

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

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

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

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

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

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

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

2. REGULATORY FRAMEWORK

2.1 Introduction

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

During the negotiations that preceded the 2006-11 price paths, the Bowen Broken Rivers Tier 2 group decided to adopt a revenue cap (SunWater, 2006b). Under this approach, a carry-over adjustment from the previous price path would be made at the start of the regulatory period to correct for any under or over recovery of the cumulative Part B revenues. The carry-over adjustment for the 2012-17 regulatory period is a negative balance of $30,336. The impact of this carry-over is discussed in Chapter 6 – Draft Prices.

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 Bowen Broken Rivers WSS:

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

(b) energy efficiency regulation that results in a net increase in costs;

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

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

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

(f) outbreak of noxious weeds.

Other Stakeholders

No other stakeholders have submitted on this matter.

2.3 Authority's Analysis

The Authority has, in Volume 1, analysed the general nature of the risks confronting SunWater and recommended that an adjusted price cap apply to all WSSs. The proposed allocation of risks and the means for addressing them are outlined in Table 2.1.

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

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

Source: QCA (2011).

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

It should be noted that anticipated prudent and efficient electricity 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.

Meter upgrades (e) are outside the scope of the investigation. No levies or charges (d) are to be applied by the Authority which need to be incorporated in irrigation prices.

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

During the 2005-06 price negotiations, it was generally agreed to adopt a 70:30 ratio of fixed costs to variable costs. However, due to the prevailing Government policy that there should be no real price decreases, the Part A fixed charge was set at 81% and Part B variable charges at 19% of total revenues in this scheme.

Stakeholder Submissions

SunWater

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

Other Stakeholders

Bowen Broken Water Supply Scheme Irrigators (2011) submitted that an increase to the Part A charge is unsustainable during prolonged periods of zero announced allocation. If the product cannot be supplied by SunWater then irrigators should not pay.

Authority's Analysis

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

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

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

In response to the irrigators' submission regarding water reliability and Part A charges, the Authority notes that under current legislative and contractual arrangements (and the Ministerial Direction), customers must bear all the costs of water supply incurred by SunWater, irrespective of whether it is made available or not (provided the costs of supply are efficient and prudent).

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

The volumes of temporary water traded for the Bowen Broken Rivers WSS are identified in Table 3.1.

Table 3.1: Volume of Temporary Water Traded in Bowen Broken Rivers WSS (ML)

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Temporary Water Traded	922	1,025	5,337	6,899	4,083	395	197	484

Source: SunWater Annual Reports (2003 – 2010g), and Queensland Valuation Services (2010).

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.

For the Bowen Broken Rivers WSS, SunWater (2006b) assumed a water usage forecast of 15% of WAE.

Stakeholder Submissions

SunWater

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

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

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

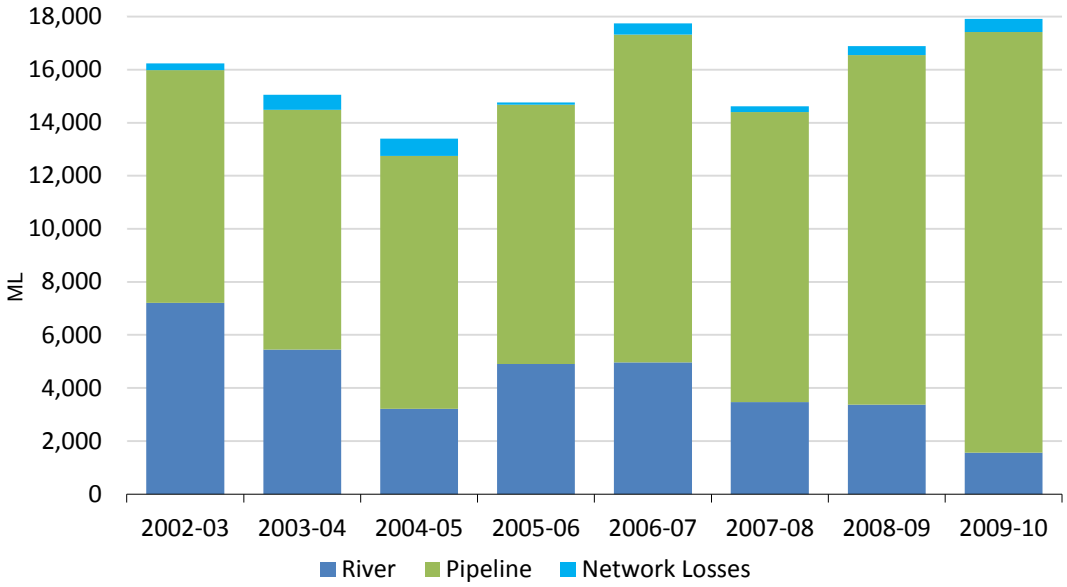
Based on the last eight years observations, SunWater has forecast use as follows:

(a) at a whole scheme level (all sectors) – an average of 41% of total WAE (including SunWater's distribution loss WAE and its other WAE); and

(b) for the irrigation sector only – an average of 15% of irrigation WAE (including forecast usage of 80% of distribution system WAE). This compares with the use assumption adopted in the 2006-11 price paths of 15% of WAE.

Figure 3.1 shows the historic usage information for the Bowen Broken Rivers WSS submitted by SunWater (2011). The river category includes all irrigation and other usage sourced from the river. Pipeline volumes refer to sales to industrial customers.

Figure 3.1: Water Usage for the Bowen Broken Rivers WSS



Source: SunWater (2011).

Other Stakeholders

No other stakeholders have submitted on this matter.

Authority's Analysis

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

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

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

3.3 Tariff Groups

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

The previous SunWater Irrigation Price Paths Final Report (SunWater, 2006b) nominated the Bowen Broken Rivers – River tariff group.

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

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

3.4 Inter Scheme Cost Allocation

Stakeholder Submissions

Other Stakeholders

Bowen Broken Water Supply Scheme Irrigators (2011) submitted that the Bowen Broken Rivers WSS supplies a large part of the downstream flows of the Burdekin River, particularly in the latter, dryer half of the year. SunWater utilises these flows throughout the year to reduce releases from the Burdekin Falls Dam to supply the Burdekin-Haughton WSS WAE holders. Currently, the Burdekin-Haughton WSS customers are not allocated any costs associated with the Bowen Broken Rivers WSS. If a benefit is derived by downstream irrigators, a contribution to maintenance of the Bowen Broken Rivers WSS is required from those customers.

Bowen Broken Water Supply Scheme Irrigators further submitted that the allocations that the North and South Burdekin Water Boards used prior to the Burdekin Falls Dam being constructed were being supplied with controlled flow releases from Eungella Dam and Collinsville weir. That same water is still flowing into the Burdekin River today. To allocate all the Lower Burdekin Medium Priority WAE to the Burdekin Falls Dam is incorrect as SunWater relies on in-stream flows from the Bowen and Broken Rivers to increase reliability to its Burdekin customers.

Authority Analysis

The Authority notes that there is precedence for attributing some SunWater WSS costs to another WSS.

For example, in the 2006-11 price path, prices in the Lower Mary WSS included some costs relating to headworks costs from Borumba Dam which was in the separate Upper Mary WSS (no longer a SunWater scheme). This was based on the provisions in the then Interim Resource Operations Licence (IROL) and the associated Integrated Quantity Quality Model (IQQM) modelling which concluded that there are two means of transferring water from the upper to the lower schemes:

(a) the provision in the IROL rules to release water from the Upper to the Lower Mary WSSs in situations where storage in the Lower system is severely depleted; and

(b) the then credit water rules in the Upper Mary having a number of controls or rules limiting the availability of credit water supplies to Upper Mary customers which provided a mild limitation on the extent that the flows to the Lower Mary from the Upper Mary could be diverted at certain times.

Considering all these issues, the hydrology modelling at the time suggested that 1% of the Borumba Dam costs be allocated to the segments in the Lower Mary section of the scheme. These arrangements are no longer applicable given both the IROL inter-scheme release rules and the credit water rules have since been superseded and discontinued by the ROP water sharing rules for the two schemes.

As there are no such inter-scheme water release rules in place between the Bowen Broken and the Burdekin-Haughton WSSs, SunWater has advised that this cost sharing approach was not adopted for this scheme.

The Authority notes that releases made from the water storages within the Bowen Broken Rivers WSS are for the benefit of Bowen Broken River WSS customers or to fulfil minimum stream flow requirements by bypassing specific natural stream flows through the scheme only and that any water supply benefit to users in the Burdekin-Haughton WSS is negligible. No

WAE from the Bowen Broken Rivers WSS is held by SunWater or customers to increase the reliability of the Burdekin-Haughton WSS.

Therefore, the Authority recommends that no costs associated with the Bowen Broken Rivers WSS be attributed to the Burdekin-Haughton WSS.

4. RENEWALS ANNUITY

4.1 Introduction

Ministerial Direction

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

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

Previous Review

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

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

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

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

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

The allocation of the renewals annuity between high and medium priority users was based on water pricing conversion factors (WPCFs).

Issues

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

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

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

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

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

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

(c) the methodology for apportioning bulk 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 available 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 renewal 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.

The Authority has accepted SunWater's opening balance for the Bowen Broken Rivers WSS of negative $116,000.

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

4.3 Past Renewals Expenditure

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

Submissions

SunWater

SunWater (2011) submitted actual renewals expenditure for the Bowen Broken Rivers WSS for 2006-11 (Table 4.1) in real terms as at 2010-11. This expenditure included indirect and overhead costs which are subject to a separate review by the Authority (see Chapter 5 – Operating Costs). SunWater advised that it was unable to provide the forecast renewals expenditure (approved for the 2005-06 review) for this period.

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Past (Actual) Renewals Expenditure	12	71	441	288	404

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

Other Stakeholders

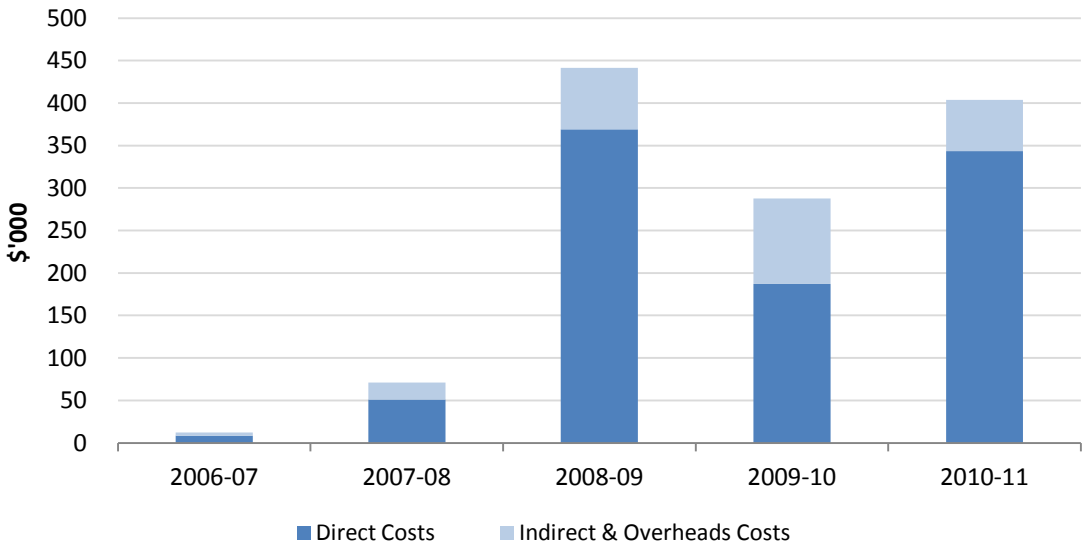
No other stakeholders have commented on this matter.

