QUEENSLAND COMPETITION AUTHORITY

Final Report

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

April 2012

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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 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 Bundaberg Distribution System for the 2012-17 regulatory period are outlined in Table 1 with actual prices since 1 July 2006. A comparison with the Authority's Draft Report recommended prices is provided in Chapter 6: Recommended Prices.

Table 1: Prices for the Bundaberg Distribution System ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
River (Unbundled)											
Fixed (Part A)	6.20	6.36	6.68	6.88	7.08	7.36	10.99	11.26	11.55	11.83	12.13
Volumetric (Part B)	9.66	9.94	10.42	10.75	11.08	11.47	1.10	1.13	1.16	1.19	1.22
Channel (Unbundled)											
Fixed (Part C)	28.20	30.60	33.64	34.72	35.80	39.04	26.31	29.02	31.85	34.80	36.74
Volumetric (Part D)	14.91	16.46	18.39	18.97	19.54	20.25	49.58	50.82	52.09	53.39	54.73
Channel (Bundled)											
Fixed (Part A)	34.40	36.96	40.32	41.60	42.88	46.40	37.30	40.29	43.39	46.63	48.87
Volumetric (Part B)	24.57	26.40	28.81	29.72	30.62	31.72	50.68	51.95	53.25	54.58	55.94

Note: Bundled prices are for information only. Prior to 2012-17, channel tariffs were a bundled price for bulk and distribution services. Thus, the fixed Part C tariffs for 2006-12 represent a notional unbundled channel price calculated by deducting Part A River prices from (bundled) Part A Channel prices. Source: Actual Prices (SunWater, 2011al) and Recommended Prices (QCA, 2012).

Although prices for bulk costs of the Bundaberg WSS are presented above, the review of the underlying bulk costs is set out in detail as part of a separate report on the Bundaberg WSS.

The Authority's recommended termination fees to apply to the Bundaberg Distribution System in 2012-17 are outlined in Table 2 together with actual termination fees since 1 July 2008.

Table 2: Termination Fees ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Channel to River	n.d.	n.d.	301.18	297.87	337.82	402.68	417.20	427.63	438.32	449.28	460.51

Note: In 2012, SunWater introduced a new methodology for calculating termination fees. n.d. - no data. SunWater started publishing termination fees in its Annual Fees & Charges Schedule from 2008-09. Prior to 2008-09, these fees were calculated as needed. Source: Actual Prices (SunWater, 2011al) and Recommended Prices (QCA, 2012).

Final Report

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

Volume 2, which comprises scheme specific reports, should be read in conjunction with Volume 1. Also relevant is the Final Report on the Bundaberg WSS.

Consultation

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

All submissions received on the Draft Report have been taken into account by the Authority in preparing its Final Report.

1. BUNDABERG DISTRIBUTION SYSTEM

1.1 Scheme Description

The Bundaberg Distribution System has 900 customers. The scheme comprises 149,522 ML of customer held medium priority water access entitlement (WAE) and 1,781 ML of customer held high priority WAE (Table 1.1). To deliver water to these customers, SunWater owns WAEs for distribution losses.

Table 1.1: Water Access Entitlements

Customer Group	*Irrigation WAE (ML)*	*Total WAE (ML)*
Medium Priority	149,210	149,522
Medium Priority Distribution Losses	25,088	25,440
High Priority	0	1,781
High Priority Distribution Losses	15,858	16,080
Total	**190,156**	**192,823**

Note: Bundaberg Distribution System WAE is included in the total Bundaberg WAE of 236,329 ML. Excludes Burnett Water WAE. Source: SunWater (2011am).

1.2 Distribution System Infrastructure

Bulk water is provided by SunWater from the Fred Haigh Dam under the resource operations licence (ROL) held by SunWater. It is the primary source of water supply releasing water to a series of downstream weirs and supplying water to channel systems outlined below.

The Gin Gin sub-system

The Gin Gin sub-system draws from Fred Haigh Dam through the Monduran pump station. The Gin Gin sub-system has two pump stations. The Monduran Pump Station has three pumps and can pump 1100 ML/day and the Tirroan Pump Station discharges into the Tirroan balancing storage. It has two pumps with a combined capacity of 72 ML/day.

The Bingera sub-system

The Bingera sub-system is supplied from the Gin-Gin main channel. The Bingera system can be divided into four parts: Bingera main channel, McIllwraith, Bucca and Bingera. The Bingera system has three pump stations: Bullyard Pump Station which has four pumps with a combined capacity of 415 ML/day; Bucca Pump Station which has two pumps with a combined capacity of 60 ML/day; and, McIllwraith Pump Station which also has two pumps with a combined capacity of 60 ML/day.

The Isis sub-system

The Isis sub-system is supplied from the Burnett River's Ben Anderson Barrage through the Don Beattie pump station. The system includes four pump stations. Don Beattie pump station is a dry well pump station perched on the right bank of the Burnett River. It has three pump sets. Combined, they can deliver 648 ML/day, but because the channel has a maximum flow capacity of 605 ML/d, no more than two pumps can be used simultaneously. North Gregory pump station has two pumps with a combined capacity of 63 ML/day. Quart Pot Creek pump station is split into two sections. Each section has two pumps. One section is rated 250 ML/day

and the other 275 ML/day. The Dinner Hill section has three pumps and is rated at 160 ML/day.

The Woongarra sub-system

The Woongarra sub-system borders the north and south-eastern sides of the City of Bundaberg. It includes two pump stations. Woongarra pump station has five pumps. Each pump has capacity of 79 ML/day. The Walker Street pump station has four pumps with a combined capacity of 225 ML/day.

The Abbotsford sub-system

The Abbotsford sub-system is supplied from the Kolan River. It has only one pump station: the Abbotsford pump station which consists of a wet well built in the left bank of the Kolan River. The pump station has two submersible pumps and is rated 24 ML/day.

The Gooburrum sub-system

The Gooburrum sub-system is supplied from the Kolan River through the Gooburrum pump station. It supplies the coastal strip north of Bundaberg. The Gooburrum pump station has a dry well and its construction resembles the Don Beattie pump station. The station has two pumps with a combined capacity of 300 ML/day.

Drainage Infrastructure

The Bundaberg Distribution System does not have designated drains to intercept the runoff from irrigated land.

The location of the Bundaberg Distribution System and key infrastructure is shown in Figure 1.1.

1.3 Network Service Plans

The Bundaberg Distribution System network service plan (NSP) presents SunWater's:

(a) existing service standards;

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

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

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

1.4 Consultation

The Authority has liaised extensively with SunWater and other stakeholders throughout this review. 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 prior to the Draft Report);

(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;

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

(g) in particular, after releasing the Draft Report:

  (i) considered issues arising from a third round of consultation in November and December 2011 and submissions on the Draft Report;

  (ii) obtained and reviewed additional information, particularly relating to past and future renewals expenditures, and non-direct and direct costs; and

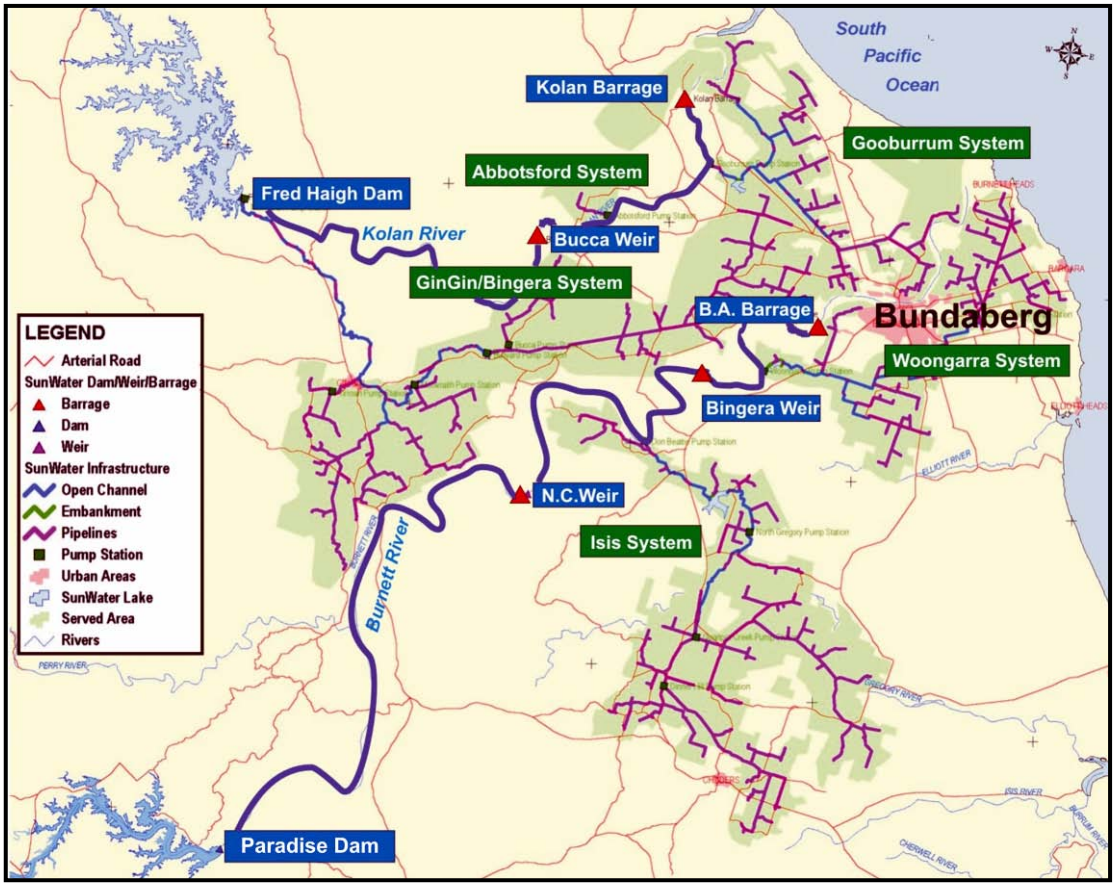
  (iii) subjected SunWater's financial, renewals annuity and electricity models and the Authority's pricing module to independent external review.

In preparing its Draft Report, the Authority 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.

Figure 1.1: Bundaberg Distribution Scheme Locality Map



Source: SunWater (2011).

2. REGULATORY FRAMEWORK

2.1 Introduction

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

During the negotiations that preceded the 2006-11 price path, the Bundaberg Tier 2 group (including representatives from the Bundaberg Distribution System) indicated that they were in favour of retaining the existing price cap regulatory arrangement. In the 2011-12 interim price period, the price cap arrangement was continued.

2.2 Draft Report

Stakeholder Submissions

SunWater

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

(a) the possible removal of regulated electricity tariffs which could have a significant impact on the cost of electricity;

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

(c) the introduction of water planning and management charges in respect of SunWater's distribution loss entitlements for channel distribution systems;

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

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

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

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

(h) outbreak of noxious weeds.

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

General Risks

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

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

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

Source: QCA (2011).

Consistent with the Authority's allocation of risks (Table 2.1), it is proposed that risks identified by SunWater in items (a), (b), (d), (g) and (h) above will be dealt with via an end-of-period adjustment, or price trigger or cost pass through upon application by SunWater or customers. Any costs of the nature of (c) would be passed through, subject to a consideration of their materiality.

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.

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

2.3 Submissions Received from Stakeholders on the Draft Report

As outlined in Volume 1, the Authority notes that several submissions regarding the Draft Report's recommendations on the regulatory framework were received. These submissions primarily referred to how more accurate forecasts of electricity costs could be undertaken and how best to accommodate any variance between actuals and forecasts that occur during the 2012-17 regulatory period through mechanisms such as a cost pass through.

For the Bundaberg Distribution Scheme, BRIG (2011e) submitted that annual, cost pass through for electricity should be introduced with a Part E tariff exclusively for electricity. BRIG submitted that this arrangement could be limited to schemes where electricity makes up a significant portion of the total delivery cost, such as the Bundaberg Distribution System. BRIG considered that this cost pass through should be in arrears and subject to regulatory over-sight.

CANEGROWERS Isis (2011b) submitted that local management of schemes has been discussed over the years and while customers may not wish to operate the scheme, they require more input into the management of the scheme as it is they who have to pay. More consultation is a necessary requirement.

2.4 Authority's Response to Submissions Received on the Draft Report

As noted above, the Authority considers that only if costs are materially different to those forecast would there be a case to consider price triggers or cost pass throughs.

In response to BRIG, the Authority concluded in Volume 1 that it is accepted regulatory practice for a five-year price path to be based on forecast costs, including electricity. Indeed, the use of forecasts is a necessity in order to achieve the critical benefits (supported by many irrigators) of 5-year price paths, which is price stability. This in turn should provide sufficient certainty for customers to make related medium term business decisions.

The Authority also considers that because its framework allows for a potential mid-price-path or end-of-period review should they be considered necessary, at that point the Authority would consider actual electricity costs as part of its deliberations on a potential adjustment. It should be noted that other factors would also be taken into consideration at that time, including SunWater's investment in energy efficiency measures, tariff selection, contestable tariff costs and materiality.

The Authority concluded that no compelling evidence had been put forward to change the approach recommended in the Authority's Draft Report.

The Authority has made a series of recommendations in relation to consultation which are addressed in Volume 1 and the following chapters.

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

For the 2006-11 price path, tariffs incorporated bulk and distribution costs into a bundled two-part tariff. During the 2005-06 price negotiations, the Bundaberg Tier 2 group accepted a tariff structure to recover 70% of the required revenue in the fixed (Part A) charge and 30% of revenue in the variable (Part B) tariff.

Draft Report

Stakeholder Submissions

For the 2012-17 regulatory period, SunWater proposed to unbundle charges so that the recovery of distribution costs are separated from bulk water costs.

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

Other stakeholders generally supported a 70:30 tariff structure:

(a) CANEGOWERS ISIS (2011) considered that the 70:30 split is the right mix as it gives SunWater a level of security, while irrigators are not taking all the risk in years of limited water. They stated that Part B tariff should comprise a mix of fixed and variable costs including operating costs, repairs and maintenance costs. They noted that a portion of the operating costs and overheads is attributable to the percentage of water delivery entitlement (WDE) delivered and therefore rightfully lies within both Part A and Part B; and

(b) Bundaberg Fruit and Vegetable Growers (BFVG) (2010b) stated that a tariff structure with a 70% Part A and 30% Part B has worked well previously. They supported a standardised two-part tariff that reflects fixed and variable costs of the scheme.

BRIG (2011d) considered that the pricing structure should not encourage the conversion of MP to HP. In other words, the cost of holding extra MP to ensure a reasonably reliable supply should be less than the cost of a lesser quantity of HP water.

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 considered 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 recommended that all, and only, variable costs be recovered through a volumetric charge.

Unbundling of tariffs further promotes cost-reflectivity of charges.

In response to CANEGROWERS ISIS, the Authority's analysis of which service delivery costs are fixed and which are variable, was further addressed in a subsequent chapter of the Draft Report.

The Authority has recommended that the volumetric charge consist of the variable costs only. Recovering fixed costs through the volumetric charge would expose SunWater to revenue risk, which it is unable to manage.

The Authority noted comments made by BFVG that the tariff ratio should reflect the nature of fixed and variable costs. The relevant ratio of fixed to variable costs is addressed further below.

In response to BRIG, the Authority considered that the pricing structure should neither encourage nor discourage conversion of MP WAE to HP WAE. The Authority considered that its approach of setting a tariff structure that reflects the underlying costs borne by SunWater will allow irrigators to accurately assess whether conversion is worthwhile.

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

The volumes of permanent and temporary water traded for the Bundaberg WSS (across bulk and distribution system customers) are identified in Table 3.1.

Table 3.1: Permanent and Temporary Water Traded (ML)

	2002-03	***2003-04***	***2004-05***	***2005-06***	***2006-07***	***2007-08***	***2008-09***	***2009-10***
Permanent	213	1,631	1,515	4,682	5,403	1,615	654	1,574
Temporary	16,101	5,523	5,649	6,410	18,285	10,836	12,200	37,262

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

Annual volumes of trades are generally material when viewed against the total WAEs in the scheme and therefore play an ongoing role in the efficient allocation of water for this scheme.

The Authority recognised that a change in tariff structure may impact the value of entitlements, and therefore incentives to trade. This matter was addressed further below in the Draft Report in the context of pricing recommendations.

Submissions Received from Stakeholder on the Draft Report

Canegrowers Isis (2011b) submitted that all WAE holders should contribute to costs, irrespective of the level of use. A low Part A and a high Part B charge penalises the user and rewards the non-user which could lead to less water use and, eventually, the cost of Part B becoming prohibitive.

BRIG (2011e) submitted that the tariff structure for this scheme should be further unbundled to:

(a) Part A – Bulk Fixed Charge;

(b) Part B – Bulk Volumetric Charge;

(c) Part C – Distribution System Fixed Charge;

(d) Part D – Distribution System semi-variable volumetric charge ; and

(e) Part E - Distribution System electricity volumetric charge.

Authority's Response to Submissions Received on the Draft Report

As outlined in Volume 1, the Authority considers that the appropriate tariff structure reflects the underlying costs. The volumetric charge should, when set to equal the anticipated costs of using an additional unit of water (the marginal cost), promote informed decisions by users. Customers will irrigate until the marginal benefit of irrigation outweighs SunWater's variable cost. That is, it makes clear the cost of supplying the additional unit of water and requires customers to establish whether the benefit of using it exceeds its cost.

In the Bundaberg Distribution System this approach results in relatively high volumetric charges due to high variable costs. However, to depart from this approach would allocate volume risk to SunWater (see chapter 2: Regulatory Framework) and would not send the appropriate price signal to ensure the most efficient level of water use.

As the volumetric charge is set to recover the costs of additional use, a decrease in use will not impact on the volumetric charge, though will impact on SunWater's volumetric revenue (but fully offset by a reduction on variable costs).

The Authority has recommended charges as submitted, except for the Part E - Distribution System electricity volumetric charge as the Authority considered that a further charge would add unnecessary complexity. While a purely electricity charge would provide marginal signals for the cost of additional electricity, the Authority considers that the Part B + Part D charge provides the appropriate marginal pricing signal as it includes other costs that are variable over the regulatory period.

While the Part E charge could be adjusted to pass through actual electricity increases, this can also be done in the Part D charge. See Chapter 6: Recommended Prices.

3.2 Termination (Exit) Fees

Introduction

SunWater charges termination fees when a distribution system WAE is permanently transferred to the river. Without a termination fee, SunWater would have insufficient revenue to cover that customer's share of fixed costs.

Draft Report

Stakeholder Submissions

In 2011-12, SunWater charged the exiting user the present value of 10 years of annual fixed distribution charges or 9.4 times the notional distribution system fixed charge, which SunWater submitted is consistent with the Australian Competition and Consumer Commission (ACCC) guidelines. SunWater treated such fees as revenue offsets for 10 years with any subsequent revenue shortfall recovered from remaining distribution system customers.

No other stakeholders have commented on this matter.

Authority's Analysis

In Volume 1, the Authority noted that the purpose of a termination fee is to ensure that a customer's departure does not result in a financial cost to SunWater or, as currently to remaining customers. Further, it should provide an incentive to SunWater to reduce costs following a customer's departure.

As proposed by SunWater, the Authority recommended a planning period of 20 years for the calculation of the renewals annuity and an annual rolling (recalculation of the) annuity. Consistent with this approach, the Authority recommended that the termination fee for each year will reflect 20 years of forecast renewals and fixed operating expenditure, although due to the rolling approach over the five year regulatory period, 24 years of data will be incorporated.

The Authority recommended that costs not recovered via the termination fee are not to be passed on to customers in the form of higher (future) annual water charges. By not recovering all fixed costs, SunWater has an incentive to reduce costs or seek out new customers.

The Authority's approach resulted in a multiple of about 13.8 times the unbundled Part C cost reflective tariff for the distribution system (see Chapter 6) compared with the ACCC's guidance of up to 11 times the fixed charge). This compared with SunWater's 2011-12 termination fees which are 9.4 times the 2011-12 distribution system fixed charge. These multiples all include GST.

SunWater's past termination fees and the Authority's Draft Report recommended termination fees, including annual increases are detailed in Chapter 6.

The Authority's recommended termination fees were higher than those charged by SunWater, as the Authority's approach:

(a) recovered 20 years of fixed costs with SunWater bearing the remaining fixed costs. SunWater's approach recovers 10 years of fixed costs with remaining fixed costs paid for by other users;

(b) reflected the Authority's estimate of fixed costs in the cost-reflective fixed charge. The Authority's cost-reflective fixed charge recovered all fixed costs. SunWater's fixed charges recovered only a portion of fixed costs. Therefore, some fixed costs are excluded from SunWater's termination fees;

(c) reflected the Authority's cost-reflective fixed charge and not the Authority's recommended fixed charge; and

(d) resulted in a multiple of up to 13.8 times the Authority's cost reflective fixed charge. SunWater's multiple is up to 9.4 of its fixed charge (Chapter 3).