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)



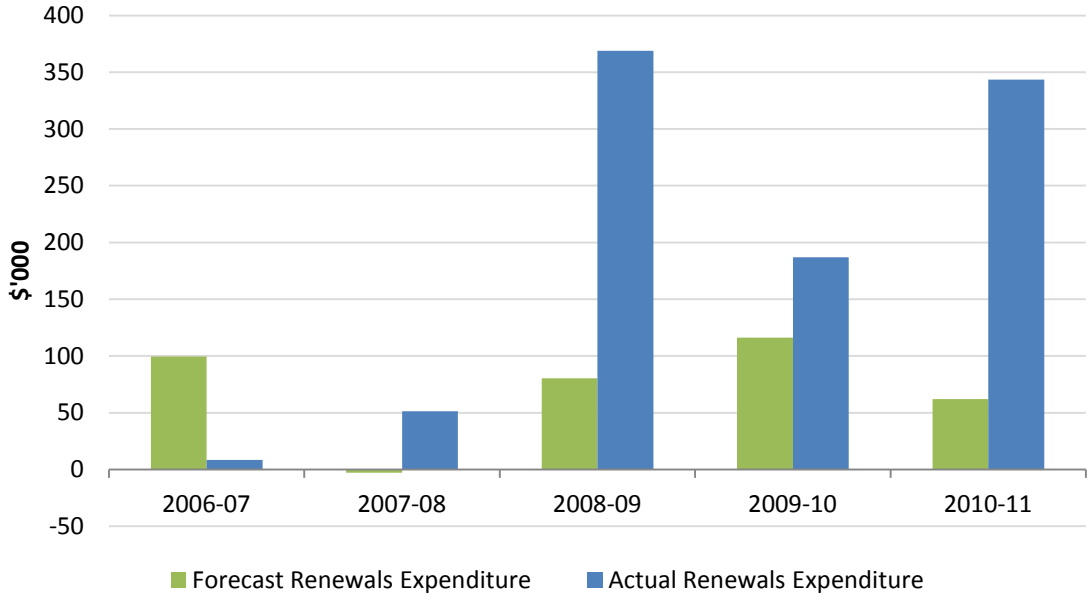
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011. Source: Indec (2011d).

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 Bowen Broken Rivers WSS for 2006-11 is shown in Figure 4.2.

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



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

Actual renewals expenditure was $603,628 (direct costs) above that forecast over the period. This is partly due to unplanned expenditure, such as the rectification of Gattonvale off stream storage embankment cracks (discussed below).

Arup was also appointed to review the prudency and efficiency of past renewals expenditures.

In the absence of forecast renewals expenditure for 2006-11 from SunWater (as noted above), Arup sought to identify variances between annually budgeted and actual expenditure for certain items.

Item 1: Rectification of Gattonvale Off Stream Storage Embankment Cracks

SunWater

This item relates to the rectification of embankment cracks in the Gattonvale Off Stream Storage (GOSS) and is forecast to cost $82,000 (total cost, including non-direct costs). The cost estimate is based on the costs already incurred on this project and SunWater's experience of similar projects, in other schemes. Expenditure was incurred in 2009-10 and continued into 2010-11.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Arup found that the rectification of GOSS embankment cracks was not identified as forecast renewals expenditure in the 2006 review. Some $68,000 of the renewals expenditure relates to plant hire, equipment and materials. The remaining costs are SunWater's costs.

Arup considered that the expenditure on this item is prudent and that the method used to estimate costs represent efficient expenditure.

Authority's Analysis

The Authority accepts Arup's recommendation that the expenditure is prudent and efficient.

Due to information deficiencies Arup was unable to conclude on the prudency and efficiency of other past renewals expenditure.

Conclusion

In summary, one item for the Bowen Broken Rivers WSS was sampled. On the basis of the consultant's review, the Authority considers that the sampled renewals expenditures are prudent and efficient and have been retained as past expenditure.

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

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

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

Item	*Date*	*SunWater*	*Authority's Findings*	*Recommended*
Sampled Items				
Rectification of Gattonvale Off Stream Storage Embankment Cracks	2010-11	82	Prudent and efficient	82
Not Sampled Items				10% saving applied

Note: SunWater (2011), Halcrow (2011).

4.4 Opening ARR Balance (at 1 July 2012)

Stakeholder Submissions

SunWater

SunWater indicated that the renewals opening ARR balance for 1 July 2011 was negative $2,302,000 for the Bowen Broken Rivers WSS. This estimate reflects the most recent information provided by SunWater to the Authority in September 2011 and may differ from the NSP.

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

Based on the Authority's assessment of the prudency and efficiency of past renewals expenditure, the recommended opening ARR balance for 1 July 2011 for Bowen Broken Rivers is negative $2,101,000.

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 $2,047,000, the Authority:

(a) added forecast 2011-12 renewals annuity revenue;

(b) subtracted forecast 2011-12 renewals expenditure; and

(c) adjusted for interest over the year.

The closing ARR balance for 30 June 2012 is the opening ARR balance for 1 July 2012.

4.5 Forecast Renewals Expenditure

Planning Methodology

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

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

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

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's forecast renewals expenditure for 2011-16 for the Bowen Broken Rivers WSS, as provided in its NSP, is presented in Table 4.3. This was submitted prior to the Government's announced interim prices for 2011-12.

Table 4.3: Forecast Renewals Expenditure 2012-16 ($'000)

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Bowen River Weir	35	10			
Eungella Dam	40	36	57	89	82
Gattonvale Off Stream Storage		103	105	105	104
Gattonvale Pump Station				61	49
Total	**75**	**149**	**162**	**255**	**236**

Source: SunWater (2011).

The major items are:

(a) GOSS – stabilise embankment and replace embankment protection at an estimated cost of $417,000 in 2012-13 to 2015-16. Inspection in 2010 identified the need to refurbish the storage embankment to maintain its structural integrity; and

(b) Gattonvale Pump Station – refurbish Pump 1 and Pump 2 at an estimated cost of $110,000 in 2014-15 to 2015-16.

The major expense item from 2017-36 is replacement the submersible pumps at the Gattonvale pump station in 2034-35 which is expected to cost $3,148,000.

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

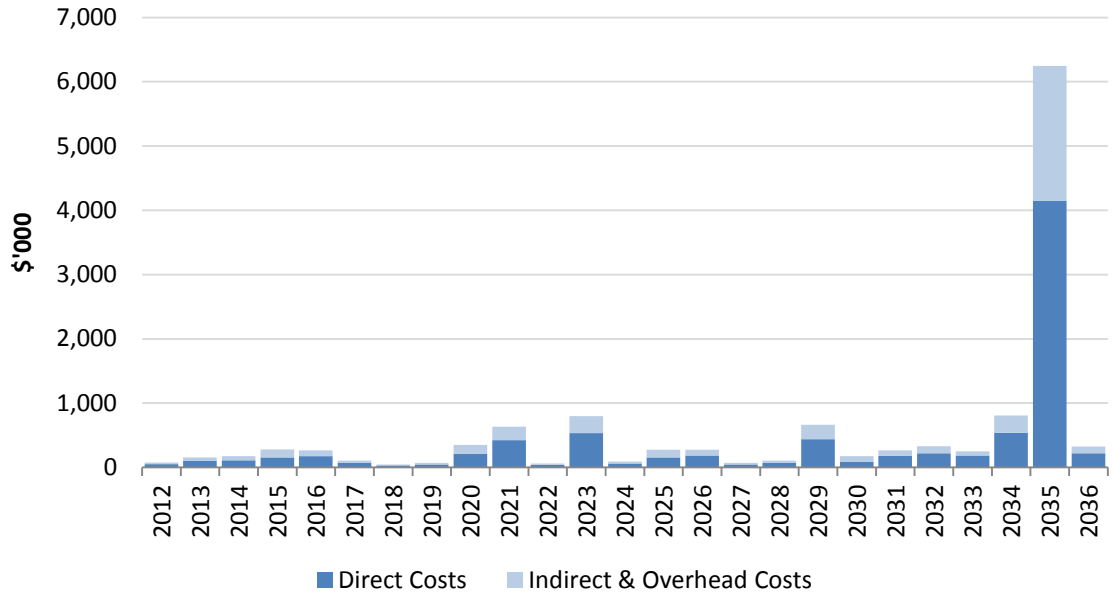
No other stakeholders commented on these items.

Authority's Analysis

Total Costs

SunWater's proposed renewals expenditure for 2011-36 for the Bowen Broken Rivers WSS is shown in Figure 4.4. This reflects the most recent renewals information provided by SunWater to the Authority in September 2011, and differs from the NSP. Where possible, the Authority has identified the direct cost component of this expenditure for review, with 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 ($'000)



Source: SunWater (2011am).

Item Reviews

Arup and SKM have reviewed the prudency and efficiency for a sample of expenditure items. Each of the assessed items is discussed below.

Item 1: Gattonvale Offstream Storage - Stabilise embankment and replace embankment protection

SunWater

This expenditure relates to the stabilisation and protection of the GOSS embankment. This expenditure is a continuation of the rectification of embankment cracks project (Item 1 in past renewals expenditure) and is scheduled to be undertaken during 2012-15 at a projected cost of $417,000 (including indirect and overhead costs, as noted in the NSP).

Other Stakeholders

No other stakeholders commented on this item.

Consultant's Review - Arup

Arup reviewed this expenditure noting that it seeks to remedy the following additional defects:

(a) cracking on bank pavement material;

(b) external bank erosion; and

(c) wave induced erosion.

SunWater provided a functional specification which prioritises these works and identifies that wave induced erosion is the most serious. The costing provided is indicative and SunWater advised that detailed costing can only be done when the water level is drawn down below the lowest major movement of material on the inside batter. The scope of the expenditure includes:

(a) project management;

(b) hire of appropriate equipment and contractors; and

(c) commissioning.

SunWater advised that the asset was constructed in 2005 as part of the original construction of the distribution system.

Arup concluded that the item is prudent and efficient. Expenditure forecasts were determined based on SunWater's experience with the current project.

Consultant's Review – SKM

SKM reviewed this renewals expenditure in detail by accessing and viewing SunWater's Systems, Applications and Products (SAP) Works Management System (WMS), and asset condition and risk assessment policy and procedures. In the SAP-WMS, the item was assigned a cost of $90,000 per year, including indirect and overhead costs. The total cost of $360,000 compares to a total of $417,000 as submitted by SunWater in its NSP. The SAP value includes a notional uplift factor for indirect costs and overheads.