Submissions Received from Stakeholder on the Draft Report

BRIG (2011e) agreed that termination fees should be calculated in such a way that the remaining customers do not incur any additional costs from the transfer of water back to the river.

CANEGROWERS Isis (2011b) agreed with the Authority that other users should not be responsible for carrying fixed costs on account of WAE shifted back to the river. Instead of having a fixed policy apply to WAE shifted back to the river, there should be flexibility to take account of the individual circumstances.

Authority's Response to Submissions Received on the Draft Report

The Authority notes stakeholders' agreement with the Authority's position that remaining customers do not incur additional costs due to the exit of distribution system customers.

The Draft Report recommended that SunWater's termination fee should recover 20 years of fixed distribution system costs, resulting in a termination fee multiple of 13.8 times fixed costs (incl. GST). Since then, additional matters have been considered including the incorporation of

estimates of cost saving (not previously incorporated in estimates of the multiple) and changes in the assumed fixed operating costs over time. As a result a multiple of just under 12 is considered more cost reflective.

When considered together with the implications for the competitiveness of the St George scheme relative to other adjacent MDB schemes – where a lower ACCC multiple would apply (11 incl. GST) – and administrative simplicity and consistency, the Authority proposes that a multiple of 11 (including GST) be applied by SunWater to cost reflective fixed charges when establishing termination fees.

A lower multiple could be applied at SunWater's discretion should it be consistent with SunWater's commercial interests (for example, by the prospect of early resales or in the interests of more efficient scheme management).

3.3 Water Use Forecasts

Introduction

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

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

For the Bundaberg Distribution System, SunWater (2006b) assumed a water usage forecast of 60% of the WAE in the channel system. Water usage for high and medium priority irrigation WAE were not separately identified (SunWater 2010a).

Draft Report

Stakeholder Submissions

SunWater

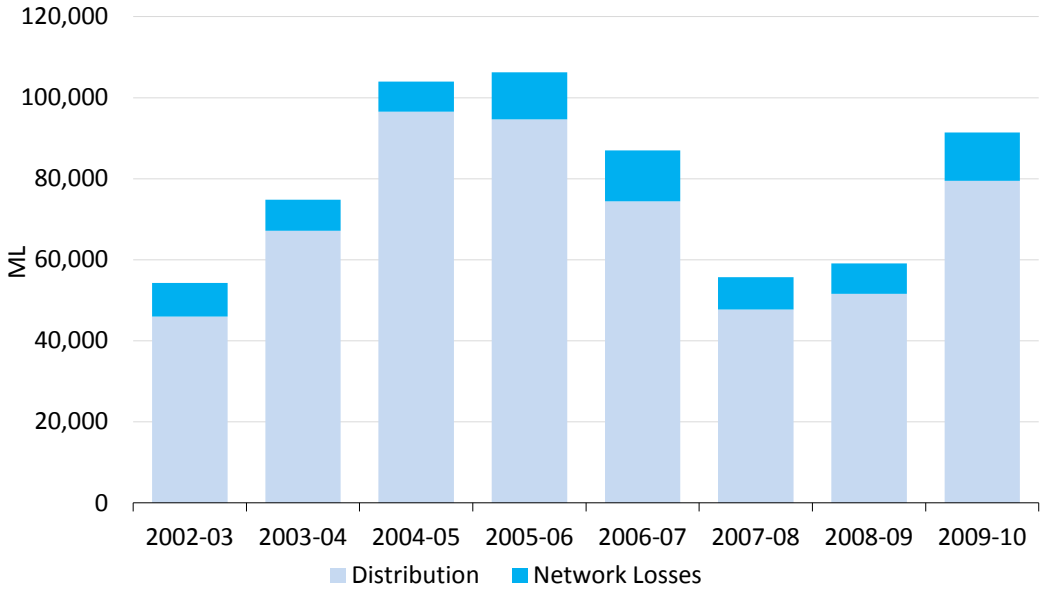
The available supply of water is determined by the announced allocations which are set according to rules contained in the resource operations plan (ROP).

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

SunWater's usage forecast for 2011-16 are made having regard to historic averages over an eight-year period and the usage forecast applied for the current price path. The forecast use for the distribution system is 50% of current WAEs and medium priority distribution losses, plus 100% of high priority losses.

Figure 3.1 shows the historic usage information for the Bundaberg Distribution System submitted by SunWater (2011). SunWater stated that over the past eight years, total water use in the distribution system has been 41% of current WAE.

Figure 3.1: Water Usage for the Bundaberg Distribution System



Source: SunWater 2011).

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

Nonetheless, the Authority considered past water use in calculating cost-reflective volumetric charges that recover variable costs (see Chapter 6 – Recommended Prices). Comments in relation to water use in the calculation of volumetric charges are noted in that chapter.

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 considered forecast irrigation water use (see Chapter 6 – Recommended Prices).

Distribution losses are addressed below.

3.4 Tariff Groups

The amended Ministerial Direction specifically directs the Authority to adopt the tariff groups as proposed in SunWater's NSPs, and not to investigate additional nodal pricing arrangements.

The previous SunWater Irrigation Price Paths Final Report (SunWater, 2006b) nominated one tariff group for the channel systems of the Bundaberg Distribution System – Distribution System or watercourse supplemented by a distribution system.

SunWater proposed in its NSP that it does not intend to significantly change the current tariff group, other than unbundling bulk water and distribution charges.

In accordance with the Ministerial Direction, the Authority will adopt the proposed designated single tariff group.

3.5 Distribution Losses

Introduction

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

In the previous price path, the costs of distribution losses were allocated to distribution users (SunWater, 2006a).

Draft Report

Stakeholder's Submissions

SunWater

SunWater (2011w) submitted that distribution loss WAE should be assigned bulk water costs (and water charges) due to the need to store these entitlements using headworks like any other types of WAE. They also submitted that these costs should be recovered from customers of the distribution system (by including them in that system's revenue requirement) on the basis that they are needed to provide the distribution service.

The projected usage for distribution losses in the NSP are based on the assumption that 100% of high priority loss WAEs are used each year and that medium priority loss WAEs reflect the same usage percentage as other medium priority WAEs in the distribution system. Therefore, in the case of the Bundaberg Distribution System, high priority loss WAE is assumed to be 16,080 ML per annum and medium priority loss WAE entitlement is estimated at 50% of 25,440 ML or 12,720 ML per annum.

Other Stakeholders

CANEGROWERS Isis (2011) submitted that the channel charges should be based on actual distribution loss. They also considered that costs should be apportioned according to deemed benefit.

CANEGROWERS (2011a) submitted that distribution loss allocations are around 40,000ML compared to actual losses of around 10,000ML and assumed future losses of around 21,000ML. This will unfairly have a major impact on the distribution systems share of bulk costs.

Authority's Analysis

As noted in the Draft Report, the Authority's general view was that distribution customers should pay for all distribution losses as identified in the distribution loss WAEs. Furthermore, that all distribution customers benefit from high priority losses, as these are released to fill the channel for all users and are not (solely) used to deliver high priority water.

In response to CANEGROWERS ISIS (2011), the Authority noted that, historically, SunWater has not used all distribution loss WAE in delivering water to customers. Table 3.2 shows the actual amount of water loss compared with loss WAE.

Table 3.2: Total Medium and High Priority Distribution Loss WAEs

Item	*2002-03*	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Loss WAE	41,520	41,520	41,520	41,520	41,520	41,520	41,520	41,520
Actual Loss	8,258	7,647	7,469	11,616	12,566	8,029	7,518	11,963
Actual loss as % of loss WAE	20%	18%	17%	28%	30%	19%	18%	29%
Water use as % of WAE*	30%	45%	64%	63%	49%	32%	34%	53%

*Note: * Refers to actual distribution system water use as a percentage of distribution system WAEs.*

This variation between actual losses water released and loss WAEs is due to two factors.

Firstly, it is due to the management of water releases under a system of announced allocations. In this regard, SunWater each year announces the portion of WAEs available to customers (the announced allocation) based on the level of water in the WSS storages. Where there is an announced allocation of 70% for medium priority WAEs, it also applies to medium priority loss WAEs. So in that year, up to 70% of the loss WAEs can only be released. This system explains, in part, why actual losses released cannot always equate to the full loss WAEs.

Secondly, the variation between actual losses water released and loss WAEs may be due to an excessive holding of loss WAEs. The Authority considers that, in principle, distribution system customers should not pay for distribution loss WAEs held by SunWater in excess of that needed to meet actual loss releases required as SunWater could benefit from their sale.

It was noted that DERM as resource regulator has progressively confirmed the distribution loss volumes through the water resource planning processes. Nevertheless, where it becomes evident that there is a sustained difference between the loss WAEs and actual losses, the loss WAEs should immediately be reviewed by DERM.

Prior to any finding that current loss WAEs are excessive, the Authority accepted the current loss WAEs. In order for SunWater to recover all prudent and efficient costs, all costs related to loss WAEs should be recovered from customers. The Authority recommended that distribution prices be calculated on the basis of total loss WAEs.

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

Submissions Received from Stakeholders on the Draft Report

Stakeholders at the round 3 consultation submitted that the Bundaberg Distribution system uses only 22% of its distribution losses and should only pay for this amount.

The Isis Central Sugar Mill (2012) submitted that there are significant differences between the actual losses and the nominal loss WAE and the Isis Central Sugar Mill believes this is artificially inflating costs. The Isis Central Sugar Mill supports the Authority's recommendation of a review of distribution losses by DERM.

CANEGROWERS Isis (2011a) submitted that actual losses need to be established to stop assumed losses impacting on water prices.

Stakeholders also highlighted that while HUF apportions more costs to HP, it was considered that this is not necessarily appropriate because the high priority distribution loss WAE is paid for by irrigators. Stakeholders submitted that high priority distribution loss WAE is paid for by medium priority channel irrigators – and this is a significant cost item in this scheme. On this basis, the benefits of the HUF are somewhat offset.

Authority's Response to Submissions Received on the Draft Report

As detailed in Volume 1, the Authority recommends a change to its Draft Report recommendation.

The Authority has now confirmed that there are three means for reviewing distribution losses under the *Water Act 2000*. As a consequence, the Authority recommends that prudent and efficient bulk costs associated with distribution loss WAEs should be paid for by distribution system customers, excluding the costs associated with distribution loss WAEs held by SunWater in excess of that needed to meet required actual loss releases. SunWater should bear the costs of holding distribution loss WAE greater than is needed to supply distribution customers.

The Authority's preliminary estimate of the excess distribution loss WAE is based on maximum actual distribution loss deliveries, adjusted for the level of water use in that year, based on available water use data from the past nine years up to and including 2010-11.

For the Bundaberg Distribution System, the Authority recommends that customers are allocated 78% of high priority distribution losses, and 0% of medium priority distribution losses.

The Authority's view remains that distribution customers should pay for distribution losses. Furthermore, that all distribution customers benefit from high priority losses, as these are released to fill the channel for all users and are not (solely) used to deliver high priority water. The Authority has accepted the HUF methodology as set out in Volume 1 and the Bundaberg bulk scheme report.

3.6 Paradise Dam

Introduction

The Paradise Dam is located on the Burnett River and was completed in 2006. It provides an additional 124,000ML of medium priority water and 20,000ML of high priority water to customers lying within the geographic boundary of the existing Bundaberg WSS. (These additional volumes are not part of the Bundaberg WSS subject to review by the Authority).

The Paradise Dam is owned and operated by Burnett Water, a wholly owned SunWater subsidiary.

The operations of Paradise Dam integrate with the existing storage infrastructure within the Burnett and Kolan river systems. The new water allocations resulting from the construction of the dam have been made available throughout the Bundaberg WSS. To date, a total of 11,229ML of WAEs from Burnett Water has been sold, and a further 3,279ML has been leased.

A letter from Minister Robertson, dated 28 September 2010, stated that the Authority has not been requested to recommend prices for water services provided by Burnett Water Pty Ltd and, therefore, for the purposes of this referral, the assets of Burnett Water Pty Ltd (that is, Paradise Dam and Kirar Weir) are not to be included in this review.

Draft Report

Stakeholder Submissions

SunWater

SunWater has advised that water charges for Paradise Dam are not relevant to the Authority's current review.

Other Stakeholders

Stakeholders raised a number of issues relating to the impacts of Paradise Dam on existing users, both in terms of bulk and distribution activities.

During the second round of consultations (April 2011), irrigators also stated that Paradise Dam has caused credit water to be removed so there is a lower standard of service and water reliability.

During the second round of consultations (April 2011), irrigators submitted that with the introduction of Burnett Water, SunWater distribution customers have experienced a reduced share of channel capacity. The irrigators questioned whether SunWater charges should be reduced to reflect a drop in service.

CANEGROWERS (2011) submitted that SunWater irrigators have experienced a 15% decrease of peak flow rate in the channel due to Burnett Water. Consequently, 15% of distribution costs, including distribution losses should be removed.

BRIG (2010) submitted that existing customers should not be paying for assets constructed to service new customers. BRIG stated that this was clearly outside the current agreement in relation to delivery of Paradise Dam water where channel capacity is limited. The sale of new allocation from Paradise Dam has constrained the flow rate available to south side irrigators when their supply is being pumped from Monduran (see Figure 3.2).

CANEGROWERS (2011) submitted that the new water out of Paradise Dam does not contribute towards the costs of running the bulk or distribution assets, except for electricity. They stated that this was despite the fact that the charges for Burnett Water reflect similar water charges to the old water plus a rate of return plus a capital charge when purchasing the water. Burnett Water customers have some access to SunWater channels in peak times and significant access in off-peak times. Burnett Water should pay for its share of channels and bulk water or it should not be permitted to use these assets.

BRIG (2011) commented that the Authority should further clarify the matter of Paradise Dam water pricing. BRIG noted that its concerns are related to the fact that SunWater delivers the old water (subject to the Authority's review) and the new Burnett water (not subject to the Authority's review) through the same distribution infrastructure. BRIG stated that the NSPs do not adequately address this issue and it is unclear how costs and income associated with the delivery of the new water are included in the information relating to old water pricing.

B Strathdee (2010) submitted that SunWater made water available from Paradise Dam on two occasions to growers only by application. A further charge of $30/ML was made and the water had to be used within a certain number of days. Mr Strathdee suggests that this extra charge and time limit is unfair.

N Baldwin (2010) submitted that an element of the yield of the Paradise Dam could be designated to service the currently held nominal allocations as opposed to capital sales of all the water which simply expands under-supplied water allocations.

Authority's Analysis

The Authority accepted SunWater's view that pricing matters relating to Paradise Dam are outside the Authority's purview. However, the issues raised by stakeholders relate to cost allocation between existing and new allocation holders are relevant, as there could be implications for pricing for existing users. In addition, customers have raised concerns as to whether there is a reduction in service standards for existing distribution system customers as a result of Burnett Water customers sourcing water through channels and, whether Burnett Water customers should contribute to existing distribution assets.

Service Standards

The Authority noted that the Paradise Dam and Bundaberg WSS operate as a single integrated system, but with separate charging arrangements for 'new' and old' customers. These charging arrangements were originally negotiated by SunWater and the irrigators' Customer Council.

Burnett Water customers can have SunWater deliver 'new' water to off-river irrigation activities through the existing channel system. This requires an additional supply contract and attracts additional charges.

In the Burnett Water Information Package (2005), SunWater sought to implement an arrangement to avoid a costly $100 million channel system upgrade by offering delivery options involving:

(a) peak period distribution services, without a capacity upgrade, for up to 15% of allocation served at each point (5% in Woongarra system); or

(b) off-peak distribution services.

SunWater advised that the 15% spare capacity was estimated taking into account an assessment of current capacity and recent utilisation. The take-up of capacity by Burnett Water customers results in a potential slight reduction in service standard, in that customers that previously could take up to 1% of their allocation each day can now take 0.95% of their allocation each day.

The Authority accepted that this is a slight reduction in service standards from that prevailing. However, it was noted that the approach taken is likely to be much cheaper for all customers as it avoids channel system upgrades, at least in the short term.

In response to comments made in round two consultation regarding credit water, the Authority sought further advice. Credit water was a temporary drought-related product arrangement to enable Burnett River irrigators to source water from weir releases from the Burnett River when announced allocations were below 100%. This credit water was in addition to announced allocation volumes. SunWater advised that the ability to provide this product was removed when the Burnett ROP was implemented, and was not a direct result of Paradise Dam.

Share of Distribution Costs

The pricing arrangements for Burnett Water customers are set out in the Burnett Water Information Package (2005).

Based on this, the Authority noted that Burnett Water users pay a higher price than Bundaberg WSS customers. The 2011-12 Burnett Water prices compared to Bundaberg WSS prices for are shown in Table 3.3.

Table 3.3: Comparison of Burnett Water and SunWater charges

		Burnett Water	***SunWater***
	Medium Priority	***High priority***	***Medium priority***
Initial purchase price for WAE	852	2562	-
Bulk charge – Part A	33.19	94.26	7.36
Bulk charge – Part B	11.47	11.47	11.47
Channel charge – Part C	23.52 to 57.36 (peak)[1] 8.24 to 42.12 (off-peak)	23.52 to 57.36 (peak)[1] 8.24 to 42.12 (off-peak)	39.04
Channel charge - Part D	20.25	20.25	20.25
Fixed channel charge	$244 up front or 36.64 annually (peak) $121 up front or 18.32 annually (off-peak)	$244 up front or 36.64 annually (peak) $121 up front or 18.32 annually (off-peak)	-

Note: 1 – Part C channel charges are set according to 5 segments in the Bundaberg Distribution system. Source: SunWater (2011).

The same variable (Part B) charges apply to Burnett Water and Bundaberg WSS customers, as there are no separate customer meters for 'old' and 'new' water.

For Burnett Water, the additional 'Part C' charges vary on a segment basis. There are five segments according to the scheme sub-systems – Abbotsford, Gin Gin/Bingera, Gooburrum, Isis and Woongarra. The lowest charge of $8.24/ML is for off-peak water in the Gooburrum system. The highest charge is $57.36/ML for peak supplies in the Abbotsford system.

As an example, a medium priority Burnett Water user in the Gin Gin/Bingera system will pay a Part A Burnett Water river charge ($33.19/ML), a Part B Bundaberg WSS river charge ($11.47/ML), a Part D Bundaberg distribution system channel charge ($20.25/ML). The segment Part C charge is $32.68/ML for peak supplies or $17.44/ML for off-peak. This total of $97.59/ML for peak supplies compares to a charge of $78.12/ML for existing users (all 2011-12 charges). In addition, Burnett water users pay an initial purchase price of $852/ML and a fixed distribution service charge of $244/ML for peak use or $121/ML for off-peak use.

As indicated in the Burnett Water Information Package (2005), the Part C charge will be indexed at the consumer price index (CPI) for 10 years and a record kept of costs and revenues to assess performance against lower bound cost recovery. The Part C charge was intended to cover additional electricity costs attributable to Burnett Water. Any surplus revenues accrued over the 10-year period from these charging arrangements will be used to offset any additional operating and maintenance costs and contribute to capital works required to deliver future 'new' water. The Burnett Water Information Package (2005) indicates that the charges are not set to make a profit for SunWater. The charges for 'old' and 'new' water may be merged if considered reasonable after 10 years (that is 2015-16) or when more than 65,000ML are sold into the channel system, whichever occurs first. However, water from Paradise Dam would still attract an upfront capital charge. The Authority considered that the merger of the charges may be best implemented at the start of the next price period (2017-18) to avoid confusion regarding prices in 2015-16 and 2016-17.

In effect, in return for existing users accepting unchanged Part B charges, all additional costs including electricity and future marginal costs including capacity costs are passed through to 'new' customers. In the long term, existing customers should benefit to the extent that lower bound costs for the overall scheme should be more easily met with the addition of new WAEs.

Of further note, the existing arrangements as described above were negotiated between Burnett Water and irrigator groups on behalf of irrigators at the time that 'new' allocations were made available. It is clear that Burnett Water customers are, by paying the same Part B charges as Bundaberg WSS irrigators, covering their share of marginal (variable) costs for the Bundaberg WSS. However, they are also making a significant contribution to distribution system costs, by means of the long term arrangement that is in place to manage any surplus revenues for the benefit of all irrigators.

The Authority considered that, as Burnett Water is taken up, and the two schemes ultimately merge, the bulk fixed costs should decline on a per ML basis. Until they are merged, there is no scope for unit savings to be achieved in the bulk component of the scheme.

However, the Authority noted that, in the distribution system, the additional volumes should result in slightly lower costs per ML, in the absence of any channel system capacity upgrades.

The Authority therefore did not propose to make any adjustments to lower bound bulk costs in the Bundaberg WSS in response to the availability of 'new' water. However, distribution system fixed costs were proposed to be apportioned across all volume supplied through the distribution system, including water sourced from Burnett Water, for the purposes of determining lower bound costs.

In response to comments made at round two consultation and CANEGROWERS, allocating costs to Burnett Water customers will decrease the portion of costs allocated to SunWater distribution system customers.

SunWater's NSP details the electricity costs in the Bundaberg WSS attributable to the Burnett Water users assuming a volume of 3,410ML at a cost of $28.45/ML. As noted above, there is no proposed contribution to distribution system costs that would otherwise result in a revenue offset for existing users.

SunWater advised that distribution services are provided for a total of 5,832ML of Burnett Water contracts (including 2,483ML peak) and a further 2,515ML of leased Burnett Water (all off-peak). SunWater's estimate of 3410ML in the NSP reflects the expected level of usage of these WAEs (about 41%).

In response to CANEGROWERS, BRIG, Strathdee and Baldwin, Paradise Dam [Burnett Water] charges are beyond the scope of this review.

Stakeholder Submissions Received on the Draft Report

Irrigators at the round 3 consultation submitted that channel users have lost 15% of their peak capacity to Burnett Water and [Burnett Water customers] should be allocated 15% of the distribution system fixed costs. ISIS Central Sugar Mill (2012) and CANEGROWERS Isis (2011a) also submitted that 15% of all distribution system costs excluding electricity should be allocated to Burnett Water.

BRIG (2011e) submitted that if large amounts of new [Burnett Water] allocation are sold during the price path, the price determination should allow the Authority to recalculate tariffs, taking into account the additional SunWater income.

Irrigators at round 3 consultation considered that ROP compliance costs should be entirely allocated to Burnett Water users as they relate to Paradise Dam. Similarly, BRIG (2011e) submitted that ROP compliance costs were not incurred until Paradise Dam was built. BRIG submitted that Burnett Water should meet ROP compliance costs, and requests the Authority to examine this issue to ensure correct cost allocation.

Authority's Response to Submissions on the Draft Report

The Authority's cost allocation method is described in detail in Chapter 6, and allocates fixed costs to all WAE holders that use the distribution system, including Burnett Water customers. Fixed costs are allocated on the basis of WAE, rather than utilisation of peak capacity. Burnett Water customers currently hold 5.6% of total WAE in the distribution system, and are therefore allocated 5.6% of the fixed costs. The Authority's modelling for the Draft Report only took into account the WAE included in SunWater's NSP and as a result did not adjust for Burnett Water WAE. This error has been corrected for the Final Report to reflect cost allocation on the basis of all WAE, including that held by Burnett Water customers. This results in a $2.08/ML decrease in cost-reflective Part C charges relative to those presented in the Draft Report.

The Authority acknowledges that the amount of Burnett Water WAE used in the distribution system may increase during the price path as available WAE is purchased. The Authority has not attempted to forecast the uptake of available Burnett Water WAE for allocating costs and has allocated costs based on current WAE held. The Authority accepts BRIG's submission that further sales of Burnett Water into the distribution system increase the WAE across which fixed costs can be spread, enabling a smaller $/ML cost to be recovered from each WAE holder.

Any material $/ML cost reduction due to a larger amount of WAE in the distribution system should therefore be passed to distribution customers. This may occur within period, or at the end of the period, depending on materiality. The Authority will consider stakeholder submissions to this effect during and at the conclusion of the regulatory period.

In relation to ROP compliance costs, the Authority is required to accept SunWater's tariff groups, which do not include a separate tariff group for Burnett Water users of the Distribution System. As a result, the Authority does not consider that it can allocate SunWater's ROP compliance costs directly to Burnett Water customers that use the Distribution System.

The Authority notes that SunWater must comply with the ROP, and will incur costs of doing so. The Authority believes that the consideration of whether SunWater is incurring ROP compliance costs relating to Paradise Dam is not a matter of cost allocation, but of prudency. The Authority considers that any ROP compliance expenditure incurred by SunWater on Paradise Dam is not prudent and should not be recovered through SunWater's tariffs. Such costs should be incurred by Burnett Water and recovered from all Burnett Water customers, not just those that use the SunWater Distribution System. However, the Authority has no jurisdiction to recommend costs or tariffs for Burnett Water.

In the absence of a detailed review of ROP compliance costs, the Authority does not consider that SunWater's ROP compliance expenditure is imprudent and has therefore made no specific adjustment to these costs. However, the Authority notes that 5.6% of Distribution System fixed costs, including ROP compliance, are allocated to Burnett Water customers due their WAE holding (rather than as a separate SunWater tariff group).

3.7 Gin Gin Main Channel – Allocation of Costs to Bulk Water Services

Draft Report

Stakeholder Submissions

SunWater

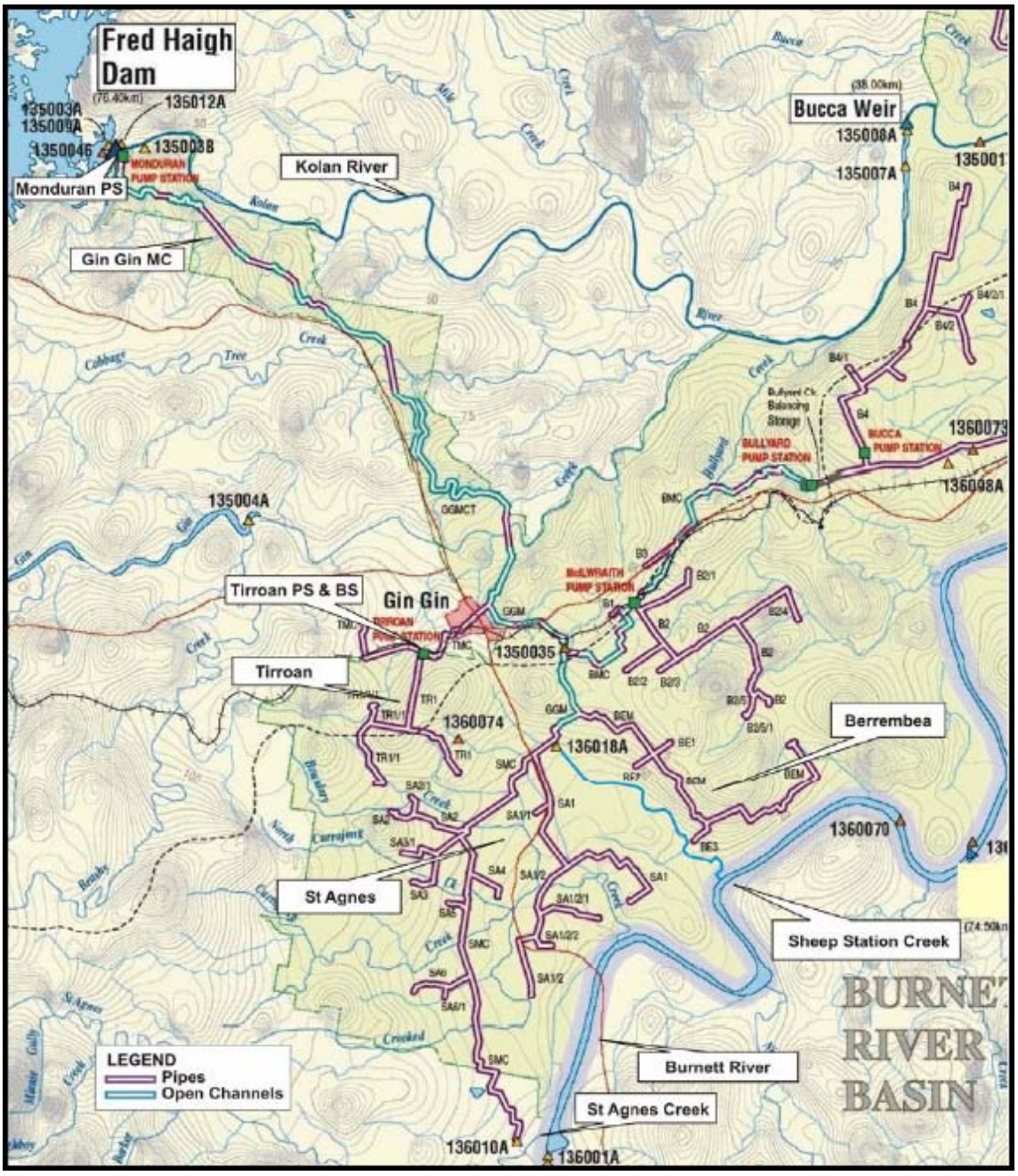
In the Bundaberg WSS NSP, a provision of 8% of the lower bound costs of Gin Gin main channel and the Monduran pump station are included in bulk costs. This reflects the occasional need to pump water from the Kolan system to supplement supplies in the Burnett.

SunWater proposed that the costs of the Gin Gin Main Channel that should be attributed to bulk are equivalent to $118,000 in the 2010-11 year. This covers an 8% share of operating costs including electricity, indirect costs and overheads and the renewals annuity associated with the pump station and the channel. However, SunWater has not included the adjustment in its proposed operating costs for Bundaberg WSS and Bundaberg Distribution System in its NSPs.

Subsequent to the receipt of the NSPs, SunWater proposed to the Authority that the total cost transfer from the distribution system to the bulk scheme was $61,000 in 2012-13. This amount includes $12,000 of renewals annuity and $49,000 of operational expenditure.

The Gin Gin distribution sub-system is shown in Figure 3.2.

Figure 3.2: Gin Gin Distribution System



Source: SunWater (2011).

Other Stakeholders

BRIG (2011) commented that the bulk water NSP for Bundaberg is not a simple storage model with a portion of distribution costs for Gin Gin channel being included to cover the transfer of water from the Kolan River to the Burnett River. BRIG questioned the magnitude of this transfer as it expects SunWater will use the unsold water in Paradise Dam instead of pumping water from the Kolan River.

BRIG (2011) stated that it does not expect there to be much water transferred from the Fred Haigh Dam to the south side due to unsold water in Paradise Dam.

CANEGROWERS (2011) submitted that the use of channel infrastructure for the bulk system needs to be reviewed. In this case 8% of the costs of the Gin Gin main channel and associated pump station are attributed to the bulk system. CANEGROWERS submitted that if any deemed bulk customers are using any part of the channel infrastructure they should be paying the same channel charge as growers within the channel system for the proportion of their allocation which is typically delivered through the distribution system.

Authority's Analysis

For the 2006-11 review, the Tier 1 Working Paper No 14 indicated that, in relevant schemes, a proportion of the costs of relevant pump stations and main channels would be allocated to irrigators in supplemented streams. However, the Tier 1 Report for the 2006-11 price path did not provide any details of the actual proportion of any distribution costs attributed to bulk users in the Bundaberg WSS.

The Authority noted that the Burnett ROP makes provisions for transfer of water under certain conditions:

(a) when Fred Haigh Dam is above 59.13m AHD and Paradise Dam is between 52.8m AHD and 46.3m AHD, the first 760ML/day demand on the Burnett River downstream of the confluence of Sheepstation Creek less the volume required for the Gin Gin-Bingera system, is to be supplied from Fred Haigh Dam; and

(b) when Fred Haigh Dam is above 59.13m AHD and Paradise Dam is below 46.3m AHD, water may be released from Fred Haigh Dam to meet the demand on the Burnett River downstream of the confluence of Sheepstation Creek.

In further requests for information, SunWater advised that the Integrated Quantity and Quality Model (IQQM) was used to model the total channel flow volumes at the channel intake and total channel outflows to supplemented watercourses in the simulation period of more than 100 years.

With the addition of Paradise Dam, the need for any additional pumping and use of the Gin Gin Main Channel to supplement the Burnett River will be much reduced. SunWater advised that the 8% factor represents a proportion that is likely to be pumped from the Kolan to the Burnett over the longer term, assuming full take-up of Paradise Dam WAE, but also taking into account ROP constraints.

The Authority noted that, with the large volume of unused WAEs in Paradise Dam, and given current capacity levels (100% in both Fred Haigh and Paradise Dams) the likelihood that Gin Gin Channel will be used as a bulk asset is very low for the foreseeable future.

However, given the requirements of the ROP, it was clear that Gin Gin Channel serves a bulk water function and it is appropriate that a proportion be allocated to bulk. As long as the ROP makes such provision, a relevant portion of the Gin Gin Main Channel should be included in bulk water costs.

The Authority had no reason to reject the outputs of the IQQM and proposed to accept SunWater's revised cost transfer of $61,000 in 2012-13.

The Authority noted that the cost transfer as proposed by SunWater in its NSP represents about 7% of total Bundaberg WSS total operating and renewals costs.

In relation to submissions:

(a) as noted by BRIG, there is scope for additional flows from Paradise Dam to reduce the need for transfers from Fred Haigh Dam. However, this is limited under the ROP rules; and

(b) in relation to CANEGROWERS' comment, the Authority considers that, where possible, prices should reflect costs incurred in service provision. Bulk customers use only a proportion of total distribution assets, and in circumstances where an asset has joint usage, it is appropriate that bulk customers be allocated a share of the costs commensurate with their relative usage of the asset.

The Authority noted that such a principle, if applied more widely, would be consistent with cost-reflective segment-based or nodal pricing. However, the Ministers' Direction requires the Authority to adopt only the tariff groups as identified in SunWater's NSPs and not to adopt any additional nodal pricing structures. The proposed cost allocation approach for part of the distribution system cost to be met by bulk customers remains consistent with the Ministers' Direction as it does not change the existing tariff groups nor introduce new nodal charges.

Stakeholder Submissions Received on the Draft Report

BRIG (2011e) reiterated its concerns that it did not expect much water to be transferred through from Fred Haigh Dam due to the large amount of unsold water in Paradise Dam. BRIG requested further investigation of the hydrological modelling.

Irrigators during round 3 consultation also requested more detail about the calculation of cost allocation to the bulk system, including how the $61,000 was calculated, which electricity price was used and whether the average or the Gin Gin specific pumping costs are adopted.

Following the Draft Report, SunWater submitted that the IQQM methodology to determine the allocation of channel costs to bulk schemes – including the $61,000 allocation of costs to the bulk system – is the most appropriate for estimating the longer term volume of water transfers under existing ROP rules and is an appropriate basis for allocating the cost transfer.

SunWater (2012a) submitted that it is appropriate to use the IQQM data for this purpose and it contains the best data available.

Authority's Response to Submissions on the Draft Report

The Authority notes that, due to the ROP, some proportion of channel costs should be allocated to the bulk system. The Authority considers that the potential benefit of a detailed review of SunWater's IQQM modelling in relation to this matter is limited, particularly given the above lower cost nature of the bulk scheme.

The Authority therefore accepts SunWater's IQQM modelling and proposes no change to its Draft Report recommendation.

4. RENEWALS ANNUITY

4.1 Introduction

Ministerial Direction

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

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

Previous Review

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

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

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

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

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

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

Issues

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

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

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

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

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

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

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

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

(d) the methodology to calculate the renewals annuity.

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

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

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

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

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

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

An additional six past renewals items across all schemes were reviewed for the Final Report, bringing the share of past renewals expenditures reviewed from 29% in the Draft Report to 34% by value. A further 14 forecast renewals items were reviewed, increasing the share reviewed from 13% in the Draft Report to 29% by value. The size of the sample is sufficiently large to determine and apply separate cost savings to past (and forecast) non-sampled items.

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

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

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

SunWater submitted that the opening balance for the Bundaberg Distribution System (including the Bundaberg Bulk System) was $547,000.

For the Draft Report, the Authority accepted SunWater's unbundled opening ARR balance for Bundaberg Distribution (excluding the Bundaberg Bulk System) of $427,000.

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

In the Draft Report, the Authority indicated that in October 2011 Indec had uncovered actual renewals expenditure for 2000-06. The Authority was not able to review this information or quality assure it for the purposes of the Draft Report, but stated its intention to do so for the Final Report.

Final Report

For the Final Report, the Authority has used the actual renewals expenditure for bulk and distribution assets over the period to revise the opening 1 July 2006 balances accordingly (see Volume 1).

As a result, the 1 July 2006 opening ARR balance for the Bundaberg Distribution System is revised to $942,000 (a rise of $ 515,000 on the Draft Report).

4.3 Past Renewals Expenditure

Draft Report

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

Stakeholder Submissions

SunWater

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

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

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

	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***
Renewals Expenditure	1,491	1,070	960	1,590	2,080

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

Other Stakeholders

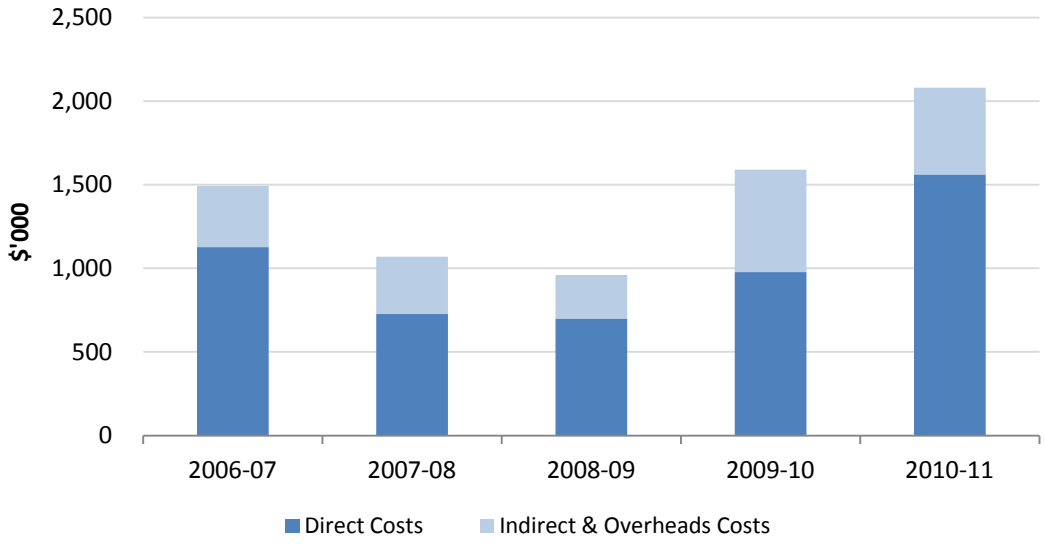
No other stakeholders have commented on these items.

Authority's Analysis

Total Renewals Expenditure

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

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



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

Stakeholder Submissions Received on the Draft Report

CANEGROWERS Isis (2011a) submitted that it seems that the capital replacement program is determined by anticipated life of the asset rather than its real life. CANEGROWERS Isis considered that equipment should only be replaced as required not by a measurement of time.

Authority's Response to Submissions Received on the Draft Report

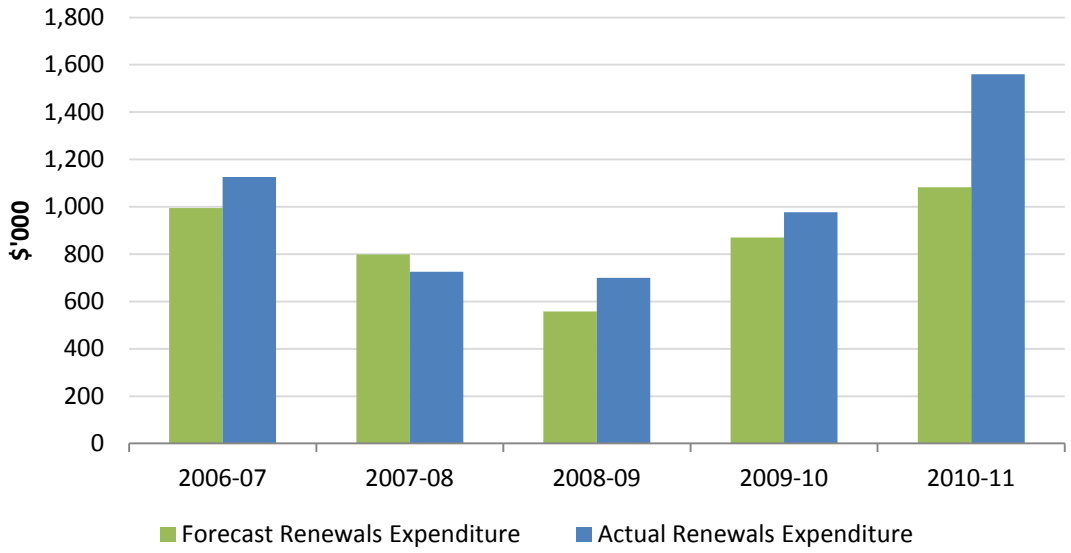
The Authority notes that while long term asset renewal planning undertaken by SunWater is based primarily on asset life, SunWater does undertake asset condition assessments to inform renewals expenditure in the near future. The Authority considers that an approach to asset renewal planning to places more emphasis on renewals expenditure in the near future is appropriate. This adequacy of SunWater's asset planning has been discussed in more detail in Volume 1, and has been assessed on an item by item basis by the Authority's consultants (see future renewals items below).