SKM have drawn on the following renewals item specific replacement/refurbishment report provided by SunWater:

Table 4.4: Documents Reviewed Specific to the GOSS Refurbishment

Document No.	*Document Name*	*Document Title*	*Date*
1108555	1108555 – v1 – 25 – QCA Justification H16 GOSS Embankment Stabilisation	Bowen-Broken Water Supply – Gattonvale Offstream Storage –	19 August 2011

Source: SKM (2011).

Prudency Review

On the basis of a review of the data in SAP and the information contained in the SunWater report specified above, 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.

SunWater's SAP-WMS has listed the asset to have no refurbishment life listed (and a standard run to failure asset life of 200 years).

SKM considered the applied run to failure asset life for this asset to be reasonable and in keeping with good industry practice. However, SKM considered that not allocating a refurbishment period is not in keeping with good industry practice.

SKM advised that SunWater has applied its risk evaluation method to this asset. The material used to construct the earth embankment was identified as being prone to piping failures. The risk evaluation determined that the asset has a Production/Operations and Financial risk with a 'Critical' consequence rating (score 100). The consequence rating together with a probability (likelihood of occurrence) score of 3 results in an overall risk score of 300 which places this asset in a 'Medium' risk category. For this asset type, an overall risk category of Medium reduces the run to failure asset life from 200 years to 175 years. SKM considered this reduction in run to failure asset life based on this risk assessment for asset replacement planning purposes to be appropriate and in keeping with good industry practice.

SunWater's report (1108555) referenced above, makes comment as to how refurbishments for this asset type are scheduled. The refurbishments are based on issues identified and are programmed based on known condition and risk. SKM considered this not to be an effective way of scheduling refurbishments, and there may be merit in breaking down the Embankment asset type into sub-categories based on the type of embankment. This will provide an opportunity to determine run to failure and refurbishment periods, in line with industry standards, that is specific to the type of embankment and its composition. The risk evaluation method could then be applied to the asset and the refurbishments can be scheduled based on risk.

The latest condition assessment, as recorded in WMS for this asset, was undertaken in 2010. The following general note was recorded: *"Very dispersive soil. Historically spending $80-$100K/year on stabilisation of embankment/crest"*. The asset was constructed in 2004-05 and this note has identified that this asset is not performing as expected. The maximum asset condition score, recorded in SAP-WMS, is a 4 (Significant deterioration with substantial refurbishment required to ensure ongoing reliable operation) assigned to Grass Cover and Batter Condition. The following comments to note were made: *"Erosion due to dispersive soil"* and *"Slumping due to dispersive soil."* SunWater commissioned an Engineering Investigation to determine the extent of the erosion to the batters and to make recommendations to address the concerns raised. Abstracts from this Engineering Investigation and photos were made available for SKM's perusal.

The decay curve was used to determine the refurbishment date based on the asset condition rating. The date for refurbishment was determined as 2011-12.

(a) Options Evaluation

The proposed refurbishment method is as recommended in the Engineering Investigation. The construction method is to move the slumped material back into place, tie and place a geofabric cloth over the material by keying in at the top of the embankment and then placing angular rock mulch over the geofabric. The site visit conducted in April 2011 includes photos indicating the areas that have been treated with the proposed method in the past. The photos do indicate that no significant failure has occurred since placement of angular rock. SKM reviewed the refurbishment method proposed and do not consider it appropriate and or in keeping with current industry practice. Based on a preliminary investigation, SKM recommended that the following alternatives be investigated to the various areas of concern:

(a) Downstream face:

  (i) planting of appropriate grass;

  (ii) treatment of the soil with gypsum/lime; and

  (iii) installation of an intermediate berm and or a table drain;

(b) Upstream Face: investigate upgrading the embankment to current "best practice" by providing a sand layer/gravel layer/ appropriately designed riprap layer to counteract the wind action and natural dispersion;

(c) Cracking at the Crest – obtain a second opinion to the cause of the formation of the cracks. From SKM's review of the information provided, the cause could also be ascribed to slope instability rather than drying shrinkage viewed in light of the other information. It is to be noted that should the cause be due to slope instability that with the ingress of water, such as rain, the bank could experience a sudden failure;

(d) Dam Embankment:

(i) investigate providing sand filters within the wall and at the dam-foundation interface, or alternative ways of monitoring piping;

(ii) investigate providing a foundation cut-off and a cut-off within the dam to limit seepage; and

(iii) investigate the details regarding the inlet and outlet pipes to ensure that these meet current best practice in relation to dispersive soils.

Based on the above, SKM considered that not all the options have been investigated and that the proposed method may not be the optimal solution. SKM recognised that SunWater's processes necessitating the undertaking of a detailed options analysis prior to carrying out the work and therefore recommended that consideration is given to alternative solutions.

(b) Conclusion on Prudency Evaluation

On the understanding that SunWater's policies for adjusting refurbishment periods and assessing asset condition have been followed, SKM concluded that the need for refurbishment of this renewals asset has been demonstrated. Whilst it was prudent to include a renewals item refurbishment value in the overall renewals value, SKM recommended that, in line with SunWater's procedures, a more detailed options assessment is undertaken, taking into consideration alternative approaches as discussed above.

Efficiency Evaluation

For asset refurbishment works where the planned refurbishment date is less than five years from the planning date, SunWater's planning team draws on actual costs for similar activities undertaken recently or alternatively compiles a price from first principles. Given the volume of renewals items that SunWater's Planning Team is engaged with at any point in time, this approach was considered reasonable and in accordance with good industry practice, where the management of a large portfolio of assets is concerned.

(a) Renewal/Replacement Cost Evaluation

SKM sighted drawings for the earth embankment and had access to dimensions of the area affected. SKM developed benchmark costs for the maintenance works to regrade the internal batter slopes of the embankment, place a geofabric cloth and placement of angular rock from first principles.

SKM noted that SunWater has adopted a cost of $90,000 per year, averaged, over a four-year period for maintenance as a renewals value which is based on internal deliberations. SKM have back-calculated the total area of the internal embankment batter that can be refurbished with the $90,000 based on the cost breakdown contained within WMS. The back calculation is shown in Table 4.5 below.

Table 4.5: Cost Breakdown of SunWater including SKM Quantity Back Calculation

Cost Item	*Cost ($)*	*SKM Cost Rate ($)*	*Quantity*
Rental & Hire – Plant and Equipment	40,000	$150/hr	267 hrs
Materials Non Inventory, made up of the following components:	35,000	$18/m²	1950m²
Rip-rap 300mm thick (PS4A)		$12/m²	
Geofabric (270 g/sqm), including key in at top of bank.*		$6/m²	
Preliminary and General Items (Includes Internal Overheads	15,000	20%	
Total	**90,000**		

** Rates based on the Rawlinsons Australian Construction Handbook 2011 rates. Source: SKM (2011)*

SunWater is proposing to undertake the work to two metres below full supply level (FSL) and include a wave action buffer. SKM have made the assumption that the wave action buffer is 0.5 metres above the FSL. The drawings indicate that the internal embankment batter gradient is 1:2.5. Based on the information it is calculated that 290 metres of the internal embankment batter can be addressed within each year. The overall length that can be addressed within the four years total 1,200 metres, of the approximately 1,500 metres length of the embankment identified or only 80%. The extent of the bank erosion has been identified during a site visit in April 2011. The extent of erosion is indicated on a drawing with supporting photos taken at 200 metre intervals. As explained in the above options evaluation section SKM did not consider the method proposed effective and recommended an alternative solution.

SKM's bottom-up cost estimate is summarised in the table below.

Table 4.6: SKM Cost Estimate

No.	*Description*	*Quantity*	*Rate*	*Cost ($)*
1	Contractor and Materials			
1.1	Cut and fill material (0.3 m average thickness x 1500 m x 6.73 m)	3028 m^3	\$15/m^3	45,420
1.2	Level and grade to falls (1500 m x 6.73 m)	10,100 m^2	\$3.40/m^2	34,340
1.3	Rip-rap (PS4A)	10,100 m^2	\$12/m^2	121,200
1.4	Geotextile	10,100 m^2	\$6/m^2	60,600
2	SUB-TOTAL A			261,560
3	Preliminary and General (17% of Sub-Total A)			44,465
4	SUB-TOTAL B			306,025
5	SunWater Overheads and Labour Component (45% of Sub-Total B)			137,711
6	**TOTAL**			**443,736**

** Rates based on the Rawlinsons Australian Construction Handbook 2011 rate. Source: SKM (2011).*

From the information presented in Table 4.6, SKM's cost estimate is 23% higher than the renewals value defined in the SAP. It is also 6% higher than the estimate submitted by SunWater in its NSP.

SKM therefore considered the costs submitted to the Authority for this renewals item to be efficient, based on the information available.

SKM Summary and Conclusions

SKM was satisfied that SunWater's robust procedures for determining the timing of refurbishment of a renewals item have been followed and hence that the timing and need for refurbishment of this renewals item is prudent. However, SKM recommended further review of options.

SKM considered the cost of the refurbishment to be efficient.

Authority's Analysis

The Authority accepts SKM's and Arup's recommendation that the renewals expenditure is prudent and efficient.

The Authority notes that SKM's estimated cost of \$443,736 for the item is higher than the amount proposed in the NSP (\$417,000) and that identified by SKM in the SAP-WMS (\$360,000). The Authority recommends that the amount submitted in the NSP be accepted. It is noted that this is a preliminary estimate – any substantial expenditure in excess of the proposed amount should be subject to ex post assessment in the next regulatory review.

Item 2: Toilet Block

SunWater

This expenditure relates to the replacement of toilet block 1 (compost toilet) and toilet block 2 (septic system) and is expected to cost $450,000. The works are scheduled to be undertaken in 2022-23.

Other Stakeholders

No other stakeholders commented on this item.

Consultant's Review

Arup considered that the cost for the composting toilet was excessive and the cost estimate for the overall expenditure does not include the economy of undertaking similar works at the site. Additionally, Arup recommended that SunWater revisit the costs and consider changing to composting toilets altogether.

Arup conclude that $450,000 to replace two toilet blocks is excessive, but did not provide an alternative estimate.

Authority's Analysis

The Authority accepts Arup's finding that the forecast expenditure on the composting toilet is excessive. At this stage, the Authority recommends that the proposed cost for one toilet be included pending a review of the total cost of the project. The Authority proposes to include $225,000 of the proposed cost.

Item 3: Gattonvale pump station

SunWater

SunWater have forecast a large number of renewals expenditures worth $3.148 million relating to the Gattonvale Pump station in 2034-35. The most significant renewals expenditures include:

(a) replace cableways and conduits for $138,000;

(b) replace earthing and earth grid for $87,000;

(c) replace consumer mains, 33Kv for $150,000;

(d) replace high voltage switchboard for $317,000;

(e) replace transformer for $188,000; and

(f) submersible Flygt pump for $1.65 million.

Other Stakeholders

No other stakeholders commented on this item.