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 Bundaberg Distribution System for 2006-11 is shown in Figure 4.2.

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



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

Actual renewals expenditure was $785,000 (direct costs) above that forecast over the period, including $586,000 of unplanned expenditure on Intersafe.

Review of Past Renewals Items

Halcrow was appointed to review the efficiency (and prudency where not previously approved) of past renewals expenditure items. SKM was also appointed to provide an assessment of selected item(s).

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

As noted in Volume 1, the Authority has accepted Halcrow's (2011) and SKM's (2011) findings that the state-wide Intersafe Program (of $13.6 million) is prudent and efficient.

In its review Halcrow found that:

(a) the expenditure was prudent on the basis that SunWater has a legal obligation to ensure the workplace health and safety of its employees;

(b) costs represent market rates as SunWater sought competitive tenders and used contractors to deliver the program; and

(c) the program was completed on time and within budget.

SKM concluded that:

(a) SunWater's procedures were robust and, by developing standard infrastructure, implementation costs will have been reduced through economies of scale;

(b) given the nature of the works, it was appropriate for SunWater to develop a program of works to implement the identified solutions as swiftly as reasonably possible; and

(c) the costs incurred by SunWater in implementing the works have been subjected to competitive forces and hence can be considered as market costs.

In relation to Intersafe expenditure in the Bundaberg Distribution System specifically, the Authority has sighted SunWater's tender assessment which confirms a competitive process as six tenders were received, of which five were evaluated in detail by a three-person evaluation committee. The winning tenderer was awarded based on cost effectiveness. The actual Intersafe amount spent by SunWater in the Bundaberg Distribution System ($756,596) is consistent with the expected value (including contingencies) of winning tender.

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

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

Aurecon noted a number of limitations in the general past renewals information provided by SunWater including:

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

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

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

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

In addition to recommendations on the general level of past renewals information, Aurecon assessed the prudency and efficiency of two individual past renewals items.

Item 1: Woongarra Pump Station – Replacement of Electrical Control System (2011)

Draft Report

Aurecon reviewed both past and future renewals expenditure relating to this item. Aurecon's assessment of future renewals expenditure is discussed in section 4.5 below.

This item relates to the design, specifications and cost estimate of the works required for the replacement of the Electrical Control system. SunWater forecast a cost of $60,500 (direct and indirect costs) in 2010-11.

Other Stakeholders

No other stakeholders have commented on this item.

Aurecon's Review

Aurecon noted that despite a forecast cost of $60,500 in 2010-11, SunWater had not expended any costs up to February 2011.

Aurecon noted that the proposed expenditure aligns with a number of other similar proposals across pump stations both within the Lower Mary, and at Bundaberg. Aurecon noted that a certain level of upgrading and changes had been made on the control panels since originally built, however most of the electrical control equipment appeared to be original, and somewhat dated causing issues for the replacement of parts as required.

SunWater indicated that some parts were not obtainable on the marketplace. The pump station was built around 1979, making the pump station around 32 years old. Aurecon noted that some upgrading of electrical equipment was carried out in 1998, meaning that even the upgraded equipment would be dated by today's standards.

Aurecon noted the Parsons Brinckerhoff report Audit of Electrical Sites (PB, 2009) highlighted the need for the replacement of control panel at Woongarra Pump station as a high priority to be undertaken in the short term. At the Dinner Hill pump station at Bundaberg (with a similar electrical panel structure projected for replacement in 2012-13) Aurecon noted the increasing frequency of breakdowns and repairs required in recent years.

Aurecon noted that in recent years SunWater adopted a two- to three-year work program which involved an internal assessment of the works project, followed by detailed design works and specification in the second year undertaken typically by SunWater, which also included the preparation of the works program for tendering. The tendering process may also be completed in this year, with the final year involving the engagement of an external contractor for the manufacture and installation of the new electrical control system.

Aurecon made the following observations:

(a) SunWater employed a structured process employed for the replacement of a significant asset, supported to a large degree by the external expert report by PB. A number of other major pump station locations are also proposed for similar renewal expenditure;

(b) costs incurred for Stage 1 (2010-11) are predominantly incurred by SunWater staff; and

(c) the proposed upgrading will allow external monitoring and remote control of the pump house facilities, improving labour efficiencies.

Based on a review of information and reports provided, particularly the PB study and the site inspection visit and discussions held with SunWater staff, Aurecon considered that the proposed direct costs are both prudent and efficient.

Authority's Analysis

The Authority accepted Aurecon's recommendation that the 2010-11 expenditure relating to the replacement of electrical control systems at Woongarra Pump Station is prudent and efficient.

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Item 2: Monduran Pump Station – Roof and Gutter Replacement

Draft Report

This item relates to the replacement of roof and gutters at the Monduran Pump Station in 2008-09 at a cost of $280,132 (including direct and indirect costs).

No other stakeholders have commented on this item.

Aurecon's Review

Aurecon examined the works undertaken at the pump station during its field trip investigation to Bundaberg. During the visit, Aurecon was able to identify residual damage (staining) to ceiling/walls caused by water leakage from the previous roof. SunWater also provided condition assessments for the pump station which identified the need for roof works.

Aurecon also examined the expenditure associated with roof replacement, which Aurecon estimated had a surface area of approximately 880m^2. Aurecon noted the complexity of the roof in terms of height from ground, the need for insulation protection from lighting, and a central gantry walkway on the roof which would have required removal and re-installation.

SunWater provided to Aurecon background files which contained:

(a) three quotes by external contractors for the replacement of the roof (January 2008), which were utilised for project budgeting purposes. The range in cost for these quotes ranged from approximately $190,000 (excluding GST) to approximately $245,000 (excluding GST);

(b) tendering process documentation including advertisements within the Bundaberg Newspaper and Qld Government Tendering;

(c) two tenders that were submitted; and

(d) the invoice for the contractor (remove original roof/insulation/roof catwalk, and installation of new roof 0.42 Ultra Interdeck roofing, insulation, and catway installation) of approximately $220,000 (including GST).

Aurecon viewed the expenditure of $220,000 for the contracted works as efficient.

The remaining amount ($60,000) of renewals expenditure included SunWater labour costs associated with project management, equipment hire, and indirect costs and overheads.

Based on information reviewed and the site inspection visit, discussions held with SunWater staff and examination of the works undertaken, Aurecon considered that the renewal expenditure was both prudent and efficient (direct costs).

Authority's Analysis

The Authority accepted Aurecon's conclusion that the replacement of roof and guttering at Monduran Pump Station is prudent and efficient.

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Item 3: Isis Pump Station - Replace PLC and SCADA

Subsequent to the Draft Report, the Authority reviewed a number of renewal items to increase the portion of SunWater's renewals program subject to intensive review.

The Authority engaged SKM to review this item.

SKM's Review

SKM reviewed costs incurred between 2005 and 2006 according to the documentation provided to SKM by SunWater. SKM drew on the following Annuity Item specific replacement reports produced by SunWater for this review:

Table 4.2: SKM's Reviewed Documents

Document No.	*Document Name*	*Document Title*	*Date*
1175623	1175623 – v1 ISIS	CTRLS UPGRD Project Brief	31-3-2005
1175629	1175629 – v1 ISIS	CTRLS UPGRD Scoping Analysis	June 2004
1175628	1175628 – v1 ISIS	CTRLS UPGRD SW Capitalisation	10-6-2009
1175631	1175631 – v1 ISIS	CTRLS UPGRD	15-8-2005
1175632	1175632 – v1 ISIS	CTRLS UPGRD Mtg Minutes	15-10-2005
1175635	1175635 – v1 ISIS	CTRLS UPGRD Mtg Minutes	14-10-2005
1175638	1175638 – v1 ISIS	CTRLS UPGRD Mtg Minutes	31-10-2005
1175639	1175639 – v1 ISIS	CTRLS UPGRD Mtg Minutes	27-03-2006
1175640	1175640 – v1 ISIS	CTRLS UPGRD Quote Schneider	18-04-2006
1175641	1175641 – v1 ISIS	CTRLS UPGRD Finance Information	21-06-2007
1175643	1175643 – v1 ISIS	CTRLS UPGRD Capitalisation	23-06-2007
1175644	1175644 – v1 ISIS	CTRLS UPGRD Finance Information	15-05-2008
-	Item 4	Installation of PLC at Don Beattie Pump Station	-

Prudency Review

In June 2004 SunWater completed a scoping analysis on the replacement of the existing PLC network and installation of a SCADA system for the Don Beattie Pump Station. The scope of work was identified and included the following:

(a) replacement of the Station PLC (1 off) and Pump PLC (3 off) with a single PLC with the appropriate I/O modules;

(b) installation of a SCADA system with a dial-up facility for remote control; and

(c) replacement of vibration sensors and monitoring equipment.

The estimated cost was $167,143. The upgrade work was considered to be an important requirement in ensuring the future serviceability of the system. This formed the basis for the projects undertaken from 2005 to 2006.

The system consists of 4 PLC's and data concentrators; 3 installed in 1987, with the fourth installed in 1991. The following issues have been listed:

(a) the hardware design is cumbersome, and the software is difficult to use, which creates maintenance and troubleshooting difficulties;

(b) for operation outside of the peak irrigation season the operators prefer a time-controlled mode with selectable duty pumps. This mode cannot be easily added to the existing system;

(c) the Givelda storage requires an additional level sensor to operate correctly. However addition of an additional sensor with the existing system would require substantial software modifications;

(d) there is no capability for electronic data logging;

(e) any hardware modifications will require the software to be re-written, because the existing software documentation is non-existent. The cost would be expected to be large, as the software was provided 17 years ago and is no longer supported; and

(f) the PLC hardware (17 years old) is approaching its life expectancy.

Efficiency Evaluation

SKM viewed the condition report for this asset. As stated above SKM understood that the Isis Pump Station PLC asset was originally put into service between 1987 and 1991. SunWater's SAP WMS indicates that for facilities such as this the standard run-to-failure life for equipment such as SCADA is generally 15 Years, as defined for a low risk asset in the Whole of Life Maintenance Strategy. The risk categorisation given to the assets by SunWater is not clear. However, because SunWater states that part of the justification for replacement was to minimise call-out costs, SKM has assumed the risk category would be Low Risk. On this basis a "Run to Failure" policy was considered by SKM to be appropriate. A SunWater review states, by comparison with other SunWater sites with PLC equipment, the asset would have been close to its life expectancy by 2005. SKM agreed that this type of equipment has a typically short service life, quickly becoming obsolete and unsupported as technology improves. Furthermore, the supplier of the existing equipment (Honeywell) confirmed that it was their intention to phase out support for this model of equipment by 2010. The decision to replace hardware components and install software upgrades was therefore considered an appropriate and cost effective management of the assets.

Since, from SKM's assessment, SunWater's procedures for condition assessment have been followed from a pragmatic assessment, based on this condition assessment, SKM considered that this annuity item is prudent.

In considering whether or not the replacement PLC/SCADA system was required, SunWater has identified the existing problems as above. Assuming the existing equipment was approaching the end of its serviceable life, full replacement would appear to be the only realistic choice. The options for replacement were confined to:

(a) installation methods;

(b) addition of SCADA capability; and

(c) component selection.

The installation method chosen was for design and engineering work to be undertaken by SunWater staff. On the basis that SunWater has qualified personnel capable of performing the work; this would eliminate the costly need for preparation of Contract Documents for Tender, and would ensure the SunWater staff obtain knowledge of the system.

The addition of SCADA capacity would enable remote monitoring to be implemented, and would also enable electronic data logging. If this SCADA is to be implemented then SKM considers that the appropriate time to implement it is during a major equipment replacement.

Component selection was made to ensure commonality with other equipment on the SunWater system, so that maintenance personnel have some familiarity with it. SKM believe this is a prudent approach which will be cost effective in the long term.

SKM has sighted the contents page only of a document titled "SCADA Strategy, User Needs and Strategic Plan Reports, Outline Plan", which identifies the operational user needs for the SCADA.

SKM assumed the justification of the SCADA system implementation was initiated partly in response to the findings of this report.

As stated above, SKM considered that the asset had been allowed to run to failure. This had been confirmed by independent condition reporting which stated that the asset components were largely obsolete. On this basis the timing of the replacement was considered appropriate.

On the understanding that it is an accepted requirement for the SCADA automation to be operational, and that the addition of the SCADA functionality is required, SKM concluded that the need for replacement of this annuity asset has been demonstrated. As such the inclusion of this annuity item in the annuity value is prudent.

Efficiency Evaluation

The processes used by SunWater to establish future annuity item replacement costs are detailed in the main body of this report. For annuity items that require to be replaced within five years of the assessment date, SunWater's planning team updates the SAP WMS replacement cost record by either going to market for market prices, assessing the cost of recent similar projects of building a bottom up cost assessment based on detailed engineering design. It is understood that a mixture of these approaches was used to develop a budget prices for this past replacement item. This approach is considered reasonable and is in accordance with good industry practice, where the management of a large portfolio of assets is concerned.

SKM sighted a detailed Bill of Materials for the PLC/SCADA replacement. Three PLC equipment options were considered, all based on SunWater preferred equipment (Modicon) for reasons of standardisation as explained above. The hardware pricing ranged from $37,640 to $78,591, and the cheapest option, being adequate for current and future requirements, was selected.

In addition, pricing was also obtained by SunWater for the replacement vibration sensors and monitors. The project estimate for the PLC/SCADA replacement was prepared by SunWater staff and is presented in Table 4.3.

Table 4.3: Bundaberg Distribution Isis Pump Station PLC/SCADA Replacement Budget Expenditure

Cost Estimate, Don Beattie, Design and Contruction

PLC replacement	no/units	units	$/unit	$ inc Gst	comment
I/O lists	20	hours	$ 105	$ 2,110	
design drawing drafts	80	hours	$ 105	$ 8,439	
design drawings	80	hours	$ 93	$ 7,440	ES draftsperson
purchasing supervision	20	hours	$ 105	$ 2,110	
purchasing	20	hours	$ 56	$ 1,111	
PLC software development	80	hours	$ 105	$ 8,439	
PLC software testing in Brisbane	40	hours	$ 105	$ 4,220	
PLC/Sixnet interface testing	16	hours	$ 105	$ 1,688	
PLC software description	32	hours	$ 105	$ 3,376	
SCADA software development	80	hours	$ 105	$ 8,439	
SCADA testing in Brisbane	20	hours	$ 105	$ 2,110	
Operators manual	32	hours	$ 105	$ 3,376	
installation, electrician	150	hours	$ 56	$ 8,330	
installation, apprentice	150	hours	$ 49	$ 7,299	
installation supervision (John Hazzard)	80	hours	$ 86	$ 6,846	
commisioning	40	hours	$ 105	$ 4,220	
SCADA installation and testing	16	hours	$ 105	$ 1,688	
maintenance training	8	hours	$ 105	$ 844	
SCADA remote access testing	4	hours	$ 105	$ 422	
SCADA operator training	4	hours	$ 105	$ 422	
SCADA software installation manual	32	hours	$ 105	$ 3,376	
as built drawing modifications	20	hours	$ 93	$ 1,860	ES draftsperson
travel expenses	9	days	$ 135	$ 1,217	
car hire	9	days	$ 70	$ 630	
contingencies	1		$ 10,000	$ 10,000	
sum				**$ 100,010**	
Hardware specification	120	hours	$ 105	**$ 12,659**	3 weeks
Hardware specification	120	hours	$ 105	$ 12,659	3 weeks
PLC software specification	120	hours	$ 105	$ 12,659	3 weeks
SCADA software specification	80	hours	$ 105	$ 8,439	3 weeks
Tendering	1		$ 10,000	$ 10,000	
Contract supervision	40	hours	$ 105	$ 4,220	3 weeks
sum				**$ 47,976**	

On this basis a Works Order was produced for the project to the value of $153,288, which includes SunWater engineering and installation costs (and it is assumed, some contingency). SKM understood the project was completed as planned using predominantly SunWater engineering staff, although significant external assistance was needed to complete the software development.

SunWater also obtained pricing for replacement vibration monitoring equipment. The estimated cost was $37,353 and did not include installation, for which SKM allowed a further $35,000 resulting in a total additional cost of $72,353.

SKM reviewed the cost estimate. The number of hours (1,163) and their hourly rate allocated to each of the design components and for installation and configuration was considered reasonable for a small scale project of this type. SKM typically expected approximately 1,000 hours would be required for such a task and the SunWater estimate for labour of $100,010 is therefore within

the bounds of SKM's estimate. With regards to the hardware costs, SunWater obtained prices for three solutions options from the same preferred supplier. SKM compared the costs of the selected option with the prices from our internal database costs. The comparison is shown in Table 4.4.

Table 4.4 Costs Estimate of PLC/SCADA Hardware Components

Item	*SunWater Estimate*	*SKM Estimate*	*Variance*
PLC Processor, 30.8k memory, built in comms ports.	$1,690	$1,847	+9%
Digital Input cards capacity 12.	$255	$270	+6%
Analogue Input cards	$970	$695	-29%
Digital Output cards capacity 8.	$295	$275	-7%
SCADA Computer	$3,000	$2,500	-17%
Licence	$5,000	$5,000	-0%
Total	**$11,210**	**$10,587**	**6%**

Note: SKM costs are in 2012 dollar terms whereas SunWater's costs are in 2010 dollar terms.

The maximum variance from the SunWater estimate is 29% with the total variance being +6%. This places the SunWater costs within the level 4 (+/- 30%) order of magnitude estimating which SKM uses for capital project cost benchmarking. The quoted cost for PLC and SCADA equipment from the supplier (upon which the SunWater estimate was based) was $48,139. On the basis of the benchmarking costs listed in Table 4.4, SKM accepted this quoted cost as reasonable.

SKM understood from financial information provided that the actual project cost was $167,142.97, which represents a 9% cost overrun on the budget estimate of $153,288. This is a small cost overrun which SKM believed is tolerable and within industry norms. Added to this cost is the cost of the vibration monitoring equipment, which is additional to the original scope and bill of materials for replacement of the original SCADA which SKM estimated as being $72,353.

Conclusion on Efficiency Evaluation

From the cost benchmarking undertaken by SKM, SKM concluded that a reasonable estimate for the control system is:

PLC and SCADA hardware:	$48,139
Labour:	$100,010
TOTAL	$148,149

Added to this is the cost of the vibration monitoring equipment which is additional to the original scope for replacement of the existing SCADA system. SKM's estimate for this is $73,353. Adding this to the actual cost of the PLC and SCADA replacement ($167,143) gives a total work value of $239,496.

However, SKM noted that the annuity value submitted to the Authority in SunWater's Network Service Plan is $413,994. SKM considered that this value reflects the actual project expenditure, which was expanded to include the vibration monitoring equipment and unforeseen software development costs (understood to be significant) which had not been included in the original estimate. However, SKM considered that the major contributor to the difference in costs between SKM's estimate (which is comparable to the scoping study estimate) and the final outturn is cost overrun on software development which was originally planned to be developed in-house by SunWater and then was subsequently outsourced. SKM considered this cost overrun not to be consistent with what may be expected of an efficient operator in this case. The $413,994 submitted by SunWater in its Network Service Plan is therefore considered not to be efficient.

Authority's Analysis

The Authority notes that while the expenditure was considered prudent, but not efficient, the expenditure appeared to have been incurred before the 2007-11 price path period. The Authority accepts SKM's findings that the efficient amount is $239,496.

Item 4 - Intersafe

In the Authority's Draft Report, Intersafe expenditure in the Bundaberg distribution system was not specifically noted.

SunWater indicated that this project was not included in the 2006-11 price paths, however, SunWater decided to undertake the work following a report from Intersafe recommending that SunWater take action to reduce the safety risk to staff. Expenditure was $908,000 in 2010-11 in the Bundaberg distribution system.

The Authority engaged SKM to review Intersafe expenditure. SKM (2011) concluded that:

(a) SunWater's procedures were robust and, by developing standard infrastructure, implementation costs will have been reduced through economies of scale;

(b) given the nature of the works, it was appropriate for SunWater to develop a program of works to implement the identified solutions as swiftly as reasonably possible; and

(c) the costs incurred by SunWater in implementing the works have been subjected to competitive forces and hence can be considered as market costs.

The Authority accepted Intersafe expenditure as prudent and efficient.

Item 5: Flood Damage Repairs

Submissions Received from Stakeholders on the Draft Report

In its submission in response to the Draft Report, SunWater advised that additional information is now available on required flood damage repairs which need to be taken into account for the renewals annuity calculation. For the Bundaberg Distribution Scheme, the flood repair costs are $626,533 (actual) for 2010-11 and $123,491 (estimated) for 2011-12.

SunWater has advised that the 2010-11 flood damage repair costs are included in its proposed renewals expenditure and the 2011-12 flood damage repair costs are additional to its proposed renewals expenditure.