Consultant's Review

Arup noted that SunWater has not provided proper justification for the $3.148 million (including indirect and overhead costs) worth of large works proposed at Gattonvale Pump Station.

Specifically, Arup noted the inclusion of $1.65 million for the replacement of a submersible Flygt pump. Arup's investigation revealed that the most expensive submersible Flygt pump (not knowing the specification of this particular pump) is $220,000. A forecast cost of $1.65 million is not justifiable, even if accounting for the associated installation, overhead and indirect costs.

Without further explanation from SunWater, Arup recommends that this expenditure be significantly reduced to reflect the more likely costs of the pump.

Arup also recommended that explanation be sought from SunWater regarding the large number of works identified for 2034-35 before including the expenditure in the renewals annuity.

Authority's Analysis

In relation to the submersible Flygt pump, the Authority notes Arup's recommendation that this forecast expenditure is greater than required and that the forecast should be significantly reduced to reflect more likely costs of the pump. However, the $220,000 estimate proposed by Arup does not include installation costs and does not take into account pump specifications. The Authority concludes that there is insufficient information to determine the level of efficient costs for this item.

In relation to the large number of works proposed at Gattonvale pump station in 2034-35, the Authority notes Arup's recommendation that explanation is required from SunWater before including the expenditure in the renewals annuity.

However, as these items have not been subject to scrutiny by Arup or SKM, and represent indicative expenditures in 23 years, there is insufficient information to assess prudency and efficiency.

Conclusion

In summary, three items for the Bowen Broken Rivers WSS were sampled. Of these:

(a) one item relating to Gattonvale Offstream Storage (Item 1) was considered prudent and efficient and have been retained as forecast expenditure;

(b) one item was considered prudent but not efficient (Item 2) and has been reduced to half of the proposed cost, pending further justification from SunWater; and

(c) for one item there was insufficient information to assess the level of efficient costs.

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

In total, the Authority recommends the direct renewals expenditure be adjusted as shown in Table 4.7.

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

	Item	***Year***	***SunWater ($)***	***Authority's Findings***	***Recommended ($)***
Sampled Items					
1.	Stabilise embankment and replace embankment protection	2011-12 to 2014-15	417	Prudent and efficient	417
2.	Toilet Block	2022-23	450	Prudent but not efficient	225
3.	Gattonvale pump station	2034-35	1,650	Insufficient information	10% saving applied
Not Sampled Items					10% saving applied

Note: SunWater (2011), Arup (2011), SKM (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. The Authority's recommendations are detailed in Volume 1.

4.7 Allocation of Headworks Renewals Costs According to WAE Priority

Previous Review

For the 2006-11 price path, the renewals costs for the Bowen Broken Rivers bulk water infrastructure were apportioned between priority groups using a water pricing conversion factor (WPCF) of 2:1; that is, one ML of high priority WAE was considered equivalent to 2 ML of medium priority WAE.

Stakeholder Submissions

SunWater

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

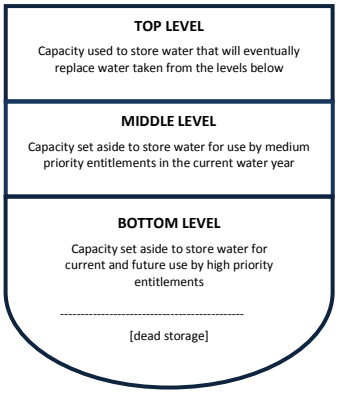
SunWater submitted that, in general, the HUF allocates a greater proportion of capital costs per ML to high priority WAE. Specifically, the HUF methodology takes into account water sharing rules, Critical Water Sharing Arrangements (CWSA) and other operational requirements that typically give high priority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

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

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

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

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



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

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

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

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

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

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

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

The parameters used for determining the HUFs for the Bowen Broken Rivers WSS are summarised in Table 4.8. The HUFs for this scheme (SunWater 2010d) are 0% for medium priority, 35% for High A1 Priority and 65% for High A2 Priority.

Table 4.8: Application of HUFs Methodology

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

Nominal Group	(ML)	HUF Group	(ML)
Medium Priority	5,676	MP_A	5,676
High A1 Priority	11,649	HP_A	33,254
High A2 Priority	21,605		

STEP 2: ROP Conversion Factor Adjustment

Conversion Factor: ROP_{CF}	N/A
Maximum volume that can be converted to HP: $HP_A max$	33,254
Corresponding volume of MP: $MP_A min = MP_A-(HP_A max-HP_A)*ROP_{CF}$	5,676

STEP 3: Water Sharing Rules & Operational Requirements

Water Sharing Rules	
Volume below which MP not available: $MP_0 AA$	53,189
Volume above which max MP available: $MP_{100} AA$	65,867
CWSAs and other operational requirements	
Likely increase in volume effectively reserved for HP: MP_0	61,933
Likely increase in min. storage before max. MP available: MP_{100}	74,611
Key Dam Level Measures	
Full Supply Level: FSV_{hwks}	118,573
Dead Storage Level: DSL_{hwks}	1,241

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 = 7,596; HP_2 = 36,366	0%	MP_{2u} = 0; HP_{2u} = 0
Middle: $\min\{(MP_{100}-MP_0),(FSV_{hwks}-MP_0)\}$	MP_1 = 12,678	0%	MP_{1u} = 0
Bottom: $MP_0 - DSV_{hwks}$	HP_1 = 60,692	47%	HP_{1u} = 28,610

STEP 5: Calculation of HUFs for each Water Entitlement Group

HUF Formula	HUF Group	Nominal Group
MP_A: $(MP_{1u}+MP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ = (0+0) / (0+28,610+0+0)	HUF_{mp} = 0%	Medium Priority = 0%
HP_A: $(HP_{1u}+HP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ = (28,610+0) / (0+28,610+0+0)	HUF_{hp} = 100%	High A1 Priority = 35% High A2 Priority = 65%

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

Other Stakeholders

Bowen Broken Water Supply Scheme Irrigators (2011) submitted that high priority WAE receive the vast majority of water stored in the dam and have an extremely high level of reliability. Accordingly, high priority users should contribute more towards maintenance and overhead costs that reflect their delivery reliability.

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.

In response to Bowen Broken Water Supply Scheme Irrigators the Authority recommends that high priority customers pay a higher proportion of renewals costs than medium priority customers. 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 Bowen-Broken Rivers WSS, the changes resulted in no change to the HUF (Table 4.9).

Table 4.9: Revised HUF Calculations

STEP 4: Hydrologic performance of headworks storage

Storage Layer	Storage Capacity (ML)	Prob. of Utilisation	Utilised Capacity (ML)
Top layer			
Initial	MP_2 = 7,596; HP_2 = 36,366	0%	MP_{2u} = 0; HP_{2u} = 0
*Revised**	MP_2 = 6,410; HP_2 = 37,552	no change	MP_{2u} = 0; HP_{2u} = 0
Middle Layer	MP_1 = 12,678	0%	MP_{1u} = 0
Bottom Layer	HP_1 = 60,692	47%	HP_{1u} = 28,610

STEP 5: Calculation of HUFs for each Water Entitlement Group

	Initial	Revised	Nominal Group
HUF_{mp}	0%	0%	Medium Priority = 0%
HUF_{hp}	100%	100%	High A1 Priority = 35% High A2 Priority = 65%

**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, there is no meaningful conversion, as the HUF allocates all renewals costs to high priority. This compares with the WPCF of 2:1 used for 2006-11 price paths.

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 Bowen Broken Rivers WSS the recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.10. The renewals annuity for 2006-11 and SunWater's proposed annuity for 2012-17 is also presented for comparison.

Table 4.10: Bowen Broken Rivers WSS Renewals Annuity (Real $000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	39	38	36	60	46	406	402	397	399	456	456
Authority	-	-	-	-	-	-	324	318	321	407	400
High Priority	-	-	-	-	-	-	316	311	314	398	391
Medium Priority	-	-	-	-	-	-	0	0	0	0	0

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

Ministerial Direction

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

Issues

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

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

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

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

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

5.2 Total Operating Costs

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

Non-direct costs are classified as either:

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

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

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

In its NSP, SunWater described the scope of its operating activities 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 21 staff are located at the Moranbah and Collinsville depots and are responsible for the day-to-day water supply management and for delivery of the

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

programmed works for all users in the region. Operation and maintenance activities are undertaken by staff at Collinsville and Eungella Dam;

(b) service provision relates to:

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

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

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

(i) the ROP and Resource Operations Licence (ROL) – a major part of which is gathering and reporting data at quarterly and annual intervals on water sharing rules, ROP amendments and modifications; water accounting and reporting on stream flow, water quality and other data (see Table 5.1);

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

Storage	***Monthly Monitoring Requirements***			
	Inflow	***Head Water***	***Tail Water***	***BGA***
Eungella Dam	No	Yes	Yes	Yes
Bowen River Weir	No	Yes	Yes	Yes
Gattonvale Offstream Storage	No	Yes	Yes	Yes

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

(ii) dam safety – as Eungella 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 on Eungella Dam and Gattonvale Offstream Storage and quarterly on the Bowen River Weir. Specific dam safety inspections are required at Eungella Dam, which include monitoring of embankments, piezometers, seepage and the general condition of the storages as defined in the dam surveillance specification.

Monitoring of Eungella Dam is undertaken daily while the spillway is overflowing and the emergency action plan is active. 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 *Environmental Protection Act 1994* which require SunWater to deal with risks such as fish deaths, chemical usage, pollution, contaminants and approvals for instream works; and

(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 workplace health and safety, financial reporting and taxation and irrigation pricing;

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

(e) SunWater has sought to transfer the management and cost of recreation activities to private operators or Government. However, recreation facilities at Eungella Dam continue to be operated and maintained by SunWater (the cost of which is outlined further below); and

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

Previous Review

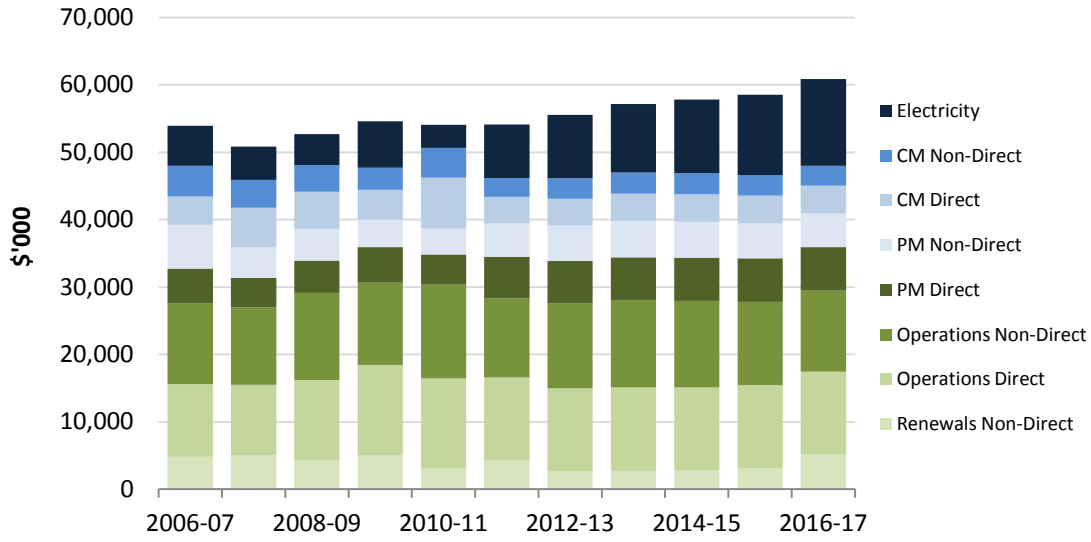
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

Stakeholder Submissions

SunWater

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

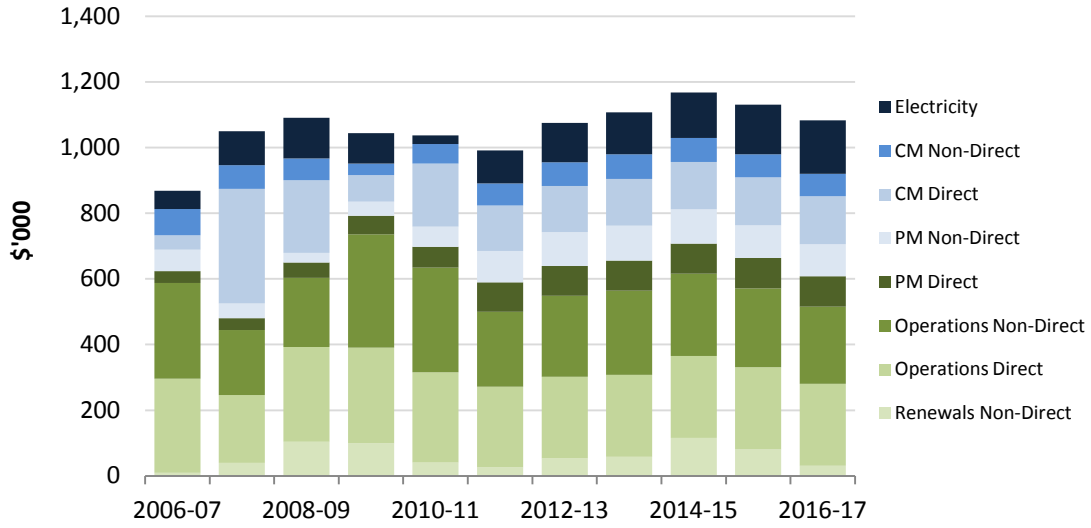
Figure 5.1: SunWater's Total Operating Costs (Real $'000) – All Service Contracts



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 Bowen Broken Rivers WSS (all sectors) is shown in Figure 5.2, Table 5.2 and Table 5.3.

Figure 5.2: Total Operating Costs – Bowen Broken Rivers WSS (Real $'000)



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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	578	405	500	637	593	474	495	505	500	490	485
Electricity	56	104	125	93	26	101	119	129	139	151	163
Preventive Maintenance	101	80	76	100	125	185	194	198	196	193	190
Corrective Maintenance	123	421	287	117	252	206	213	217	217	216	214
Renewals Non-Direct	10	39	104	99	41	26	53	59	116	81	31
Total	**868**	**1,050**	**1,091**	**1,044**	**1,037**	**991**	**1,074**	**1,108**	**1,167**	**1,130**	**1,082**

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 5.3: 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	145	128	166	208	213	205	208	208	208	208	208
Electricity	56	104	125	93	26	101	119	129	139	151	163
Contractors	66	125	195	77	182	143	145	147	149	152	152
Materials	15	216	55	54	66	42	43	43	44	45	45
Other	139	123	141	92	68	84	84	84	84	84	84
Non-Direct	447	354	409	521	481	416	475	496	543	490	431
Total	**868**	**1,050**	**1,091**	**1,044**	**1,037**	**991**	**1,074**	**1,108**	**1,167**	**1,130**	**1,082**

Note: Renewals direct costs are discussed in the previous chapter. Non-direct costs include the non-direct operating costs allocated to renewals. Totals vary from NSP due to the inclusion of renewals non-direct costs, SunWater's revised approach to insurance and electricity, exclusion of revenue offset (which is dealt with in the following chapter), and rounding. Source: SunWater (2011ap) and SunWater (2011ao).

In its NSP, SunWater submitted that the operating costs for this scheme averaged 940,000 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 $996,000 per annum.

Other Stakeholders

No other stakeholders have submitted on this matter.

Authority's Analysis

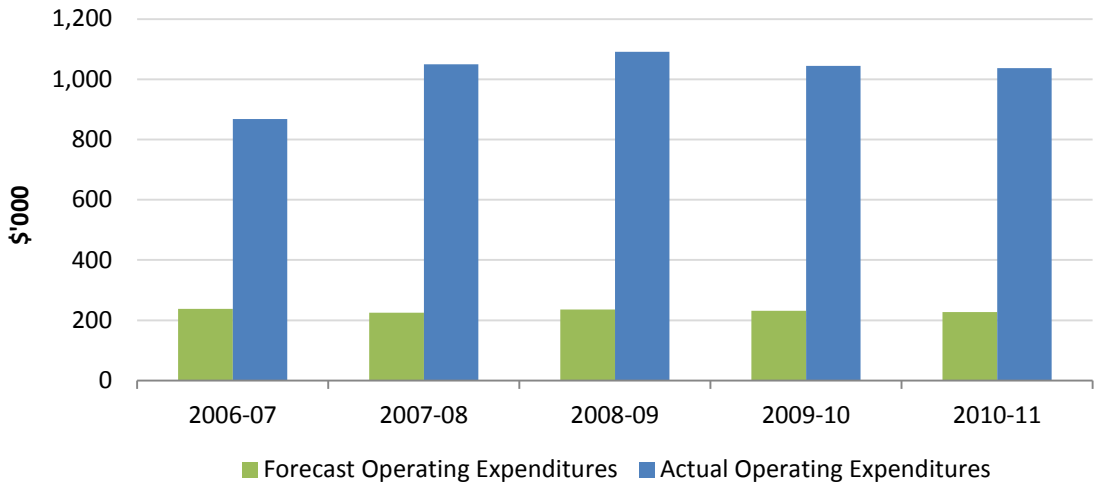
The Authority has sought to review the extent to which previously anticipated cost savings (identified prior to the 2006-11 price paths) have been incorporated into SunWater's total cost estimates for the purpose of 2012-17 prices.

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. For this scheme, SunWater's actual operating costs were above $3.93 million above Indec's forecast efficient operating costs.

A comparison of forecast and actual operating costs for the Bowen Broken Rivers WSS is shown in Figure 5.3 below.

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



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

Indec has not, however, inferred from its analysis that SunWater should alter its costs over the 2012-17 regulatory period to the level of efficient costs determined for 2011. It observed that further analysis would be required to justify and support such an inference (see Volume 1). The Authority has engaged other consultants to address potential scheme specific cost savings.

5.3 Non-Direct Costs

Introduction

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

Some specialist operations staff with expertise in key operational areas, such as Supervisory Control and Data Acquisition (SCADA), may be located either in Brisbane or regional locations. Their specialist expertise is applied to technical problems and issues in support of local operators.

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

The nature of these non-direct activities is detailed in Volume 1.

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

Previous Review

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

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

Stakeholder Submissions

SunWater

As noted in Volume 1, SunWater submitted that it will incur $23.5 million in total non-direct costs in 2012-13 (Table 5.4). 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 total direct labour costs (DLCs) be used to allocate non-direct costs between service contracts.

Total non-direct costs and those allocated to the Bowen Broken WSS are in Table 5.3 below.

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	27,831	25,097	25,872	24,579	25,152	23,770	23,512	24,244	24,055	23,708	25,089
Bowen Broken Rivers	447	354	409	521	481	416	475	496	543	490	431

Source: SunWater (2011ap).

The non-direct costs for this scheme include a portion of SunWater's total overhead costs (for example, HR, ICT and finance), as well as a share of Infrastructure Management costs for each

region (South, Central, North and Far North) and a share of the overhead costs of SunWater's Infrastructure Development Unit.

Other Stakeholders

Bowen Broken Water Supply Scheme Irrigators (2011) submitted that irrigators do not receive any phone calls, verbal updates, text messages, emails or letters about impending releases from upstream storages but are charged $29,500 for customer support. SunWater need to fully explain these overhead costs before they will be accepted by irrigators.

Authority's Analysis

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

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

Deloitte was unable to draw any definitive conclusions from an attempt to benchmark against Pioneer Valley Water Board (PVWater) and other Australian rural water service providers. Deloitte noted that PVWater's non-direct costs were higher than those of SunWater as a percentage of total operating costs – but that there are differences between PVWater and SunWater which can make comparisons unreliable.[3]

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

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

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

SunWater's proposed use of DLCs is on the basis that it: best reflects activity and effort; is a proxy for other drivers; and provides consistency across service contracts. In response to Bowen Broken Rivers Irrigators, the Authority notes that SunWater's proposed non-direct allocation is for the whole scheme. The portion included in irrigation prices depends on the intra-scheme allocation method discussed later in this chapter.

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

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

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

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

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

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

The Authority's recommended level of non-direct costs to be recovered from the Bowen Broken Rivers 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 Including Indirect Renewals (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	447	354	409	521	481	416	475	496	543	490	431
Authority	-	-	-	-	-	-	464	478	517	456	395

Source: SunWater (2011ap).

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

5.4 Direct Costs

Introduction

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

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

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

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

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

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

Stakeholder Submissions

SunWater

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

SunWater's forecast direct operating expenditure by activity is set out in Table 5.6. 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 5.7 presents the same operating costs developed by SunWater on a functional basis.

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	286	207	289	292	274	246	249	249	250	250	250
Electricity	56	104	125	93	26	101	119	129	139	151	163
Preventative Maintenance	35	36	47	57	63	90	91	92	92	93	93
Corrective Maintenance	44	350	222	81	192	139	141	143	144	146	146
Total	**421**	**696**	**682**	**523**	**556**	**575**	**600**	**612**	**625**	**640**	**652**

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. Source: The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011. Source: SunWater (2011ap) and SunWater (2011ao).

Table 5.7: 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	145	128	166	208	213	205	208	208	208	208	208
Electricity	56	104	125	93	26	101	119	129	139	151	163
Contractors	66	125	195	77	182	143	145	147	149	152	152
Materials	15	216	55	54	66	42	43	43	44	45	45
Other	139	123	141	92	68	84	84	84	84	84	84
Total	**421**	**696**	**682**	**523**	**556**	**575**	**600**	**612**	**625**	**640**	**652**

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).

Other Stakeholders

No other stakeholders have submitted on this matter.

Authority's Analysis

The Authority engaged Arup to review the prudency and efficiency of SunWater's proposed direct operating expenditure for this scheme. Arup noted that there were substantial information deficiencies that prevented Arup from determining whether SunWater's forecast operational expenditure is prudent and efficient.