However, SunWater subsequently submitted that insurance revenue was also expected to be received, which would offset some of the flood repair costs. SunWater sought that this submission remains confidential as the negations with the insurer are still ongoing.

Authority's Response to Submissions Received on the Draft Report

As outlined in Volume 1, the Authority reviewed a sample of flood damage repairs across SunWater's schemes. The sampled items accounted for 30% of total flood repairs. SKM found that all sampled items were prudent and efficient.

However, the Authority notes that if flood damage repair costs are to be included then so should any offsetting insurance revenues. As insurance revenues are yet to be determined, the Authority has not included flood damage repairs costs in prices.

Therefore, once the insurance matter is settled, SunWater may apply for an adjustment to prices to account for the flood damage expenditure and revenue, or the ARR balances will be adjusted during the next regulatory review.

Conclusion

Draft Report

In the Draft Report, two items for the Bundaberg Distribution System were sampled. On the basis of the consultants review, the Authority considered that both items were prudent and efficient and were retained as past expenditure.

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

Final Report

Subsequent to the Draft Report, the Authority reviewed an additional renewals item and has excluded it from past renewals as it appears to fall outside of the 2007-11 period. The Authority also included Intersafe expenditure for 2010-11 that was considered prudent and efficient and excluded flood damage repair costs.

As outlined above and in Volume 1, the Authority undertook further sampling of past renewals expenditures across SunWater's schemes. The larger sample of items reviewed indicated that a lower average savings for past renewals expenditures could have been achieved. (A separate level of savings was calculated for forecast renewals expenditures – see further below).

After consideration of this further work, the Authority recommended that a 4% saving be applied to all non-sampled and sampled items for which there was insufficient information.

The Authority's recommendations are summarised in Table 4.2.

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

Item	*Date*	*SunWater ($,000)r*	*Authority's Draft Report Findings*	*Draft Recommended ($,000)*	*Authority's Final Report Findings*	*Final Recommended ($,000)*
Sampled Items						
1. Woongarra Pump Station – Replacement of Electrical Control System	2010-11	60.5	Prudent and efficient	60.5	Prudent and efficient	60.5
2. Monduran Pump Station – Roof and Gutter Replacement	2008-09	280	Prudent and efficient	280	Prudent and efficient	280
3. Isis Pump Station - Replace PLC and SCADA	2007 to 2009	413	Not sampled	10% saving applied	Incurred prior to 2007	0
4. Intersafe	2010-11	908	n/a	10% saving applied	Prudent and efficient	908
5. Flood damage repair	2010-11 and 2011-12	$626and $123	na	10% saving on 2010-11, 2011-12 not included	Excluded pending outcome of insurance claim	0
Non-Sampled Items				**10% saving applied**		**4% saving applied**

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

4.4 Opening ARR Balance (at 1 July 2012)

Draft Report

SunWater indicated that the renewals opening ARR balance for 1 July 2011 was $1,696,000 for the Bundaberg Distribution System. This estimate reflects the most recent information provided by SunWater to the Authority in September 2011 and differs from the NSP.

Based on the Authority's assessment of the prudency and efficiency of past renewals expenditure in the Draft Report, and the proposed methodology for unbundling ARR balances, the draft recommended opening ARR balance for 1 July 2011 for Bundaberg Distribution was $2,215,000.

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

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

(b) adding 2006-2011 renewals annuity revenue;

(c) subtracting 2006-2011 renewals expenditure; and

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

For the Draft Report, to establish the closing ARR balance as at 30 June 2012 of $2,255,000, 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.

Final Report

The Authority has revised its Draft Report estimate of the 30 June 2012 ARR to take account of the key changes since the Draft Report as outlined above including:

(a) a change in the 1 July 2006 opening ARR balance from the use of actual renewals data;

(b) the application of a 4% saving to non-sampled items and sampled items for which there was insufficient information; and

(c) removal of 2010-11 flood damage repair costs.

The combined effect of these changes is that the opening ARR balance for 1 July 2011 is revised from $2,215,000 to $3,106,000.

The resulting revised ARR balance as at 30 June 2012 is $3,060,000.

Both estimates are higher than the equivalent Draft Report estimates.

4.5 Forecast Renewals Expenditure

Planning Methodology

Draft Report

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

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

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

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that:

(a) the costs of undertaking options analysis (and associated activities including consultation) are excessive ($445,000 annually for all schemes);

(b) these costs are to be allocated exclusively to the irrigation sector; and

(c) although some of the Authority's consultants' suggested improvements have merit, they all involve additional cost. SunWater sought to implement only those that demonstrate a net-benefit.

Authority's Response to Submissions Received on the Draft Report

In response to SunWater, and as outlined in Volume 1, the Authority considers that:

(a) the cost of the options analyses is acceptable when compared to SunWater's total renewals expenditure ($14.5 million in 2011-12). In addition, SunWater's estimated $445,000 does not include the savings associated with options analyses;

(b) the cost of carrying out options analyses should be met by all water users (including irrigators and non-irrigators where they exist) in the relevant service contract; and

(c) SunWater should review its renewals planning process (taking into account the Authority's consultants' suggested improvements) and provide a copy of the review to Government and the Authority by 30 June 2014.

As noted in Volume 1, the Authority has not, therefore, amended its draft recommendations regarding SunWater undertaking high-level and detailed options analyses. The Authority has, however, modified its draft recommendation as noted in (c) above.

Prudency and Efficiency of Forecast Renewals Expenditure

Stakeholder Submissions

SunWater

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

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

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Abbotsford Pump Station	22	28		23	179
Berrembea Distribution		6			
Bingera Distribution	17	30	10	12	79
Bucca Pump Station				23	46
Bucca Weir		72			
Bullyard Distribution		6			14
Bullyard Pump Station	5				46
Childers Distribution		17			
Dinner Hill Pump Station	55	168			23
Don Beattie Pump Station	89	56		126	97
Farnsfield Distribution	87	90			
Gin Gin Main Channel Distribution			10	6	
Gooburrum Distribution	45	73	164	26	65
Gooburrum Pump Station	262	28	3	6	85
Isis Balancing Storage	62			13	
Isis Distribution		28	48	11	
Mcilwraith Distribution		18			
Mcilwraith Pump Station		51	66	375	
Monduran Pump Station	211	62	153	9	92
North Gregory Distribution			27	6	
North Gregory Pump Station			35		
Quart Pot Creek Pump Station	98	28			103
Tirroan Distribution	2				12
Tirroan Pump Station		73	108	276	
Walker Street Pump Station	5	28	13	47	
Woongarra Balancing Storage	44	15		7	
Woongarra Distribution	113	51	101	32	105
Woongarra Pump Station	491	102	119	138	46
Woongarra Relift	3			3	
Total	**1,611**	**1,030**	**847**	**1,142**	**997**

Source: SunWater (2011).

The major items incorporated in the above estimates are:

(a) Abbotsford Pump Station: replace low voltage switchboard: $179,000 in 2015-16. This switchboard was condition assessed in 2008 resulting in its replacement being scheduled for 2015-16;

(b) Dinner Hill Pump Station: supply and install Programmable Logic Controller (PLC) and Supervisory Control and Data Acquisition (SCADA) system: $168,000 in 2012-13. A new control system is to be installed at Dinner Hill Pump station as the current system is near to obsolete and to enable additional remote monitoring;

(c) Farnsfield Distribution Systems: replace part of pipeline on Section F06: $177,000 from 2011-12 to 2012-13. Due to condition, 120m of pipeline requires replacement;

(d) Gooburrum Pump Station: electrical component upgrade: $262,000 in 2011-12. The upgrade of electrical components at Gooburrum Pump station is required based on the age and obsolescence of the existing equipment;

(e) McIlwraith Pump Station: electrical upgrade: $329,000 in 2014-15. The electrical components of the pump station will be upgraded due to the age of the components and the unavailability of spares;

(f) Monduran Pump Station: cement line suction main: $109,000 in 2011-12. Condition assessment in 2006 of this suction main identified significant deterioration of the lining and hence the need for these remedial works;

(g) Wongarra Pump Station: replace PLC and Switchboards: $262,000, refurbish pump and motor $176,000 in 2011-12;

(h) Tirroan Pump Station replace low voltage switchboard: $184,000 in 2014-15. The low voltage switchboard will be replaced due to the age of the components and the unavailability of spares; and

(i) Woongarra Pump Station: electrical component upgrade: $262,000 in 2011-12. The electrical component upgrade is required based on the age and condition of existing components, as well as the unavailability of spares.

The major expenditure items from 2016-17 are:

(a) replacement of common control in the Woongarra Pump Station at an estimated cost of $2,433,000 in 2031-32;

(b) replacement of channel lining at the Bingera Distribution System at an estimated cost of $2,300,000 in 2032-33; and

(c) replacement of the channel lining in the Bingera Distribution System at an estimated cost of $2,644,000 in 2034-35.

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

BRIG (2011) submitted that it is aware that there are sections of pipeline requiring replacement, which is impacting on reliability. Given that there is a positive balance in the replacement fund [ARR], BRIG questions why is work done in a piecemeal fashion. BRIG (2011) submitted that it has noticed that the renewals are massively back ended. BRIG wishes to be assured that their

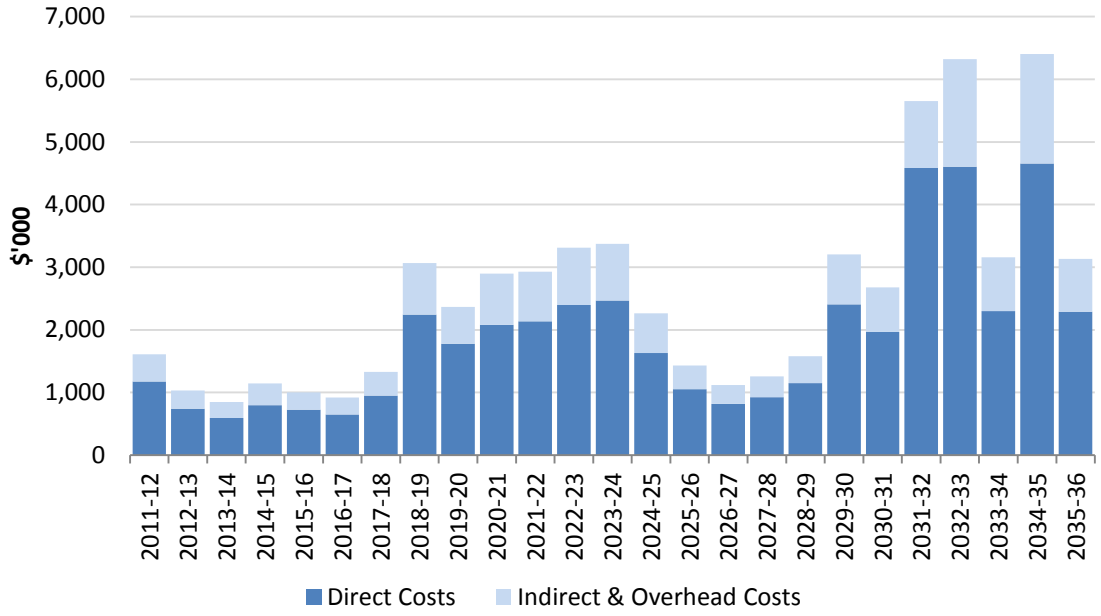
assumptions are valid as it does not wish to see the next generation [of irrigators] have to pay for underfunding now or vice versa.

Authority's Analysis

Total Costs

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

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



Source: SunWater (2011am).

In response to BRIG's (2011) concerns about the timing of replacement of pipeline assets, the Authority notes that SunWater's Works Management System captures asset risk and condition assessments to schedule renewals expenditure for each asset. As a consequence, similar assets may have differing replacement dates depending on their criticality and condition.

In relation to the large renewals program towards the end of the asset planning period, the Authority noted that under SunWater's asset management methodology, the timing of asset replacement is determined by a number of factors including asset life and risk and condition assessments. The Authority recommended in Volume 1 that high-level options analysis for all material renewals expenditures expected to occur over the recommended planning period, with a material renewal expenditure being defined as one which accounts for 5% or more in present value terms of total forecast renewals expenditure. The Authority considered that this recommendation addresses some of BRIG's concerns about the large amount of renewals over the 2031-35 period.

Review of Future Renewal Items

As for past renewals expenditure, Aurecon and SKM reviewed the prudency and efficiency of a sample of items.

Item 1: Woongarra Pump Station – Replacement of Electrical Control System (2011-12)

Draft Report

This item relates to the supply, installation, commissioning of PLC, switchboards and cables required for the replacement of the electrical control system at Woongarra Pump Station. SunWater forecast a cost of $262,000 (direct and indirect costs) in 2011-12.

No other stakeholders commented on this item.

Aurecon's Review

Aurecon noted that the proposed expenditure aligns with a number of other similar proposals across pump stations both within the Lower Mary, and at Bundaberg. Aurecon noted that a certain level of upgrading and changes had been made on the control panels since originally built, however most of the electrical control equipment appeared to be original, and somewhat dated causing issues for the replacement of parts as required. SunWater indicated that some parts were not obtainable on the marketplace. The pump station was built around 1979, making the pump station around 32 years old. Aurecon noted that some upgrading of electrical equipment was carried out in 1998, meaning that even the upgraded equipment would be dated by today's standards.

Aurecon noted that the PB report Audit of Electrical Sites (2009) highlighted the need for the replacement of control panel at Woongarra Pump station as a high priority to be undertaken in the short term. At the Dinner Hill pump station at Bundaberg (with a similar electrical panel structure projected for replacement 2012-13) Aurecon noted the increasing frequency of breakdowns and repairs required in recent years.

Aurecon noted that in recent years SunWater adopted a two- to three-year work program which involved an internal assessment of the works project, followed by detailed design works and specification in the second year undertaken typically by SunWater, which also included the preparation of the works program for tendering. The tendering process may also be completed in this year, with the final year involving the engagement of an external contractor for the manufacture and installation of the new electrical control system.

Aurecon made the following observations:

(a) SunWater employed a structured process employed for the replacement of a significant asset, supported to a large degree by the external expert report by PB. A number of other major pump station locations are also proposed for similar renewal expenditure;

(b) actual works are to be undertaken by specialised external electrical contractors; and

(c) the proposed upgrading will allow external monitoring and remote control of the pump house facilities, improving labour efficiencies.

Based on a review of information and reports provided, particularity the PB study and the site inspection visit and discussions held with SunWater staff, Aurecon considered that the proposed direct costs are both prudent and efficient.

Authority's Analysis

The Authority accepted Aurecon's recommendation that the 2011-12 expenditure relating to the replacement of electrical control systems at Woongarra Pump Station is prudent and efficient.

Final Report

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Item 2: Woongarra Balancing Storage - Refurbish Control Gate & Replace Weed Screen

Draft Report

At the Woongarra Balancing Storage, SunWater forecast renewals of $45,000 (direct and indirect costs) in 2011-12 relating to:

(a) refurbish control gate – remove and repaint gate, replace anodes & bearings ($22,000); and

(b) replace weed screen ($23,000).

No other stakeholders commented on this item.

Aurecon's Review

Although Aurecon undertook a site inspection, as water levels were up it was not readily able to inspect these assets specifically. However, Aurecon was able to make the following observations regarding these proposals:

(a) regular condition assessment reports were undertaken specifically for the gate and weed screen, providing detailed quantitative and qualitative assessments. Aurecon's review of these reports indicated that in recent years the condition scoring of these assets deteriorated, and subsequent recommendations made for the refurbishment of these assets;

(b) SunWater had detailed costing for similar work programs completed;

(c) the works would be undertaken by external contractors, based on a merit selection process; and

(d) SunWater indicated that the paint and bearings for the automatic control gates have a typical life of about seven years. Aurecon considered that the suggested life seems entirely credible given that the control gates are permanently in contact with water.

Based on the information and reports provided along with the site inspection visit and discussions held with SunWater staff, Aurecon considered that the proposed direct costs are both prudent and efficient.

Authority's Analysis

The Authority accepted Aurecon's recommendation that the 2011-12 expenditure relating to the refurbishment of the control gate and replacement of the weed screen at Woongarra Balancing Storage is prudent and efficient.

Final Report

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Item 3: Dinner Hill Pump Station - Replace Electrical Control System

Draft Report

SunWater has forecast $224,000 (including direct and indirect) of renewals expenditure at the Dinner Hill Pump Station relating to the replacement of the Electrical Control system as follows:

(a) prepare documents, drawings, specifications and cost estimate for PLC and SCADA system in 2011-12 at a cost of $55,000; and

(b) supply, implement, install and commission PLC and SCADA system in 2012-13 at a cost of $169,000.

No other stakeholders commented on this item.

Aurecon's Review

Aurecon noted that this proposed expenditure aligns with a number of other similar proposals across pump stations both within the Lower Mary, and at Bundaberg. Aurecon noted that the electrical control panels are original, and the equipment is somewhat dated causing issues for the replacement of parts as required. (SunWater indicated that some parts were not obtainable on the marketplace and utilized old or redundant part from other pump stations as spares for those pump stations still using original equipment).

Aurecon noted the PB report, Audit of Electrical Sites (2009), made recommendations for the replacement of these electrical control panels across pump house facilities across the state. At this site, Aurecon noted the increasing frequency of breakdowns and repairs required in recent years.

Aurecon noted that in recent years SunWater adopted a two- to three-year work program which involved an internal assessment of the works project, followed by detailed design works and specification in the second year (undertaken typically by SunWater), which also included the preparation of the works program for tendering. The tendering process may also be completed in this year, with the final year involving the engagement of an external contractor for the manufacture and installation of the new electrical control system. In this case, the process has been condensed over the two-year period of 2011-12 and 2012-13.

Aurecon made the following observations:

(a) SunWater employed a structured process for the replacement of a significant asset, supported to a large degree by the external expert report by PB. A number of other major pump station locations are also proposed for similar renewal expenditure;

(b) actual works to be undertaken by specialized external electrical contractors;

(c) costs incurred for Stage 1 (2011-12) are predominantly incurred by SunWater staff; and

(d) the proposed upgrading will allow external monitoring and remote control of the pump house facilities, improving labour efficiencies.

Based on the review information and reports provided, particularity the PB study, and the site inspection visit and discussions held with SunWater staff, Aurecon views that the proposed direct costs as being both prudent and efficient.

Authority's Analysis

The Authority accepted Aurecon's recommendation that the expenditure in 2011-12 and 2012-13 relating to the replacement of the electrical control system at the Dinner Hill Pump Station is prudent and efficient.

Final Report

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Item 4: Bingera Distribution - Replace Screens

Draft Report

SunWater has forecast renewals of $217,000 (including direct and indirect costs) in the Bingera Distribution sub-system relating to the replacement of screens in 2033-34.

SunWater has indicated that this renewal activity involves a total of seven screen functional asset locations.

No other stakeholders have commented on this item.

Aurecon's Review

Aurecon noted that these screens have a notional 30 service life, and were installed in 1983. Based on a recent condition assessment (score of 2), SunWater has extended the service life of these aluminium screens to 2033-34. These screens now have a 50-year operating life.

Based on the information presented within the 1997 Bill of Materials (BoM), and subsequently indexed by 2.09 as recommended by the Cardno report, the replacement direct costs assigned to each of the seven functional locations is $21,412.

Based upon a desktop review of the information provided, Aurecon views that the proposed renewal activity is prudent in terms of timing particularly as the projected replacement date is 20 years beyond its assigned asset life.

Although Aurecon was provided with a BoM, it did not provide sufficient information for Aurecon to undertake an evaluation of the appropriateness of the cost estimates. Hence, Aurecon was unable to validate the efficiency of the proposed renewal expenditure.

Authority's Analysis

The Authority accepted Aurecon's recommendation that the expenditure in 2033-34 relating to the replacement of screens in the Bingera Distribution System is prudent, but that SunWater has provided insufficient information to establish efficiency. The Authority therefore made no specific adjustments to this item, but applied a general 10% reduction in the value of this item as insufficient information was available to establish its efficiency.

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that the replacement value for the screens had been conservatively estimated at $27,000 per screen. SunWater submitted that the expenditure should be allowed in full, rather than subject to the 10% reduction in the Authority's Draft Report.

Authority's Response to Submissions Received on the Draft Report

Without further detailed justification of the replacement value of the screens, the Authority considers that the sufficient information to establish efficiency is still lacking. SunWater has not provided any additional details that would warrant a change in the Authority's conclusion. Further, after reviewing a larger sample of items since the Draft Report, and as noted in Volume 1 and further below, the Authority considers that a general cost reduction should continue to apply to non-sampled items and those items where there is insufficient information to establish prudency and efficiency.

Item 5: Bingera Distribution – Replace Concrete Lining

Draft Report

SunWater has forecast total direct and indirect renewals costs of $5,066,000 in 2032-33 and 2034-35 relating to the replacement of concrete lining in the Bingera Distribution sub-system.

No other stakeholders have commented on this item.

Aurecon's Review

Aurecon noted that the assigned standard asset life for concrete lined channels is 80 years. The Bingera Distribution channels were constructed in 1983, so the notional replacement year is 2062-63.

SunWater provided Aurecon with two separate condition reports:

(a) Condition Assessment for asset code CL08 (2007), which indicated scores of 4 for cracking in panels and concrete panel foundation, and a recommendation of replacing two bays; and

(b) Condition Assessment for asset code CL11 (2004), which indicated scores of 3 for cracking on concrete panels in most panels from pencil line thickness to 3mm.

SunWater has provided BoM for both of the items referred to above (CL08 and CL11). Aurecon's review of the asset database revealed that the actual works program is divided as follows:

(a) $2.36 million in 2032-33 (CL01-CL07, CL09, CL10, CL12, CL13); and

(b) $2.7 million in 2034-35 (CL08 and CL11)

Aurecon reviewed the BoM for the proposed replacement works (CL08 & CL11), along with unit rates for inputs (reinforced and unreinforced concrete the main cost input). The BoM provided was based upon a pre-2000 valuation (mainly 1997). Based on the Cardno valuation work a recommendation was made to index all Dam Concrete inputs by 2.24 to inflate them from 1996-97 to a 2007-08 valuation. Aurecon reviewed the stated unit rates (2007-08 prescribed unit rates) for a number of listed items against quoted commercial rates and found that the unit rates proposed were comparable.

Based on the BoM, direct estimated costs associated with the works for 2034-35 is $1.908 million. Unfortunately, Aurecon has insufficient information regarding the length of channel involved with the works to calculate the cost of works per channel meter delivered.

Aurecon considered that the Halcrow (2011) report which examined proposed renewal expenditure involving the replacement of concrete channel lining at Emerald for 2031-32 is of relevance in this regard. Halcrow's analysis identified that the proposed renewal expenditure using concrete translated to a cost of $2,547 per meter (dimensions/width of the channel unknown). Halcrow noted there have been successful installations of using High Density Polyethylene (HDPE) to line channels within the Emerald district, and costing approximately $330 per meter direct cost installed. Using HDPE for channel lining would come at a cost of only 13% of that incurred using concrete.

Based on the condition assessment provided, Aurecon viewed the proposed need to bring forward the renewal works to 2032-33 and 2034-35 as prudent. Based upon a review of unit charge rates quoted within the BoM for the works, Aurecon viewed the costing charge rates used by SunWater as efficient [on the assumption of a like-for-like replacement]. However, based on observations made by the Halcrow (2011) study, Aurecon questioned the efficiency of using concrete to reline the channels as proposed by SunWater for the Bingera Distribution, particularly considering the magnitude of the expense. Aurecon recommended that additional analysis be undertaken to examine the merits and feasibility of using HDPE lining as opposed to concrete for this renewal activity, before accepting a costing for this renewal activity as being efficient.

Authority's Analysis

In the Draft Report, the Authority accepted Aurecon's recommendation that the expenditure in 2032-33 and 2034-35 relating to replacement of the concrete lining of the Bingera Channel is prudent, but that additional analysis is required to be undertaken before the renewals activity can be considered efficient.

The Authority did therefore not make any specific adjustment to this item.

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that it accepted the Authority's conclusion in the Draft Report.

During round 3 consultation, irrigators submitted that this item may not have been reviewed sufficiently. Irrigators considered that renewal costs should assume a plastic, not concrete lining.

BRIG (2011e) submitted that contrary to the approach taken in other schemes, renewals annuity costs associated with channel lining in the Bundaberg Distribution System have not been reduced. BRIG suggests that some $4 million could be saved by replacing concrete with plastic.

SKM's Review

SKM reported that the standard object type (asset type) for this infrastructure is recorded as Concrete Works (CTWK) which SunWater has allocated a standard run to failure asset life of 80 years and a refurbishment period of 40 years. SKM considered that the appropriate object type for this infrastructure is concrete lined irrigation channel (CHCONCL) which SunWater has allocated a standard run to failure asset life of 80 years and a refurbishment period of 20 years. SKM considers both the run to failure asset life and refurbishment period for CHCONCL to be more appropriate and in line with industry practice for this asset type than Concrete Works (CTWK).

SKM drew on the following Annuity Item specific replacement/refurbishment report produced by SunWater:

Table 4.4: SKM's Reviewed Documents

Document No.	*Document Name*	*Document Title*	*Date*
1169557	PRODUCTION-#1169557-v1-Task_7_QCA_SKM_Phase_2_review_Bingera_MC_Concrete_Lining_QCA_Response.DOC	Replace Bingera Main Channel Concrete Lining - $4.556,000 in 2033 – 2035	13 February 2012

Prudency Review

SKM considered the applied run to failure asset life and refurbishment period for this asset to be reasonable, based on a classification of CHCONCL and in keeping with good industry practice.

The Bingera Main Channel has been divided into 13 sections. Each section of channel has a unique asset identifier recorded within SAP WMS, with an associated asset condition record and risk evaluation.

SunWater has applied its risk evaluation method to these assets. From SunWater's SAP WMS system SKM noted that for all but one section (BIA-BING-BMC-CL-CL08-CLC) it has an environmental, financial and stakeholder relations risk criterion with a consequence rating of minor (score 8). This, together with a probability (likelihood of occurrence) score of 3 results in an overall risk score of 24 which places these assets in a low risk category. Under SunWater's asset management method, for this asset type, an overall risk category of low and with a consequence score of less or equal to 8 determines that the asset is replaced on a run to failure basis. Where an asset is assessed as having a low overall risk but consequence of failure greater than 8, the asset is not allowed to run to failure but is planned to be replaced at a condition score of 5 rather than 6 (run to failure). The commentary within SAP WMS indicates that failure would cause localised flooding and third party damage. SKM considered the risk associated with these comments to be in line with the risk associated with the environmental, financial and stakeholder relations risk consequence score of 8. SKM therefore considered the risk related run to failure asset life to be reasonable.

Each of the 13 channel segments is grouped in its own asset classification and is subject to the WMS assessments for future works. For each of these assets there are conditions scores which range from 2 (Minor defects only) to 5 (Major deterioration such that asset is virtually inoperable). The latest asset condition assessments conducted ranges from 2004 to 2010; however SKM noted that two sections have no asset condition assessment recorded.

All condition assessments for each of the sections of channel have been conducted within the last 10 years which is consistent with SunWater's policy and procedures. SKM therefore considered that the information available on condition does not demonstrate justification to replace/ refurbish all the sections of channel.

SKM individually assessed each section of the Bingera Distribution channel to determine whether SunWater has followed their policies and procedures in determining the time of replacement.

Using the data recorded within the SAP WMS and making use of the SunWater decay curve the expected year of replacement for each channel section were determine. SKM determined that several of the sections of the channel are not in need of replacement within this annuity period

(up to 2035). From the asset condition assessments SKM noted that it was evident that maintenance works had been conducted on a selection of the channels. For the sections that had maintenance conducted to them the asset condition assessments do not reflect the new/ refurbished asset condition rating contained in SAP as the recorded condition had not been updated to take into consideration the improvement in condition arising from the maintenance work undertaken.SKM calculated the replacement year for each section using data from within the WMS and the SunWater decay curve. Both the identified and predicted replacement years are outlined below.

Table 4.5: Bingera Distribution Channel - Predicted Replacement Years

Functional Location	*Identified replacement*	*Replacement date according to degradation curve as calculated by SKM*
BIA-BING-BMC-CL-CL01-CLC	2033	2039
BIA-BING-BMC-CL-CL02-CLC	2033	No data
BIA-BING-BMC-CL-CL03-CLC	2033	2012
BIA-BING-BMC-CL-CL04-CLC	2033	2039
BIA-BING-BMC-CL-CL05-CLC	2033	2039
BIA-BING-BMC-CL-CL06-CLC	2033	2103
BIA-BING-BMC-CL-CL07-CLC	2033	2039
BIA-BING-BMC-CL-CL08-CLC	2035	2021
BIA-BING-BMC-CL-CL09-CLC	2033	2039
BIA-BING-BMC-CL-CL10-CLC	2033	2120
BIA-BING-BMC-CL-CL11-CLC	2035	2042
BIA-BING-BMC-CL-CL12-CLC	2033	No data
BIA-BING-BMC-CL-CL13-CLC	2033	2039

SKM noted that SunWater has included a preliminary options evaluation. The preliminary options evaluation investigated two options:

(a) Replacing like for like, and

(b) Installing an HDPE Liner

The default SunWater replacement option is replacing “like for like” in accordance with SunWater’s method for determining replacement costs for annuity asset items which are to be replaced more than five years from the current planning date. The information supplied in the SunWater report specified above highlights the technical and financial challenges of installing a HDPE liner. It is difficult to establish the impact of each of the challenges at the preliminary options stage. SKM therefore considered the options investigated reasonable and in keeping with good industry practice.

SKM investigated both the options above and found that replacement of the concrete liner like for like is the most cost effective option as discussed below.

Applying SunWater's risk and condition based method for determining run to failure asset life and hence projecting asset replacement timing, a risk score of low with a consequence score of less or equal to 8 determines that the asset will be replaced at the time of failure (asset condition score of 6).

As the Bingera channel is made up of thirteen sections, each is subject to its own condition assessment. Results indicated that the asset had typically deteriorated at a greater rate than the expected standard asset condition decay curve had predicted to that point. However, following the policies and procedures in place, only two of the sections of the Bingera channel require refurbishment within this annuity period according to the information available. The individual years of replacement can be seen in Table 4.5, which indicate that sections BIA-BING-BMC-CL-CL03-CLC and BIA-BING-BMC-CL-CL08-CLC need to be replaced in years 2012 and 2021 respectively. SKM considers that only the two sections of the channel are to be replaced in accordance to SunWater's policies and procedures within this annuity period.

SKM considered that SunWater's policies for adjusting replacement periods and assessing asset condition have not been followed. Although the assessment dates have not exceeded the maximum recommended value of 10 years, the asset category and hence standard run to failure life applied to the asset is incorrect in SAP. Applying the correct asset category and run to failure asset life and adjusting this for condition and risk results in projected replacement dates different to the indicated 2033 replacement year for each section.

From the information available, SKM concluded that the need for refurbishment of the two sections only of channel identified above has been demonstrated. As such, inclusion of two sections only of the proposed annuity item in the annuity value is considered prudent and due for replacement during the annuity period, i.e. in 2012 and 2021 respectively.

Efficiency Evaluation

For major works such as the replacement of the main channel concrete lining, SunWater's planning team applies a unit rate against a bill of materials quantities for the asset in question. Given the volume of annuity items that SunWater's Planning Team are engaged with at any point in time, this approach is considered reasonable and in accordance with good industry practice.

SKM sighted as built drawings for the main channel and, as such, SKM was able to develop a benchmark cost for replacing the main channel lining and find that SunWater's prices are within 30% of SKM's estimate which is in keeping with SKM's reviews of cost estimation for other concrete structures developed by SunWater.

On SKM applying SunWater's policy and procedures, it was found that only two of the thirteen sections within the Bingera Distribution Network are required to be replaced within this annuity period. Table 4.6 below indicates the predicted replacement years and the replacement cost as listed in WMS.

Table 4.6: Bingera Distribution Channel - Replacement Costs

Functional Location	*Identified replacement*	*Replacement date according to degradation curve as calculated by SKM*	*Cost for Replacement (BOM)*
BIA-BING-BMC-CL-CL03-CLC	2033	2012	$74,090
BIA-BING-BMC-CL-CL08-CLC	2035	2021	$1,029,636
Total			**$1,103,726**

SKM evaluated both a like for like and an HDPE liner replacement option. Investigations were undertaken into the feasibility of an HDPE liner with results indicating that there would be extensive rework required due to the flow rate in the channel exceeding the maximum recommended for HDPE. SKM reported that SunWater indicated that there is a higher potential cost incurred with installing an HDPE liner compared with a concrete liner.

SunWater considered that:

> *if HDPE were to be used to replace concrete lining then there would be numerous other costs due to the differing hydraulic characteristics of the two materials. Concrete lining is able to tolerate higher velocities than HDPE. If HDPE were to be used to replace concrete then it may be necessary to enlarge the channel cross section. This would involve additional earthworks. The enlarged cross section may not fit within the existing channel reserve so it may be necessary to purchase additional land. A larger cross section may also require that channel structures are replaced and metered off takes relocated. Other services such as telecommunication and power utilities may have to be relocated. Farm infrastructure may also need to be relocated. Road crossings may also need to be enlarged.*

SKM viewed Drawing No. 61337 Rev F that indicates that the design velocity is 0.642 m/s. This flow velocity exceeds the allowable flow velocity 0.45 m/s for an HDPE liner and therefore replacement with an HDPE liner would necessitate the widening of the existing channel. SKM therefore agreed with SunWater's conclusion and supports the statement that additional earthworks and channel width will be required. As indicated by SunWater, HDPE cannot tolerate the same flow velocities as concrete due to its susceptibility to become damaged through higher flows lifting the material off its foundation base and reducing its integrity. In support of this, hydraulic calculations were undertaken by SKM to determine how significant the earthworks would need to be to halve the flow velocity. SKM determined that in order to halve the flow velocity, the channel width would need to be widened to the order of 50% to 100% of the original channel width. SKM's finding supports SunWater's statement and indicates that significant earthworks would be required to ensure flow velocities that are conducive with an HDPE liner.

SKM considered the like for like option to be the most efficient option and hence agreed with SunWater to put forward an annuity item to replace the concrete lined channel with a like for like.

On the basis of the above analysis SKM considered the concrete liner option and proposed costs for such to be efficient for the two sections identified as requiring to be replaced prior to 2035.

SKM's Summary and Conclusions

SKM was not satisfied that SunWater's procedures for determining the timing of refurbishment of an annuity item have been followed. On applying SunWater's policies for adjusting refurbishment periods and assessing asset conditions on a section by section basis, SKM concluded that only two sections of channel identified above have been demonstrated as being in need of replacement. As such, only two sections of the proposed annuity item in the annuity value is prudent with a replacement timing of 2012 and 2021.

SKM recognised that, in line with SunWater's Asset Refurbishment Planning Guideline a detailed options investigation will not be conducted until between 1 and 5 years prior to the replacement work being undertaken. Hence at this stage of the timing of asset replacement, SunWater adopts a default 'like for like' replacement assumption and determines the value of that annuity item replacement by escalating as installed costs. Based on information made available SKM considers the replacement of the annuity item like for like to be efficient at a cost of $74,090 for the section due to be replaced in 2012 and $1,029,636 for the section to be replaced in 2021. Prudency for replacement of the other sections has not been demonstrated.

SKM noted that bringing forward the replacement date for two sections of the channel will have a positive impact on the annuity value as a result of the time value of money calculation used to develop the annuity value. However, in line with the Terms of Reference for SKM's review, SKM did not calculate this impact.

SunWater has advised that:

> *... the annuity is calculated based on the timing and quantum of cash expenditure. Whilst you [*SKM*] have pushed a number of sections outside the annuity period, you [*SKM*] have bought forward the planned expenditure of 2 sections. The former has the impact of reducing the annuity, whilst the latter will increase the annuity. I [*SunWater*] have done a rough calculation that shows that the NPV of our [*SunWater's*] original program was approximately $900,000. Your [*SKM's*] revised program has an NPV of approximately $700,000.*
>
> *In other words the total spend has reduced from $4.56M to $1.1M but the NPV impact is much smaller. The annuity impact moves from approx $92k to $70k.*

Authority's Response to Submissions Received on the Draft Report

The Authority notes that SKM's review of this project conducted after the Draft Report was enabled by a greater level of detail than that provided by Aurecon prior to the Draft Report. As a result, the Authority has amended its Draft Report recommendation on the basis of SKM's recommendations.

The Authority accepts that the timing of SunWater's channel lining must be altered to be considered prudent. The changes to the project timing mean that only two components of channel lining fall within the regulatory planning period.

The Authority notes BRIG's (2011e) submission that replacing channel lining with plastic, rather than concrete, could result in cost savings as has been the case in the Authority's review of channel lining projects in other schemes. However, the Authority accepts SKM's recommendation that like-for-like channel lining replacement is efficient in this instance.

The Authority has included $74,090 and $1,029,636 of renewals expenditure in 2012 and 2021 respectively.

Item 6: Bullyard Distribution – Replace Meter Outlet Structures

Draft Report

SunWater has forecast total direct and indirect renewals costs of $797,000 in 2032-33 relating to the replacement of meter outlet structures in the Bullyard Distribution sub-system.

No other stakeholders have commented on this item.

Aurecon's Review

Aurecon noted that although the standard asset life assigned for meter structures is 60 years, SunWater has conservatively planned meter outlets for 50 years pending ongoing condition assessment and design obsolescence. These meter outlets were constructed in 1983, and therefore have been planned for renewal in 2032-33.

The proposed works to replace meter outlets (both 150Mn and 20Mm) within the Bullyard Distribution involves a total of 65 functional locations. Aurecon noted that meter replacements are not included within the renewal program, only structures.

SunWater provided a BoM for each of the functional locations. The BoM provided was based upon a pre-2000 valuation (mainly 1997). Based on the Cardno valuation work a recommendation was made to index all Pipe Fittings cost inputs by 2.28 to inflate them from 1996-97 to a 2007-08 valuation. Aurecon reviewed the stated unit rates (i.e. 2007-08 prescribed unit rates) for a number of listed items against quoted commercial rates and found that the unit rates proposed (2007-08) were comparable.

Based upon a desktop review of the information provided, Aurecon considered that the proposed renewal activity is prudent in terms of timing. Aurecon also noted that SunWater is actively monitoring the condition of the outlet structures, which may bring forward or delay the renewal activity based on condition (and design obsolescence). Aurecon viewed the proposed direct expenditure (as highlighted within the BoM) as efficient, based on the comparative analysis undertaken of the unit rates proposed for key material inputs.

Authority's Analysis

The Authority accepted Aurecon's recommendation that the expenditure in 2032-33 relating to the replacement of meter outlet structures in the Bullyard distribution sub-system is prudent and efficient.

Final Report

As no submissions were received on this item following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

Item 7: Don Beattie Pump Station – Replace Common Controls

Draft Report

This renewals item is for the replacement of common controls at the Don Beattie Pump Station in 2018-19 at an estimated cost of $1,220,000.

No other stakeholders have commented on this item.

SKM's Review

SKM noted that, according to SunWater's Systems, Applications, Products (SAP) Works Management System (WMS), this asset has been in operation at its current location since 1989 and was installed as part of the original pump station construction.

SKM viewed SunWater's WMS, and asset condition and risk assessment policy and procedures. In particular, SKM drew on the following renewals item specific replacement/refurbishment report produced by SunWater for this review along with a PB report following audit of electrical sites.

Table 4.7: SKM's Reviewed Documents – Replacement of Common Control System at Don Beattie Pump Station

Document No.	*Document Name*	*Document Title*	*Date*
1107342	QCA Justification – Don Beattie PSTN replace common Controls	Bundaberg Irrigation Area – Don Beattie Pump Station – Replace common control	19 Aug 2011

Source: SKM (2011).

(a) Prudency Review

In SKM's review of the data in SAP and the information contained in the SunWater report specified above, it considered that SunWater has followed the policies and procedures that it has in place to determine renewals item replacement/refurbishment dates and costs.

SKM noted that the object type (asset type) assigned for this equipment is EL (Electrical Equipment). In SunWater's systems this is a header level object type and hence does not have a standard replacement or refurbishment period assigned to it. The components that make up this equipment are predominantly PLCs, computer, communications equipment and electrical control gear. Given that the main components are PLCs, SKM considered that it may be appropriate for SunWater to reassign this asset to the object type ELPLC – PLC. SunWater has allocated a standard run to failure asset life of 15 years and a maximum condition assessment frequency of every two years. SKM considered the standard run to failure asset life and condition assessment frequency applied to this class of assets to be reasonable and in keeping with industry practice.

SKM viewed the WMS record for this asset and note that the asset has an "In Operation" from date of 1989 which would suggest that the asset has been in operation for 23 years as of 2011-12. However, in its report (no. 1107432), SunWater advised that the asset has only been replaced recently with a project that commenced in 2003-04. A number of asset components were replaced between 2003-04 and 2006-07 at a total cost of about $560,000. However, not all components were replaced.

SKM noted that in this partial replacement, all the PLCs were replaced and that the components not replaced consist of components to which a 15-year life would normally be attributed.

As such, SKM took 2003-04 to be the In Operation date for its review. This places replacement of the asset on a standard asset life of 15 years as 2018-19.