Arup's review involved:

(a) discussions with irrigators to identify, understand and verify key issues; and

(b) a desktop assessment of data provided by SunWater in order to:

  (i) compare historical actual and forecast data;

  (ii) investigate operational forecasts based on historical trends and field observations;

  (iii) understand historical trends in line with actual water usage; and

  (iv) understand how systems have been modified with respect to management of operating expenditure.

Arup reported that SunWater's systems were not specifically designed for the provision of information to assess prudency and efficiency.

Arup noted that the information provided by SunWater did not sufficiently enable costs to be aligned with specific service obligations. Further, there have been numerous operational and procedural changes to SunWater make the extraction and reconciliation of such information difficult.

In Arup's view, the information provided by SunWater did not afford the ability to 'drill down' into costs to adequately review prudency and efficiency; hence the assessment of direct operating expenditure was limited to processes, procedures and trends.

Arup concluded that SunWater's policy and procedural documents are broadly consistent with industry practice, and SunWater has demonstrated the adoption and integration of these into its management system.

Arup acknowledged that SunWater is continually reviewing policies and procedures to take account of changed market conditions, with the aim of streamlining operations across the organisation. While in some instances observing such changes from a regional perspective may give the impression that the changes are inefficient, Arup considered that when observed from a state-wide perspective, significant efficiencies are being made.

The information Arup analysed shows the general trends in operational costs but does not associate costs directly with work orders. However, Arup found that operational cost can be justified given historic trends. SunWater has demonstrated prudency and efficiency in its policies and procedures in maintaining its desired level of service. On this basis, Arup concluded that forecasts are in line with historic actual costs but could not state whether the costs are prudent and efficient.

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.

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

Item 1: Operations

Stakeholder Submissions

SunWater

Operations relate to the day-to-day operational activity (other than maintenance) enabling water delivery, customer management, asset management planning, financial and ROP reporting, workplace health and safety (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 5.8. SunWater noted that recreation facilities at Eungella 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	131	135	162	135	136

Source: SunWater (2011).

Other Stakeholders

No other stakeholders have commented on this item.

Authority's Analysis

Arup's Review

Arup noted that SunWater did not provide documentation detailing the processes undertaken in developing operations cost forecasts. Arup considered that the key drivers are:

(a) WHS;

(b) environmental obligations (ROL and ROP); and

(c) dam safety obligations.

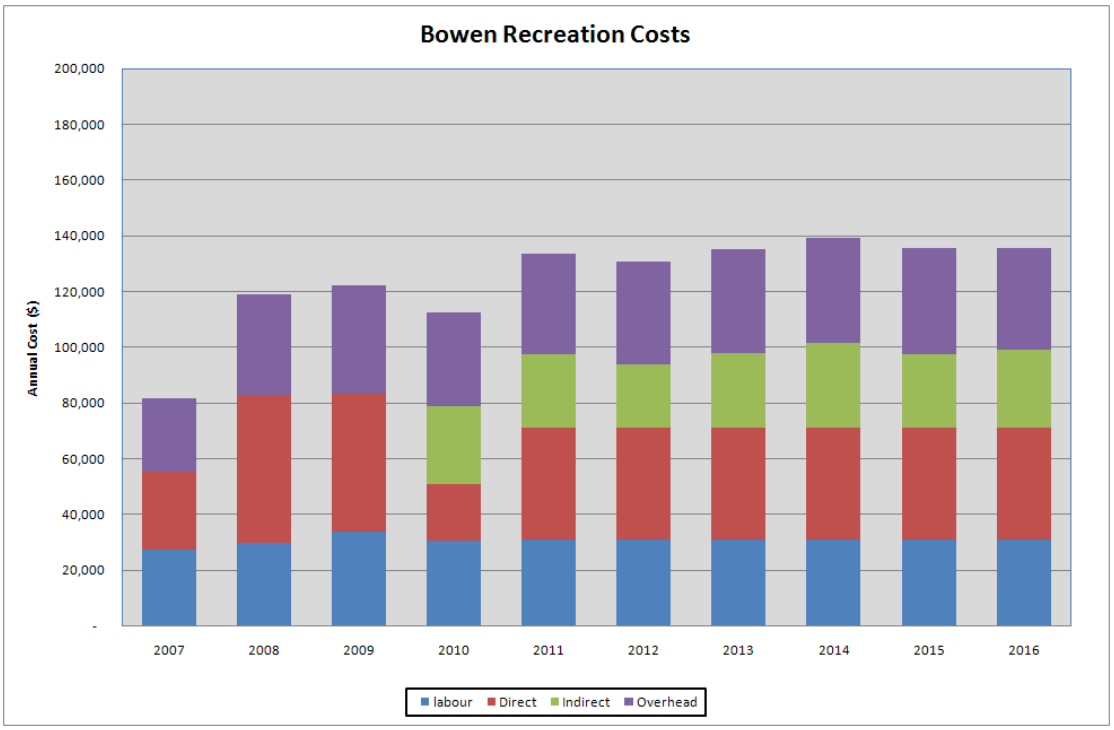
Arup noted that SunWater, given the size and nature of the organisation is required to be vigilant in meeting the above obligations.

More broadly, Arup found that the implementation of the Smarter Lighter Faster Initiative (SLFI) review has reduced costs at the regional level.

In relation to recreation costs, Arup found that SunWater's recreation provision activities include clearing grass, signage, maintaining facilities and managing health and safety. Arup found that direct and labour recreation costs are not projected to increase significantly above 2009-10 expenditures. However, since 2009-10, SunWater has included a non-direct component in total recreation costs.

Figure 5.4 shows total recreation costs for the Bowen Broken Rivers WSS.

Figure 5.4: Recreation Costs

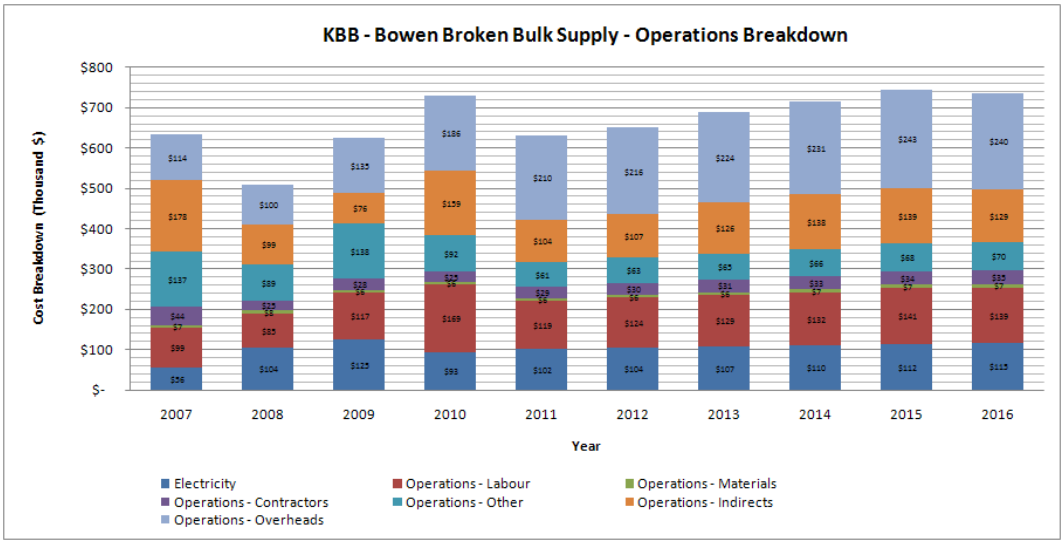


Note: Data in figure based on NSP and may differ from most recent SunWater data. Source: Arup (2011).

SunWater did not provide a further breakdown of recreation costs to allow an understanding of the relationship between the recreation activities and the recreation costs. Therefore, Arup were unable to determine whether the recreation costs are either prudent or efficient.

Arup acknowledge the contention regarding whether these costs should be borne by SunWater customers and noted SunWater's efforts to hand over responsibility [and costs] of recreational areas to relevant councils to reduce costs. Figure 5.5 shows SunWater's operations costs in the Bowen Broken Rivers WSS.

Figure 5.5: Operations Cost Breakdown



Note: Data in figure based on NSP and may differ from most recent SunWater data. Source: Arup (2011).

Arup found that SunWater's forecast operations costs are similar to actual 2006-11 expenditure. Arup noted a spike in 2009-10 labour costs was caused by increased scheme management costs but were unable to determine the exact nature of the work that contributed to this spike.

Arup found that SunWater's labour utilisation has improved due to the implementation of service delivery strategies. As a result, there is a change in the distribution of costs and duties between operations and preventive maintenance.

Arup did not recommend any adjustments to the SunWater's operations costs.

Conclusion

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 Arup did not recommend any adjustments to SunWater's operations costs, including recreation costs.

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

Further, SunWater's forecast average annual operations costs are approximately 7% lower than the average over 2006-11.

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

Item 2: Preventive Maintenance

Stakeholder Submissions

SunWater

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

Preventive maintenance includes:

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

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

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

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

Other Stakeholders

No other stakeholders have commented on this matter.

Authority Analysis

Arup's Review

Arup noted that SunWater engaged PB to consider SunWater's preventive maintenance program. PB found that the baseline preventive maintenance cost for future periods will need to be higher than historic levels to enable the entire program to be completed, but PB did not consider whether the baseline costs are prudent and efficient.

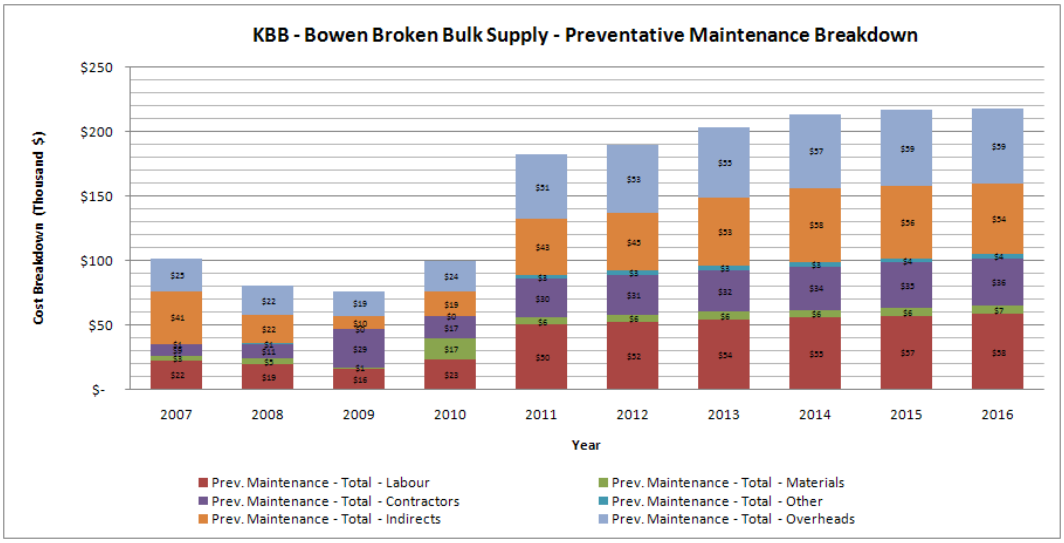
Arup requested SunWater to explain how the PB report outcomes were incorporated into the preventive maintenance forecasts, as Arup noted that SunWater's preventive maintenance forecasts exceed PB proposed costs. Arup were unable to source sufficient information to allow them to verify how PB's revised forecasts were integrated into SunWater's forecasts.