SKM noted that SunWater applied its risk evaluation method to this asset and determined, during the most recent risk assessment in 2005, that it has a financial risk criterion consequence rating of minor (score 8). This, together with a probability (likelihood of occurrence) score of 10 results in an overall risk score of 80 which, under SunWater's risk assessment method,

places this asset in a Low risk category. SKM viewed the WMS record for this asset and confirm that it has been allocated a Low risk rating. An overall risk category of Low does not trigger any reduction in the standard run to failure asset life of this type of asset and SKM confirmed this to be the case for this asset.

The next stage of SunWater's method for determining asset replacement/refurbishment timing is by means of adjusting the risk adjusted run to failure asset life according to the variance of the condition score of the asset, at the time the last condition assessment was undertaken, with the condition that the standard asset condition decay curve predicts at that time.

The last condition assessment which was a desk top assessment was undertaken in 2009 and SunWater advised that the condition assessment was "within date at the time the NSPs were compiled". The condition assessment, which was undertaken prior to SunWater implementing its detailed condition monitoring method, yielded a worst case criterion score of 1 (Perfect, as new-condition). SunWater advised that it considers that there is insufficient information in this condition assessment to change the asset life from the standard asset life of 15 years. This, coupled with the fact that not all the components were replaced in the 2003-04 to 2006-07 upgrade period prompted SunWater to plan a total replacement 15 years from the date of commencement of the refurbishment i.e. in 2018-19.

SKM considered that this approach is not strictly in keeping with SunWater's procedures. Given that some of the main components were replaced in 2006-07, and that the condition score is 'as new' SKM considered that it would be more appropriate to plan for a replacement date 15 years from the date of the installation of the latest components i.e. in 2021-22 rather than 2018-19.

SKM did not sight any option analysis for replacement of this item and noted that under SunWater's asset management procedures, any options analysis would need to be done closer to the scheduled timing of the project. Given the rapidly changing technology in this area, SKM agreed with this approach as a replacement PLC selected now may not be available in 2018-19 (or 2021-22).

The actual in operation date for individual components making up this asset ranges from the original installation date of 1988-89 to 2006-07. Given that the 2009 condition assessment allocated a condition rating of 1, SKM considered that planning for a complete asset replacement in 2018-19 to be overly conservative and consider that at 2021-22 replacement date would be more appropriate.

As this is within this annuity price reset period, SKM considered inclusion of the replacement value of this renewals item within this annuity period to be prudent.

(b) Efficiency Evaluation

SKM noted that, for assets that are planned to be replaced five years or more hence of the planning date, SunWater uses a valuation method based on a BoM for the asset. The BoM has been developed from as built drawings and a 1996-97 value (determined from a 1997 valuation) attached to each item making up the BoM based on a 1997 valuation. The 1996-97 value for each line is then escalated by a multiplier determined by Cardno in a 2007-08 valuation. This multiplier varies according to the component type being escalated. For example, all electrical equipment should be escalated by a 2.13 multiplier. The sum of costs is then adjusted by an indirect multiplier (in this case (1+30.8%) to take account of renewals item replacement specific factors such location, project management costs etc.

This approach (including the indirect uplift multipliers) was audited by Arthur Anderson in 2000, who found it to be robust and appropriate. Given the large portfolio of assets that

SunWater is required to determine a replacement value for over a 25-year asset replacement/refurbishment cycle, SKM agreed with Arthur Anderson's conclusions and considered the approach to be appropriate.

SunWater advised SKM that as not all the asset components were replaced in the 2003-04 to 2006-07 upgrades, SunWater used the as originally installed BoM and the process outlined above to determine replacement cost.

SKM did not agree with this approach and believed that it would be more accurate for SunWater to have stripped out the replaced components from the BoM and substituted the replacement costs of these components with the installed costs as incurred between 2003-04 to 2006-07 (appropriately escalated to $2009-10 terms), particularly since the cost for PLCs has fallen since 1996-97.

SKM noted that a value of $1,084,468 has been captured in SunWater's SAP-WMS for the proposed 2011-12 replacement.

SKM benchmarked the renewals item replacement costs proposed by SunWater as submitted to the Authority against its database costs for modern equivalent electrical assets and against modern equivalent replacement budget prices from equipment suppliers.

In particular, SKM price-checked the replacement purchase cost of a representative sample of the control system equipment with a focus on the high cost items and in particular the Honeywell PLC. Honeywell has advised that the 620 series PLC is now superseded and although refurbished spare parts were available in the short term direct replacement with 620 series equipment was not a viable option.

Honeywell did propose replacement with an equivalent system but were not able to price this without more detail of the specific application including software than was available. As an alternative Siemens was asked to provide an equivalent hardware platform based upon the same broad configuration details, that is three PLC processors with networking, and the equivalent input/output provision of the existing system. The platform they proposed used S7-300 processors with ET200 I/O modules – this equipment is very widely used and accepted within industry and is considered to be a viable replacement option. The new platform would require programming and additional miscellaneous hardware within the control cubicles. With provision for these the total cost of the PLC replacement is estimated to be approximately $113,500. This compares with the total hardware of $217,000 cost at 1996-97 levels for the Honeywell equipment.

A sample of other hardware was considered. For this sample SKM determined a cost multiplier of approximately 1.3 on the 1996-97 levels to bring them to 2009-10 values. Considering both this multiplier for the balance of the non-PLC equipment and the cost of the PLC replacement as noted above the total replacement cost is estimated as $311,274 (ex works). On applying a 100% uplift for installation costs (including overheads) and the SunWater Indirect multiplier of 30% yields an installed complete replacement cost of $809,000.

SKM categorised this estimate as a class 4 estimate, having an accuracy of +30%/-20%.

SKM compared its cost estimate against SunWater's cost estimate in Table 4.8 below:

Table 4.8: Don Beattie Pump Station Common Control Replacement – SunWater and SKM Cost Estimates

SunWater Estimate $2009-10	*SKM Estimate $2009-10*	*Variance*
1,084,468	$809,000	+34%

Source: SKM (2011).

SunWater's renewals item replacement value estimate of $1.1 million is some 34% higher than SKM's estimate.

SKM therefore considered that the SunWater's estimate is not efficient, albeit the estimate is just outside SKM's accuracy range. SKM considered that the reason for this is that SunWater has used 1996-97 prices for the major components (PLCs), multiplied by the standard Cardno uplift for electrical assets of 2.13. However, as noted above, the cost of PLCs has dropped since 1996-97. If SunWater were to substitute the 2003-04 to 2006-07 installation costs (derived from the 2003-04 to 2006-07 program to replace the PLCs) for the costs derived from the 1996-97 prices per the BoM, then SKM believed that SunWater's cost estimate would decrease.

A Planning Order has not yet been developed for this asset, as such SunWater has not developed a breakdown of direct and overhead costs.

SKM considered the proposed renewals item value not to be efficient. However, the cost only just exceeds the 30% estimating error of SKM's estimate. SKM believe that the difference lies mainly in the fact that PLC costs have declined since the 1997 valuation.

SKM consider that an efficient replacement cost would be about $800,000.

(c) SKM's Summary and Conclusions

SKM was not satisfied that the timing of replacement of this renewals item is prudent as submitted to the Authority as some of the main PLC components were replaced as late as 2006-07 and the condition assessment gives an 'as new' rating. However, SKM believed it would be appropriate to plan for replacement at or around 2021-22 (15 years, being the standard asset life, from the latest component replacement).

From SKM's benchmarking of the replacement costs, it was not satisfied that the renewals item replacement value submitted by SunWater is efficient. SKM believed this is because of the use of 1996-97 values, escalated by a standard multiplier for electrical plant developed by Cardno and that prices for the main control components, PLCs, have dropped since 1996-97. SKM considered that an efficient replacement cost would be in the order of $800,000.

Authority's Analysis

In the Draft Report, the Authority accepted SKM's recommendations that the replacement of Don Beattie Pump Station common control system is prudent at a revised date of 2021-22 (instead of 2018-19).

The Authority noted that the total cost (including direct and indirect) submitted by SunWater for this renewals item ($1,220,000) does not equate to the amount reviewed by SKM ($1,084,468). This is because SKM's review was based on SunWater's SAP system, which uses a simplified method for calculating indirect and overhead costs than SunWater's financial system, which formed the basis of SunWater's NSPs and submissions to the Authority. However, where direct costs were reviewed by SKM this aligns with the direct costs submitted to the Authority.

The Authority therefore accepted SKM's efficiency recommendation of a $284,486 reduction in costs, and applied this to the value submitted by SunWater ($1,220,000). The resultant cost of $935,532 was included in the Authority's recommended Draft Prices.

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that it accepted the Authority Draft Report recommendations.

During Round 3 consultation, the location of the Don Beattie pump station was questioned – particularly, clarification was required as to whether it was in this scheme.

Authority's Response to Submissions Received on the Draft Report

The Don Beattie pump station is part of the Isis distribution system, delivering water from the Ben Andersen Barrage into the distribution system. The Authority considers it to be clearly part of the scheme.

The Authority does not propose any change to its Draft Report recommendations.

Item 8: Bucca Weir – Refurbishment of Trash Racks and Guides

Draft Report

SunWater's renewals database includes $72,000 for the refurbishment of Trash Racks and Guides in 2012-13.

BRIG (2011c) and irrigators during the second round of consultations queried whether Bucca Weir is a bulk or distribution asset.

Aurecon's Review

Aurecon noted that a renewal expenditure has been assigned to Bucca Weir within the NSP. Bucca Weir is a listed asset of the Bundaberg WSS (i.e. a bulk asset). Aurecon noted that the proposed renewal expenditure relates to $72,000 in 2012-13, for the refurbishment of Trash Racks and Guides. Aurecon questioned if the actual expense relates to the Weir itself, or supporting channel/infrastructure directly related to the Distribution network.

Aurecon did not provide a recommendation on the prudency and efficiency of this expenditure.

Authority's Analysis

The Authority noted that the ROP for Bundaberg WSS and the letter from Minister Robertson (2011p) confirms that Bucca Weir is a bulk asset. In the absence of a conclusion from Aurecon regarding the prudency and efficiency of this item, the Authority did not made any specific adjustment to the value of this expenditure item, but applied a general 10% reduction in the value of this item as insufficient information was available to establish its efficiency. The Authority transferred this renewals expenditure to the Bundaberg WSS.

Submissions Received from Stakeholders on the Draft Report

SunWater accepted that this renewals item should be transferred to the Bundaberg WSS. SunWater submitted that the 10% efficiency reduction should not apply to this item, as it was found to be prudent and efficient.

Authority's Response to Submissions Received on the Draft Report

The Authority rejects SunWater's assertion the item was found to be prudent and efficient in its Draft Report. After reviewing a larger sample of items since the Draft Report, and as noted in Volume 1 and further below, the Authority considers that a general cost reduction should continue to apply to non-sampled items and those items where there is insufficient information to establish prudency and efficiency. On the basis of the large sample of items, the amount of this reduction has been revised from 10% to 20% for the Final Report.

Item 9: Woongarra Pump Station – Replace Electrical Common Control System (2032)

Subsequent to the Draft Report, the Authority reviewed a number of renewal items to increase the portion of SunWater's renewals program subject to intensive review. The replacement of the Electrical Common Control System at Woongarra Pump Station in 2032 was included in the Authority's extended renewals sample due to its significant budgeted cost of $2.6 million.

The Authority engaged SKM to review this item.

SKM's Review

SKM drew on the following Annuity Item specific replacement/refurbishment report produced by SunWater for this review:

Table 4.9: SKM's reviewed documents

Document No.	*Document Name*	*Document Title*	*Date*
#273843	Report	Woongarra Pump Station	December 2005
#306979	BUN 3029 Final Report	Woongarra PS Risk	September 2004
#515900	Complete Report Woongarra Pump Station	Motor Supply Cables Replacement	March 2007
#1065798	Report Woongarra Pump Station	Replacement Analysis	March 2011
#1128347	Project Scope for Options Analysis	Replacement of Woongarra PSTN	-

Prudency Review

The standard object type (asset type) for this infrastructure is SCADA (Controls and SCADA). For this asset SunWater has allocated a standard run to failure asset life of 15 years and a condition inspection frequency of 5 years. SKM considered the condition assessment frequency (5 years) applied to this asset type to be reasonable.

SKM viewed the WMS record for this asset and confirmed that the asset has been in service since 1978. SunWater has applied its risk evaluation method to this asset and determined the risk, during the most recent risk assessment in 2008. This risk assessment yields a highest consequence score of 3 with a probability of 10 resulting in an overall risk score of 30 (ie Low Risk). For this asset type, an overall risk category of low with a consequence score of less than or equal to 8 does not lead to a risk related adjustment to the replacement date for the asset. A condition assessment for the asset was undertaken in 2008 (within the required frequency). The condition assessment indicates that the highest condition score allocated was a 3 (Minor defects only). Applying the condition assessment score and risk rating to SunWater's Condition Based

Replacement Life Adjustment Tool results in a forecast run to failure life of 40 years and a projected replacement date of circa 2033.

The asset (including pumps and motors) is scheduled for replacement in 2032, and has an expected life of 30 years. However, from examination of the SAP, SKM understood the common controls were last replaced in 1993. With the knowledge of the obsolescence which usually affects this type of control equipment regardless of condition, SunWater would normally assume a standard run to failure asset life for this asset and scheduled replacement at the end of that life, i.e. 1993 installed date plus 15 years standard life gives a 2008 replacement date. The run-to-failure life has therefore already been exceeded. From SAP WMS SKM noted that SunWater has planned to reprogram the SCADA in 2012 in line with a planned pumps and motors upgrade study. SunWater has therefore decided to extend the life of the asset (common controls) in line with the run to failure life extension projected by SunWater's Condition Based Replacement Life Adjustment Tool.

The proposed replacement programme for Woongarra Pumping Station is appropriate for this asset and no options evaluation is required.

SunWater has applied its processes to determine run to failure asset life based on risk and condition and determined that the common control asset should be replaced at the same time as SunWater plans to overhaul the pump station in 2032. This results in an almost doubling of the standard run to failure life for this type of asset. Whilst SunWater has applied its procedures, SKM considered that an asset of this type should generally be replaced in line with its standard run to failure asset life, regardless of condition. This is because the failure mechanism tends to be catastrophic rather than gradual, and equipment obsolescence could mean that repairs are lengthy resulting in the pump station being out of action for a significant period of time.

SKM therefore believed that it would be prudent to plan for replacement of the common control system prior to the planned replacement in 2032. SKM recommended that the replacement of the asset be planned for no more than 10 years from the date of the 2012 overhaul, ie in 2022. This would represent an extension of the asset life by two thirds of the standard run to failure life beyond 2012 and which may be reasonably expected following a refurbishment/reprogramming in 2012.

SKM concluded that the need for replacement of this annuity asset has been demonstrated. and the inclusion of this annuity item in the annuity value for replacement is prudent. SKM recommended that the replacement date be set at 2022 given the current age of the asset, the standard run to failure life of this asset class and taking into account the refurbishment in 2012.

Efficiency Evaluation

For future annuity item replacements where the replacement is more than 5 years hence of the planning date, SunWater's planning team typically applies a unit rate against bill of materials quantities for the asset. However, on this occasion, SunWater has developed a planning order and developed asset replacement costs based on more current information (such as budget prices from suppliers and or information from recent projects undertaken of a similar nature). Given the volume of annuity items that SunWater's Planning Team is engaged with at any point in time, this approach is considered reasonable and is in accordance with good industry practice, where the management of a large portfolio of assets is concerned.

SunWater compiled a detailed Bill of Materials list for the project as part of the planning order, which has been produced with assistance from supplier quotations. From the nature of the equipment listed in this Bill of Materials SunWater has been consistent with their approach for other annuity control systems and based their cost estimates on preferred suppliers. SKM reviewed this Bill of Materials list and confirms that many of the costs of these materials are

comparable with similar equipment with which SKM has had experience. However, a number of significant items reveal large variances compared with SKM's estimate based on historical costs. SKM believed these variances may be the result of errors in the Bill of Materials costs compounded by the fact that the cost of SCADA and control systems have generally declined since 1997, and will impact significantly on the overall estimate. These items are listed in Table 4.10.

Table 4.10: Cost Estimate Comparison for Replacement of Controls at Woongarra Pump Station

Item	*SunWater Estimate*	*SKM Estimate*	*SKM Cost Estimate Variance over SunWater Cost Estimate*
PLC Modi CPU 984 141 Processor.	$1,184	$1,500	+27%
Digital Input cards.	$5,931	$586	-90%
Digital Output Cards.	$6,089	$800	-87%

The breakdown of costs developed by SunWater for their Planning Order has been based upon the Bill of Materials for components only and, from SKM's evaluation using 1997 Bill of Material pricing. The Indirect Uplift in the Bill of Materials in SAP WMS has not been applied, instead, SunWater's planning team has added in costs for contractors, plant and equipment and corporate overheads as is standard for SunWater Planning Orders. The breakdown is shown below in Table 4.11. The costs include $241,233 for total overheads, including design and project management (10% of total costs). This table includes SKM's estimate of all cost elements based upon SKM's itemised cost variances listed in Table 4.10 above.

Table 4.11: SunWater Planning Order for Replacement of Controls at Woongarra Pump Station

Item	*SunWater Costs*	*SKM Estimate*
Commercial Contractors	$837,390	$242,640
Rental & Hire – Plant and Equipment	$358,881	$358,881
Materials Non Inventory	$837,390	$242,640
Standard Rate Brisbane Overhead	$45,564	$45,564
Standard Rate Local Overhead	$93,986	$93,986
Standard Rate 5% Brisbane Overhead	$101,683	$101,683
SW Band 6 (Direct Labour)	$119,621	$119,621
Total	**$2,394,515**	**$1,205,015**
Pump and motor refurbishment	$200,000	$200,000
Total including pump and motor refurbishment	**$2,594,515**	**$1,405,015**

SunWater added $200,000 to cover pump and motor refurbishment bringing the total claimed annuity value to $2,600,000. By comparison, SKM's overall estimate (including the pump and motor refurbishment), and using the same overhead values as used by SunWater, is $1,405,015. Had SKM applied the same percentage overheads (11% of direct costs) as SunWater's planning team applies then the total forecast cost, based on this estimate, would be $1,269,600.

SKM considered the annuity item value as calculated by SunWater of $2,600,000 to be higher than expected, based on current prices for control equipment. SKM recommended this estimate be reviewed by SunWater. The figure claimed is inclusive of SunWater overheads which at 10% of the overall cost is within industry norms (if not on the low side) for overheads associated with design, project management, procurement etc.

SKM therefore considered the SunWater proposed annuity item value of $2,600,000 not to be efficient and would propose an alternate annuity item value of $1,405,015, taking into account SKM's opinion that the overhead rate applied to this project by SunWater is lower than SKM would typically use for design, project management and corporate costs.

The value submitted for this annuity item is not efficient, based on available information. SKM considered that an estimate representing an efficient cost should be of the order of $1,400,000 (+/-30%).

SKM's Summary and Conclusions

SKM was satisfied that SunWater's procedures for determining the timing of replacement of this annuity item have been followed and hence that the timing and need for replacement of this annuity item is prudent. However SKM considered that the replacement date should be set at 2022, as opposed to 2032 per the network service plan, given the current age of the asset, the standard run to failure life of this asset class and taking into account the refurbishment in 2012. SKM understands that bringing the replacement forward from the date submitted in the NSP will impact on the annuity value given the time value of money assumed in the annuity calculation.

SKM believed its findings, in respect of prudency but not necessary actual replacement date, would be valid for the common controls of other pump stations in the Bundaberg Distribution area, provided that the general equipment types, the application and the functionality are comparable.

SKM considered the cost of the replacement of the common controls for Woongarra Pump Station not to be efficient at $2,600,000 including refurbishment of the pumps and motors and SunWater overheads. SKM believed this cost is high, and recommended this cost estimate be reviewed. SKM considered that an estimate representing an efficient cost should be of the order of $1,400,000 (+/-30%). SKM considered that this assessment of efficiency cannot necessarily be applied to SunWater's annuity replacement values for other control system replacements in the Bundaberg region. This is because it was only two items in the Bill of Materials, whose 1997 costs used were significantly higher than SKM's estimate for a modern equivalent replacement and these may not be common across the region.

Authority's Analysis

The Authority accepts SKM's recommendations, and has included $1,405,015 for the replacement of Woongarra Pump Station Control Equipment at a revised date of 2022.

Item 10: Air Valve Replacements

Subsequent to the Draft Report, the Authority reviewed a number of renewal items to increase the portion of SunWater's renewals program subject to intensive review. The program of air

valve replacements within the Bundaberg Distribution System was included in the Authority's extended renewals sample due to its significant budgeted cost, in aggregate, of $3.7 million.

The Authority engaged SKM to review this item.