PB recommended that SunWater adopt a reliability centred maintenance (RCM) approach to optimise the ratio of preventive and maintenance activities. SunWater did not provide Arup with the status of any RCM approach, but Arup noted that the ratio of forecast preventive maintenance costs to corrective maintenance costs has altered from past years.

Arup concluded that without SunWater adopting a RCM approach, classifying the preventive maintenance and corrective maintenance forecast expenditures as efficient is not possible.

Arup noted that, during the 2006-11 price path, preventive maintenance costs increased marginally due to the 2009-10 ROP revisions. Figure 5.6 shows the preventive maintenance breakdown in the Bowen Broken Rivers WSS.

Figure 5.6: Preventive Maintenance Breakdown



Note: Data in figure based on NSP and may differ from most recent SunWater data. Source: Arup (2011).

Arup noted that SunWater forecast preventive maintenance costs increase from 2011 onwards, with labour being the main contributor. Arup were unable to discern the reasons for the large labour cost increase given there is no equivalent reduction in the costs of contractors.

SunWater has forecast a greater portion of preventive maintenance costs, compared with the 2006-11 price path but concluded that the increase in preventive maintenance forecasts are offset by an decrease in corrective maintenance.

Arup did not recommend any adjustments to the SunWater's preventive maintenance costs.

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 RCM approach to formulating maintenance activity requirements should be adopted.

SunWater's forecast annual preventive maintenance costs are approximately 94% higher than over 2006-11. However, the Authority notes that corrective maintenance costs are forecast to decrease by 19%, with overall maintenance costs forecast to increase by 5%.

The Authority notes SunWater's contention that the increase in preventive maintenance forecast costs are [partially] offset by a decrease in corrective maintenance costs and that Arup did not

recommend any adjustments to SunWater's preventive maintenance costs. On this basis, the Authority does not recommend any specific reduction in preventive maintenance expenditure.

Item 3: Corrective Maintenance

Stakeholder Submissions

SunWater

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

SunWater identifies two types of corrective maintenance activities:

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

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

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

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

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

Other Stakeholders

No other stakeholders have commented on this item.

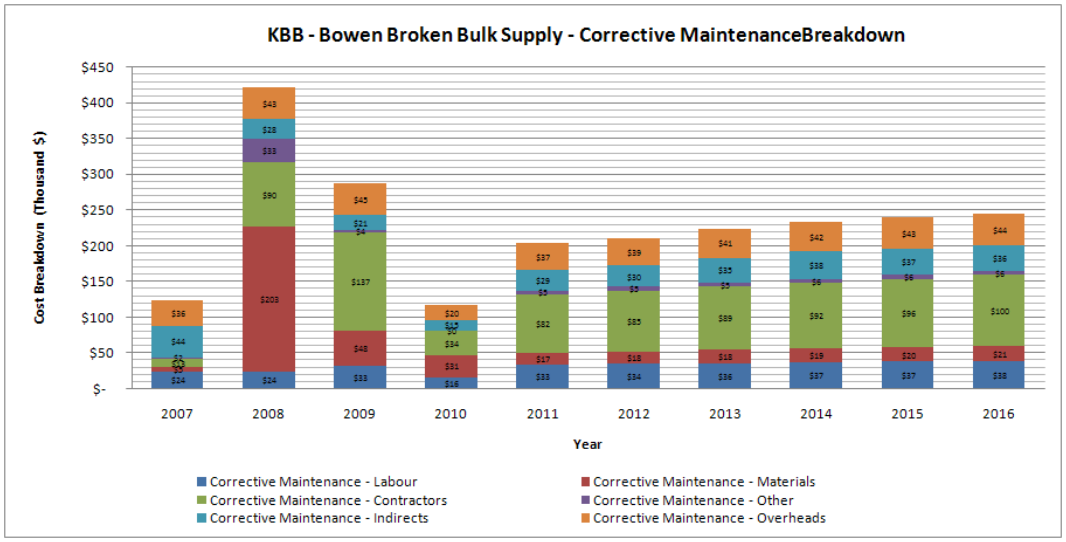
Authority's Analysis

Arup's Review

Arup noted that SunWater's corrective maintenance forecast costs are [according to SunWater] based on actual expenditures in the last four years. However, Arup were not provided any formal documentation indicating the exact methodology used to predict forecast costs for corrective maintenance.

Arup found that corrective maintenance costs are forecast to decrease from 2011 onwards, though not because of a decrease in labour or contractors. Figure 5.7 shows the corrective maintenance costs in the Bowen Broken WSS.

Figure 5.7: Corrective Maintenance Breakdown



Note: Data in figure based on NSP and may differ from most recent SunWater data. Source: Arup (2011).

As noted above, Arup conclude that classifying preventive maintenance and corrective maintenance forecast expenditures as efficient is not possible.

Arup did not recommend any adjustments to the SunWater's corrective maintenance costs.

Conclusion

The Authority notes that Arup did not recommend any adjustments to SunWater's corrective maintenance costs.

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

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

SunWater's forecast corrective maintenance costs are approximately 19% lower than over 2006-11. However, the Authority's analysis indicates that the sum of SunWater's preventive and corrective maintenance costs is forecast to increase by approximately 5%.

Arup did not recommend any adjustments to SunWater's corrective maintenance costs. On this basis, the Authority does not recommend any specific reduction in corrective maintenance expenditure.

Item 4: Electricity

Stakeholder Submissions

SunWater

Electricity is used to pump water and operate major items of infrastructure.

The electricity costs for the bulk supply relate mainly to outlet works actuation, SCADA, lighting for access and security and the flood harvesting pumps of the GOSS. The forecast electricity costs are based on an average volume of water pumped to storage.

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.

Other Stakeholders

Authority's Analysis

Arup's Review

Arup did not specifically review electricity costs, but did note that SunWater has undertaken extensive analysis of whether to use contestable or franchise tariffs. SunWater's conclusion for this scheme is to retain a franchise tariff.

Conclusion

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

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

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

The Authority has adjusted proposed electricity costs as set out in Table 5.9.

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.

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.

Direct Electricity

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.

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

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

Other Direct Costs

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

Non-direct costs

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

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Bowen Broken Rivers WSS is set out in Table 5.9.

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 5.9: 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	249	249	250	250	250	241	241	242	242	242
Electricity	119	129	139	151	163	102	106	110	115	121
Preventive Maintenance	91	92	92	93	93	88	89	89	90	90
Corrective Maintenance	141	143	144	146	146	137	138	138	139	139
Total	600	612	625	640	652	568	573	579	587	591

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

5.5 Cost Allocation According to WAE Priority

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

Previous Review

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

Stakeholder Submissions

SunWater

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

Other Stakeholders

Bowen Broken Water Supply Scheme Irrigators (2011) submitted that the operating cost allocation must remain at 3:1 (as it currently stands) for high priority and medium priority WAE. Medium priority WAE has a very low reliability in this scheme compared with many other schemes. The vast majority of WAE in the scheme are for high priority users and as such high priority users must contribute a greater proportion to maintenance and overhead costs.

Authority's Analysis

In Volume 1, the Authority has summarised the views of its consultants. In response to Bowen Broken Rivers Irrigators' submission, the Authority 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.

This allocation reflects that fixed maintenance costs, and 50% of fixed operations costs relate to the headworks. The Authority notes that the HUF allocates 100% of these costs to high priority WAE.

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 Bowen Broken Rivers 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 5.10. The Authority's recommended operating costs are set out in Table 5.11.

Table 5.10: SunWater's Proposed Operating Costs for Activity by Type

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	123	123	123	123	123
Materials	11	11	12	12	12
Contractors	30	30	31	31	31
Other	84	84	84	84	84
Non-direct	247	256	250	240	234
Preventive Maintenance					
Labour	51	51	51	51	51
Materials	9	9	9	9	9
Contractors	31	31	32	32	32
Other	0	0	0	0	0
Non-direct	103	107	104	100	98
Corrective Maintenance					
Labour	34	34	34	34	34
Materials	23	23	23	24	24
Contractors	84	86	87	88	88
Other	0	0	0	0	0
Non-direct	72	74	73	70	69
Electricity	119	129	139	151	163
Total	**1,021**	**1,049**	**1,051**	**1,049**	**1,052**

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 5.11: The Authority's Recommended Operating Costs for Activity by Type

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	119	120	121	121	122
Materials	11	11	11	11	11
Contractors	29	29	29	30	29
Other	82	81	80	80	79
Non-direct	240	246	236	223	214
Preventive Maintenance					
Labour	50	50	51	51	51
Materials	8	9	9	9	9
Contractors	30	30	30	31	30
Other	0	0	0	0	0
Non-direct	100	102	98	93	89
Corrective Maintenance					
Labour	33	33	33	34	34
Materials	22	22	22	22	22
Contractors	82	82	83	83	83
Other	0	0	0	0	0
Non-direct	70	72	69	65	63
Electricity	102	106	110	115	121
Total	**978**	**993**	**983**	**967**	**958**

Source: QCA(2011).

6. DRAFT PRICES

6.1 Background

Ministerial Direction

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

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

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

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

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

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

The Ministerial Direction also requires that:

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

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

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

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

Previous Review

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

For this scheme, prices over 2006-11 were increased by CPI. In 2011-12, prices were increased by $2/ML (in real terms) plus 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 Bowen Broken Rivers 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 Bowen Broken Rivers 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	892	1,037	1,001	993	1,007	1,359	1,411	1,434	1,438	1,493	1,496
Renewals Annuity	39	38	36	60	46	406	402	397	399	456	456
Operating Costs	858	1,011	987	945	996	965	1,021	1,049	1,051	1,049	1,052
Revenue Offsets	-6	-12	-22	-12	-35	-12	-12	-12	-12	-12	-12
Authority's Total Costs	-	-	-	-	-	-	1,291	1,300	1,293	1,364	1,346
Renewals	-	-	-	-	-	-	324	318	321	407	400
Operating Costs	-	-	-	-	-	-	978	993	983	967	958
Revenue Offsets	-	-	-	-	-	-	-12	-12	-12	-12	-12
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 Bowen Broken Rivers WSS.

As noted in Volume 1, the Authority engaged Indec to determine which of SunWater's costs are most likely to vary with water use. Indec identified:

(a) costs that would be *expected* to vary with water use. Indec expected that electricity pumping costs would generally be variable and non-direct costs would be fixed;

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

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

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

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

(d) costs that *should* vary with water use under Indec's proposed optimal (prudent and efficient) management approach (as outlined in Volume 1). On average across all SunWater's bulk schemes, Indec considered 93% of costs would be fixed and 7% variable. However Indec proposed that scheme-specific tariff structures should be applied to reflect the relevant scheme costs.

For the Bowen Broken Rivers WSS, Indec recommended 93% of costs should be fixed and 7% variable under optimal management. The Authority notes that this ratio differs from the current tariff structure which reflects the recovery of 81% of costs in the fixed charge and 19% of costs in the volumetric charge.

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

6.5 Allocation of Costs According to WAE Priority (Real $'000)

Fixed Costs

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

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Net Fixed Costs	1,200	1,208	1,201	1,267	1,251
High Priority	1,153	1,160	1,155	1,221	1,205
Medium Priority	32	32	32	31	30
Distribution Losses	15	15	15	16	16

Note: Net fixed costs are net of revenue offsets and return on working capital. Source: Actual Costs (SunWater, 2011ap) and Total Costs (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 43.1% 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. As the Bowen Broken WSS was a revenue cap scheme, the cost-reflective Part A charge incorporates the carryover adjustment required under the previous revenue cap arrangements (as noted in Chapter 2 – Regulatory Framework).

Table 6.3: Medium Priority Prices for the Bowen Broken Rivers WSS ($/ML)

	Actual Prices						***Cost-Reflective Prices***				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
River – Medium Priority											
Fixed (Part A)	8.08	8.32	8.72	9.00	9.28	11.60	6.82	6.99	7 16	7.34	7.53
Volumetric (Part B)	12.71	13.08	13.71	14.14	14.57	15.09	5.88	6.03	6 18	6.34	6.50

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

6.7 Queensland Government Pricing Policies

As noted above, the Queensland Government has directed that:

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

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

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

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

Authority's Analysis

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

The Authority has calculated these current revenues using the relevant 2010-11 prices, current irrigation WAE and the five-year average (irrigation only) water use during 2006-11. For this scheme, current revenues are above the level required to recover prudent and efficient costs (Table 6.4). Therefore, the Authority is required to recommended prices that maintain revenues in real terms for the 2012-17 regulatory period.

Table 6.4: Comparison of Current Prices and Cost-Reflective Prices (Real $2012-13)

Tariff Group	*2010-11 Prices (indexed to $2012-13)*		*Irrigation WAE (ML)*	*Irrigation Water Use (ML)*	*Current Revenue*	*Revenue from Cost-Reflective Tariffs*	*Difference*
	Fixed	*Variable*					
River	9.75	15.31	5,676	592	64,402	42,191	22,211

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

6.8 The Authority's Recommended Prices

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

Table 6.5: Draft Medium Priority Prices for the Bowen Broken Rivers WSS ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
River – Medium Priority											
Fixed (Part A)	8.08	8.32	8.72	9.00	9.28	11.60	10.63	10.90	11.17	11.45	11.73
Volumetric (Part B)	12.71	13.08	13.71	14.14	14.57	15.09	5.88	6.03	6.18	6.34	6.50

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

6.9 Impact of Recommended Prices

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

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APPENDIX A – FUTURE RENEWALS LIST

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

Asset	*Year*	*Description*	*Value ($'000)*
Bowen River River Distribution	2023-24	Replace Recorder Building	48
	2025-26	Replace Recorder Building	35
Bowen River Weir	2011-12	Install Headwater continuous time series monitoring equipment (Purchase & Install) - Bowen River Weir	35
	2017-18	Refurbish Screens - repaint and repair as required	24
	2022-23	09BBR-O/HAUL PNSTCK GTS BWN RVR (RH)2010	39
		Refurbish Actuators - offset hydraulic penstock lines to bank (for port pwr pack)	13
	2023-24	Refurbish Metalwork - covers and gate guide corrosion treatment or replacement	12
	2029-30	Refurbish Screens - repaint and repair as required	24
	2031-32	Replace Left Hand Penstock	79
		Replace Right Hand Penstock	79
	2032-33	09BBR-RFBSH WEIR PRTCTN WKS BRW(plan)	28
	2033-34	Replace Bulkhead Gate	15
	2035-36	09BBR-O/HAUL PNSTCK GTS BWN RVR (RH)2010	39
Eungella Dam	2011-12	Eungella Dam Spillway - Poison emerging saplings within 6m of left & right bank channel walls (refer items 5.3d & e 2009 DS report)	14
		Eungella Dam Filling Line Gate Valves & Pipe Work - Remove corrosion and repaint (ref. items 7.4b & d 2009 DS report)	13
	2012-13	Patch paint corroding surfaces on bridge handrails, condition assess bridge girders and carry out remedial action as required (DS 5.	36
	2013-14	Refurbish: Blast and paint bulkhead gate rails (Carried out 2004 for $26K)	35
		Refurbish:Paint Interior and Exterior Toilet Blocks and Shelter Sheds	22
	2014-15	10BBR-5Y DAM SAFETY INSP EUNGELLA (PLAN)	69
		INVESTIGATION CONTAMINATED LAND SITES	14
	2015-16	Replace Electric Power Supply	61
		Study: 5 yearly statutory Failure Impact Assessment of Cat 1 Dam.	12
	2016-17	Replace Instrumentation	12
	2018-19	Replace Intake Winch	44
	2019-20	10BBR-5Y DAM SAFETY INSP EUNGELLA (PLAN)	65
		Refurbish:Paint Interior and Exterior Toilet Blocks and Shelter Sheds	22
	2020-21	Study: 20yr Dam Safety Review (by 1 Oct 2020)	123
		09BBR-RGRDE & RSRFCE CREST &ACS RD(plan)	31
		Study: 5 yearly statutory Failure Impact Assessment of Cat 1 Dam.	12
	2022-23	Replace Toilet Block 1 (Compost)	225
		Replace Toilet Block 2 (Septic)	223
	2024-25	10BBR-5Y DAM SAFETY INSP EUNGELLA (PLAN)	64
		Replace Ladders And Handrails	37

Asset	*Year*	*Description*	*Value ($'000)*
	2025-26	Refurbish:Paint Interior and Exterior Toilet Blocks and Shelter Sheds	22
		Study: 5 yearly statutory Failure Impact Assessment of Cat 1 Dam.	12
	2028-29	Replace Rails,Beams,Trolley	259
		Eungella Dam - LH Reg Valve: Major overhaul (new seal, repaint etc) every 30 yrs	36
		Eungella Dam - RH Reg Valve: Major overhaul (new seal, repaint etc) every 30 yrs	36
		Refurbish: Blast and paint bulkhead gate rails (Carried out 2004 for $26K)	34
	2029-30	10BBR-5Y DAM SAFETY INSP EUNGELLA (PLAN)	64
	2030-31	Patch paint corroding surfaces on bridge handrails, condition assess bridge girders and carry out remedial action as required (DS 5.	36
		Study: 5 yearly statutory Failure Impact Assessment of Cat 1 Dam.	12
	2031-32	Refurbish:Paint Interior and Exterior Toilet Blocks and Shelter Sheds	22
		Replace Instrumentation	12
	2032-33	09BBR-RGRDE & RSRFCE CREST &ACS RD(plan)	31
	2033-34	Replace Control Equipment	248
		Replace Switchboard	145
	2034-35	Second Stage of Eqipment replacement	109
		10BBR-5Y DAM SAFETY INSP EUNGELLA (PLAN)	64
	2035-36	Study: 5 yearly statutory Failure Impact Assessment of Cat 1 Dam.	12
Eungella Dam Wtp	2020-21	Replace Treatment Plant Unit	154
		Replace Electric Services	11
Gattonvale Off Stream Storage	2012-13	Refurbish: Stabalise embankment and replace embankment protection - Following insppection June 2010	103
	2013-14	Refurbish: Stabalise embankment and replace embankment protection - Following insppection June 2010 (2nd year of program)	105
	2014-15	Refurbish: Stabalise embankment and replace embankment protection - Following insppection June 2010 (3rd year of Program)	105
	2015-16	Refurbish: Stabalise embankment and replace embankment protection - Following insppection June 2010 (4th year of Program)	104
	2020-21	Refurbish: Maintain & Stabalise embankment and replace protection (Regular maintenance every 5 years after intensive 4 yr program)	117
	2024-25	Refurbish: Blast and paint metalworks to maintain condition and extend effetive life (Requires Condition assessment first)	24
	2025-26	Refurbish: Maintain & Stabalise embankment and replace protection (Regular maintenance every 5 years after intensive 4 yr program)	114
	2030-31	Refurbish: Maintain & Stabalise embankment and replace protection (Regular maintenance every 5 years after intensive 4 yr program)	115
	2034-35	Replace Perimeter Fence	126
	2035-36	Refurbish: Maintain & Stabalise embankment and replace	115

Asset	*Year*	*Description*	*Value ($'000)*
		protection (Regular maintenance every 5 years after intensive 4 yr program)	
Gattonvale Pump Station	2014-15	Refurbish Pump 1 - Gattonvale PSTN	48
	2015-16	Refurbish Pump 2 - Gattonvale PSTN	48
	2016-17	Refurbish Pump 3 - Gattonvale PSTN	48
	2019-20	Replace Control Cubicle	147
		Replace Plc	29
	2020-21	Refurbish Pump 1 - Gattonvale PSTN	48
	2021-22	Refurbish Pump 2 - Gattonvale PSTN	48
	2022-23	Refurbish Pump 3 - Gattonvale PSTN	47
	2026-27	Refurbish Pump 1 - Gattonvale PSTN	47
	2027-28	Refurbish Pump 2 - Gattonvale PSTN	47
	2028-29	Refurbish Pump 3 - Gattonvale PSTN	47
	2032-33	Refurbish Pump 1 - Gattonvale PSTN	47
		Replace Plc	29
	2033-34	Refurbish Pump 2 - Gattonvale PSTN	47
	2034-35	Replace Submersible Pump, 620Mm Flygt	1,650
		Replace Hv Switchboard	317
		Replace Transformer, 33Kv / 3.3Kv	177
		Replace Consumer Mains, 33Kv	150
		Replace Cableways & Conduits	142
		Replace Structure	119
		Replace Earthing & Earth Grid	87
		Replace Main Isolator, 33Kv	58
		Refurbish Pump 3 - Gattonvale PSTN	47
		Replace Poletop Fuse Switch, 33Kv / 3.3Kv Tx	41
		Replace Poletop Fuse Switch, 33Kv / 415Kv Tx	41
		Replace Lv Switchboard	40
		Replace Cable	36
		Replace Cabling & Terminations	32
		Replace Hv Cable Pits & Covers	23
		Replace Hv Cabling & Terminations	21
		Replace Cableways	21
		Replace Surge Diverters, 33Kv / 3.3Kv Tx	21
		Replace Surge Diverters, 33Kv / 415Kv Tx	21
		Replace Sump Pump, Flygt Sumbersible	18
		Replace Control Cubicle (Level)	15
		Replace Control Cubicle / Db (Flow)	15
		Replace Consumer Mains	11
		Replace Light & Power	11
		Replace Transformer, 33Kv / 415Kv	10
Gattonvale Rising Main	2016-17	Replace Pipe Junction (228M) (P4/5)	18
	2024-25	Refurbish: Midlife valve overhaul (Note: required completed condition assessment first)	18