SKM's Review

SKM drew on the following Annuity Item specific replacement/refurbishment report produced by SunWater for this review:

Table 4.12: SKM's Reviewed Documents

Document No.	*Document Name*	*Document Title*	*Date*
None	QCA - line item 10 - BIA - replace air valves.doc	QCA - line item 10 - BIA - replace air valves	None
1172227	Doc#1172227 - Whole of Life Maintenance Strategy_copy.xlsx	Whole of Life Maintenance Strategy	Not dated

Prudency Review

The air valves vary between nine and 35 years old throughout the Bundaberg Irrigation Area, with 92% of the units fitted up to and including 1992. SKM noted that SunWater has allocated a standard run to failure asset life of 20 years within its 'Whole of Life Maintenance Strategy' spreadsheet for air valves (asset type VLAIRV). SKM considered the applied run to failure asset life and refurbishment period for this asset to be reasonable and in keeping with industry practice.

Based on a run to failure life of 20 years SKM expected that each air valve within the Bundaberg Distribution will require replacement at least once within the review period.

On the assumption that SunWater's procedures for condition assessment have been followed, based on this condition and risk assessment score, SKM considered that this annuity item (refurbishment/ replacement) is prudent for replacement of all valves within the annuity period as a rolling programme of replacements (as opposed to replacing all air valves at one point in time – which isn't practicable).

SKM did not sight any options analysis for the refurbishment of this item however, given the asset type SKM considered replacement with like for like as reasonable. SKM noted that older type air valves may not have the same attributes as newer type air valves. The standard practices of air valve configuration may also have changed since the design. In light of not having reviewed any design details (which again was impracticable given the number of air valves to be replaced) SKM recommended that SunWater undertakes a replacement study to ensure that replacing the existing air valves will meet current good industry practice and to ensure that the most efficient air valve be chosen for the application. This could be undertaken on a sample basis.

SKM considered that, given the run to failure asset life of 20 years identified in the 'Whole of Life Maintenance Strategy' spreadsheet, all air valves would be expected to be replaced at least once within the annuity period.

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 annuity asset has been demonstrated. As such, the inclusion of this annuity item in the annuity value is prudent.

Efficiency Evaluation

For major works, SunWater's planning team applies a unit rate against a bill of materials quantities for the asset in question, should the replacement be scheduled more than five years from the planning date. Given the volume of annuity items that SunWater's Planning team is engaged with at any point in time, SKM considered this approach to be reasonable and in accordance with good industry practise, where the management of a large portfolio of assets is concerned.

SunWater has estimated that the total cost for replacement of the 821 identified air valves to be $ 3.7 million, with the total material costs equating to $ 2.87 million. From SKM's review of SunWater's documentation SKM noted that this has been estimated on the assumption that each unit will cost approximately $ 3,500 to replace. This cost estimate is based on including the air valve, shut-off valve, new stand pipe, barricading, earthworks, flanges and labour.

SKM reviewed SunWater's SAP WMS to determine the quantity of each size of valve in service. The distribution of valve sizes within the Bundaberg Distribution System is outlined in Table 4.13.

Table 4.13: Identified Valves within the Bundaberg Irrigation Area

Valve Type	*Diameter*	*Quantity*
VALVE-AIR 25DIA(PVC RISER)-MATLS	25	338
VALVE-AIR 25DIA-MATLS	25	2
VALVE-AIR 50DIA(PVC RISER)-MATLS	50	385
50 AIR VENT (PVC Pole) matls	50	3
VALVE-AIR 50DIA-MATLS	50	208
VALVE-AIR TWIN 50DIA-MATLS	50	6
VALVE-AIR 75DIA(PVC RISER)-matls	75	3
VALVE-AIR 75DIA-MATLS	75	48
VALVE-AIR 100DIA-MATLS	100	56
VALVE-AIR 100DIA(PVC RISER)-matls	100	1
VALVE-AIR TWIN 100mm MATLS	100	1
VALVE-AIR 150DIA-MATLS	150	17
Total		**1068**

Based on SKM's recent project experience, SKM obtained quotations from a number of suppliers for the different sizes of air values within the Bundaberg Distribution. The total costs for each air valve size were determined based on the material cost with a 30 % allowance on the

material cost for installation and a 50 % allowance on the material cost for indirect costs. The findings are summarised below in Table 4.14.

Table 4.14: Cost estimates per air valve

Diameter (mm)	*Material cost ($)*	*Installation cost ($)*	*Indirect costs ($)*	***Total costs ($)***
25	520	156	260	**936**
50	750	225	375	**1,350**
75	1,008	302	504	**1,814**
100	1,100	330	550	**1,980**
150	2,500	750	1,250	**4,500**

SKM concluded that the total cost to replace all the identified air valves is be approximately $1.41 million.

Typically SunWater treats air valves under the operating methodology of 'RTF' or (Run to Failure) which indicates that the air valves are only replaced upon failure.

The large variation between SKM's estimated costs and SunWater's proposed expenditure is considered to be attributed to SunWater's estimated being based on the costs associated with the full valve assemblies inclusive of; valves, standpipes, barricades, flanges, earthworks and labor.

Typically the process involved with replacing an air valve only includes the replacement of the valve itself. However, SunWater's estimate is inclusive of the replacement of flanges and the surrounding structure. Typically flanges and surrounding structures should have a life expectancy close to that of the attached pipeline. Adopting this principle, SKM has developed a price on quotes from suppliers and typical installation and indirect costs ignoring costs associated with earthworks and stand pipes.

The annuity value submitted by SunWater for replacement of this annuity item is significantly greater than SKM's estimation for annuity works. As such SKM considered the SunWater proposed annuity item value of $3.7 million not to be efficient. SKM considered that $1.41 million to be an efficient annuity value for the replacement of the air valves.

SKM's Summary and Conclusions

SKM was satisfied that SunWater's procedures for determining the timing of refurbishment of an annuity item have been followed and hence that the timing and need for refurbishment of this annuity item is prudent.

Given that SunWater has estimated the cost of replacement to be greater than the expected value calculated, SKM considered the cost of the refurbishment not to be efficient. SKM however recommends that an annuity value of $1.41 M be allowed for the replacement of the air valves.

Authority's Analysis

The Authority accepts SKM's recommendation that the replacement of air vales is prudent but not efficient. The Authority has included a total of $1,410,000 for air valve replacement across 821 renewals items in its recommended prices. This represents a 62% cost reduction to each individual air valve replacement item.

Conclusion

Draft Report

In the Draft Report, eight items for the Bundaberg Distribution System were sampled. Of these:

(a) four items were prudent and efficient and were retained as forecast expenditure;

(b) two items were prudent but insufficient information was provided by SunWater to establish efficiency; and

(c) one item was prudent but not efficient, requiring adjustment to forecast expenditure; and

(d) one item was mistakenly included in distribution renewals and was transferred to the Bundaberg WSS.

In total, the Authority recommended the direct renewals expenditure as shown in Table 4.15.

Submissions Received from Stakeholders on the Draft Report

During Round 3 consultation, stakeholders expressed that SunWater's information system should be set up to allow for information to be assessed and reviewed in the future, and that standards of service needed to be reviewed.

CANEGROWERS Isis (2011b) submitted that it seems that the capital replacement program is determined by anticipated life of the asset rather than its real life. Equipment should only be replaced as required, not by a measurement of time. Irrigators pay on the basis of nominal allocations held irrespective of whether there is water in the system to distribute.

There needs to be checks and balances in place otherwise SunWater has no incentive to reduce costs when undertaking or planning asset management. One way of making SunWater accountable is through the use of deemed prudent and efficient costs relating to efficient operation rather than adopting an open cheque book approach.

In response to the Draft Report, BRIG (2011e) added that it considered that SunWater had no incentive to replace sections of pipeline that impact on reliability to a small number of outlets as the cost of delivery exceeds SunWater's Part D return.

Authority's Response to Submissions Received on the Draft Report

The Authority notes that SunWater's information system manages a large portfolio of asset renewals items over a 25-year planning period. For each asset type, SunWater applies a standard run to failure asset life and a standard refurbishment frequency. A standard asset decay curve predicts the asset condition over the asset life. Periodic condition assessments take into account the position of the asset relative to the decay curve, taking into account its risk rating. These tools are used to either defer or bring forward renewals/replacements.

On this basis, the asset replacement date is not locked in, and the lives of assets may well be extended, reducing life cycle costs.

Under the regulatory framework, SunWater has an incentive to manage its costs as efficiently as possible, as any excessive expenditure is to its account. Any significant errors in managing renewals projects are not passed through to irrigation customers.

In regard to incentives to replace assets that affect the reliability to a small number of customers, this is a matter for SunWater to negotiate with relevant customers. A process of

consultation is required to ensure that SunWater is made aware of service quality issues in small channel segments.

After reviewing submissions received in response to the Draft Report, the Authority re-examined one item (Bingera channel re-lining), which was found to be prudent and efficient, but with revised timing.

The Authority reviewed an additional two items which were found to be prudent but not efficient.

As outlined in Volume 1, the Authority undertook further sampling of forecast renewals expenditures across SunWater's schemes. In this larger sample, the Authority found that savings could be achieved in forecast renewals expenditure. For the Final Report, the Authority recommended that a 20% saving be applied to the direct costs of all non-sampled and sampled items for which there was insufficient information.

Table 4.15: Review of Forecast (Direct) Renewals Expenditure 2011-36 (Real $'000)

Item	*Year*	*SunWater ($000)*	*Authority's Draft Report Findings*	*Draft Recommended ($000)*	*Authority's Final Report Findings*	*Final Recommended ($,000)*
Sampled Items						
1. Woongarra Pump Station – Replacement of Electrical Control System (2012)	2011-12	262	Prudent and efficient	262	Prudent and efficient	262
2. Woongarra Balancing Storage - Refurbish Control Gate and Replace Weed Screen	2011-12	45	Prudent and efficient	45	Prudent and efficient	45
3. Dinner Hill Pump Station - Replace Electrical Control System	2011-12, 2012-13	224	Prudent and efficient	224	Prudent and efficient	224
4. Bingera Distribution - Replace Screens	2033-34	217	Insufficient information.	10% saving applied	Insufficient information.	20% saving applied
5. Bingera Distribution – Replace Concrete Lining	2032-33, 2034-35	5,066	Insufficient information.	10% saving applied	Prudent and efficient, but revised timing places only two components within the planning period	74 (in 2012) and 1030 (in 2021)
6. Bullyard Distribution – Replace Meter Outlet Structures	2032-33	797	Prudent and efficient	797	Prudent and efficient	797
7. Don Beattie Pump Station – Replace Common Controls	2018-19	1,220	Prudent but not efficient, and deferred to 2022	936	Prudent but not efficient, and deferred to 2022	936
8. Bucca Weir – Refurbishment of Trash Racks and Guides	2012-13	72	Transferred to the Bundaberg WSS	0	Transferred to the Bundaberg WSS	0
9. Woongarra Pump Station – Replacement of Electrical Common Control System (2032)	2032	2,583	Not sampled	10% saving applied	Prudent but not efficient, and brought forward to 2022	1,405
10. Air valve replacement	Various	3,700	Not sampled	10% saving applied	Prudent but not efficient	1,410
Non-Sampled Items				**10% saving applied**		**20% saving applied**

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

4.6 SunWater's Consultation with Customers

Draft Report

Stakeholder Submissions

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.

CANEGROWERS (2011b) submitted that the reduction in service standards in recent years without approval of customers was a major concern, for example. 48 to 72 hours for shut downs. CANEGROWERS also suggested that if SunWater does not meet its service standards and there is no action, the service standards do not mean anything.

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 recommended 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.

Submissions Received from Stakeholders on the Draft Report

In response to the Draft Report, irrigators during the round 3 consultation submitted that SunWater's information system should be set up to allow for information to be assessed and reviewed in the future. Irrigators considered that standards of service needed to be reviewed.

CANEGROWERS Isis (2011a) submitted that SunWater had a large over-budget spend on renewals items without consultation with customers. CANEGROWERS Isis submitted that more consultation on renewals expenditure, asset management planning and scheme management is required. A more optimised approach to future renewal spends is required to ensure the renewal does not exceed the scheme/system requirements and therefore exceed the customers ability to pay for the service.

SunWater (2011as) submitted that the nature and extent of stakeholder consultation is ultimately a matter for SunWater and its customers. SunWater submitted that costs would be involved in implementing the Authority's recommendations and that the Authority had failed to establish that the benefits outweighed the costs.

SunWater considers that although it is crucial that SunWater retains ultimate control over decisions regarding renewals expenditure, opportunities to improve information provided to customers that does not involve legislative amendment do exist.

Authority's Response to Submissions Received on the Draft Report

The Authority shares irrigators' concerns regarding the availability of information from SunWater and expects SunWater's readiness for subsequent pricing investigations to improve.

In response to SunWater's concerns that excessive costs will be incurred undertaking consultation, the Authority considers that SunWater's estimated cost is modest compared to total renewals spend, as noted previously. The benefits of greater consultation are likely to outweigh the costs, as noted in Volume 1.

In addition, the Authority agrees that SunWater maintain ultimate control over its renewals annuity program. However, the Authority agrees with CANEGROWERS Isis's comment that that customer consultation has not been adequate under current legislation (despite explicit recommendations of the past price review) and, as a consequence, SunWater should be more formally obliged to undertake consultation.

4.7 Allocation of Distribution Renewals Costs According to WAE Priority

Previous Review

For the 2006-11 price path, the renewals costs for the Bundaberg Distribution bulk water infrastructure were apportioned between priority groups using converted nominal water allocations. The conversion to medium priority WAE was determined by a pricing conversion factor (1.7:1), that is, one ML of high priority WAE was considered equivalent to 1.7 ML of medium priority WAE.

Draft Report

Stakeholder Submissions

SunWater

SunWater (2011i) submitted that the allocation of the renewals annuity is a matter for tariff setting by the Authority, but that the headworks utilisation factor (HUF) methodology should not be used because the HUF is not relevant to the allocation of fixed renewals costs in distribution systems which do not provide storage.

In determining a basis for allocating fixed distribution system costs to customers in general (rather than specifically between customer priority groups), SunWater submitted that current WAEs should be adopted. SunWater stated that current WAEs represent the best available means of determining customers' current share of distribution system capacity.

Other Stakeholders

During the second round of consultations (April 2011), irrigators expressed concern regarding conversion factors since some growers are likely to convert from medium to high priority over the next five years. Irrigators considered that this will cause remaining medium priority users to be imposed with extra costs. Conversion factors should be calculated by converting all medium priority to high priority and use this for both bulk and channel so there is no incentive or cost impacts on remaining growers if some growers decide to convert.

Authority's Analysis

As noted in Volume 1, the Authority considered that distribution system costs should be allocated according to the relevant cost drivers. The Authority did not consider the HUF methodology to be an appropriate cost driver for distribution system costs.

In principle, the Authority considered that distribution system capacity is the relevant cost driver for fixed renewals expenditure. In general, the best measure of capacity share is the instantaneous or peak flow rate. However, neither DERM's regulatory framework nor SunWater's contracts currently specify a peak flow rate or share of system capacity.

As discussed in Volume 1, the Authority recommended that nominal WAEs be used for the allocation of fixed distribution system costs between priority groups. That is, on the basis of current WAE held, irrespective of priority type, with no conversion. Under this approach, high and medium priority WAE are allocated the same costs per ML. This reflects the view that medium and high priority users have the same share of distribution system capacity per ML of nominal WAE, as recognised by some customers (including the Central Highland Cotton Growers and Irrigators Association) and as submitted by SunWater.

The Authority noted that its recommended approach addresses irrigators' concerns by providing no incentive or cost impacts on remaining growers if some growers decide to convert.

The Authority also recommended that, at the conclusion of this review, SunWater commence a review of a more appropriate means for allocating fixed renewals costs in distribution systems.

4.8 Calculating the Renewals Annuity

Draft Report

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

For the Bundaberg Distribution System the recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.16. The table shows the total renewals annuity recommended by the Authority and the component amounts for high and medium priority customers. Also presented for comparison is SunWater's total renewals annuity for 2006-11 and SunWater's proposed total annuity for 2012-16. SunWater did not submit a disaggregation between high and medium priority customers.

Final Report

For the Final Report, changes to the Authority's recommended forecast renewals annuity arise due to revised assessment of specific renewals items for which new information was provided. The changes included

(a) a change in the 1 July 2006 opening ARR balance from the use of actual renewals data. The 2006 opening balance is higher than in the Draft Report;

(b) the application of a 4% saving to non-sampled items and sampled items for which there was insufficient information, rather than 10% in the Draft Report;

(c) removal of the previously included flood damage repair costs for 2010-11;

(d) inclusion of Intersafe that was assessed as prudent and efficient (previously erroneously adjusted by 10%);

(e) application of a 20% saving to non-sampled items and sampled forecast renewals items for which there was insufficient information (instead of 10% in the Draft Report); and

(f) adjustments to two items sampled after the Draft Report that were assessed as prudent but not efficient (Woongarra Pump Station electrical control system, reduced from $2.583 million to $1.405 million; and air valve replacements reduced from $3.7 million to $1.41 million).

The revised renewals annuities recommended by the Authority are provided in Table 4.16 for comparison with the Draft Report estimates. The combined effect of the above changes results in a reduction in the renewals annuity.

Table 4.16: Bundaberg Distribution System Renewals Annuity ($000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Draft Report											
SunWater	1,701	1,419	1,409	1,580	1,591	1,445	1,515	1,593	1,616	1,692	1,692
Authority	-	-	-	-	-	-	1,545	1,658	1,686	1,790	1,810
High Priority	-	-	-	-	-	-	18	20	20	21	21
Medium Priority	-	-	-	-	-	-	1,527	1,639	1,666	1,769	1,788
Final Report											
Total							1,365	1,487	1,514	1,569	1,589
High Priority							15	17	17	18	18
Medium Priority							1,350	1,471	1,497	1,552	1,572

Note: Includes indirect and overhead costs relating to renewals expenditure, which is discussed in Chapter 5. SunWater's renewals annuity does not include the allocation of Gin Gin channel costs to the bulk system (see Chapter 3). The Authority's renewals annuity does include the adjustment. Source: Actuals (SunWater, 2011) and Recommended (QCA, 2011, 2012).

5. OPERATING COSTS

5.1 Background

Ministerial Direction

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

Issues

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

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

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

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

(d) the most appropriate methodologies for assigning operating costs to service contracts[1] and to different priority customer groups (within each service contract).

5.2 Total Operating Costs

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

Non-direct costs are classified as either:

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

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

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

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

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

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

(b) service provision relates to:

(i) water delivery – receiving and collating water orders, scheduling the diversion of bulk water into the distribution system, monitoring channel flows and operating regulating structures and quarterly meter reading; 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 distribution service include those relating to

(i) the ROP – water accounting and managing and reporting to DERM on the distribution loss WAE;

(ii) environmental management to comply with the ROP and *Environmental Protection Act 1994* which require SunWater to deal with risks such as fish deaths, chemical usage, pollution, contamination and the discharge of water from channels and drains into the environment; and

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

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

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

Previous Review

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

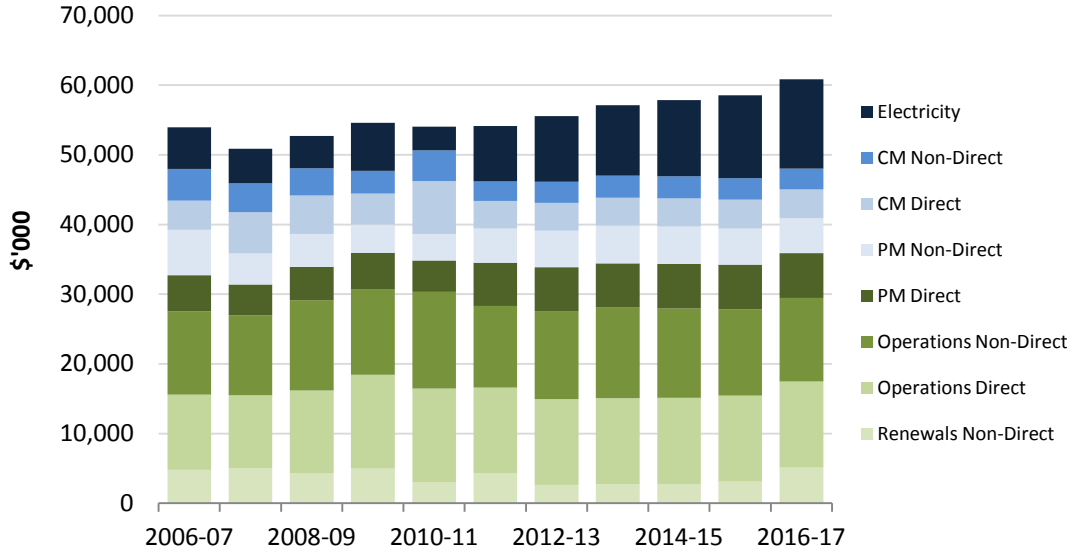
Draft Report

Stakeholder Submissions

SunWater

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

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

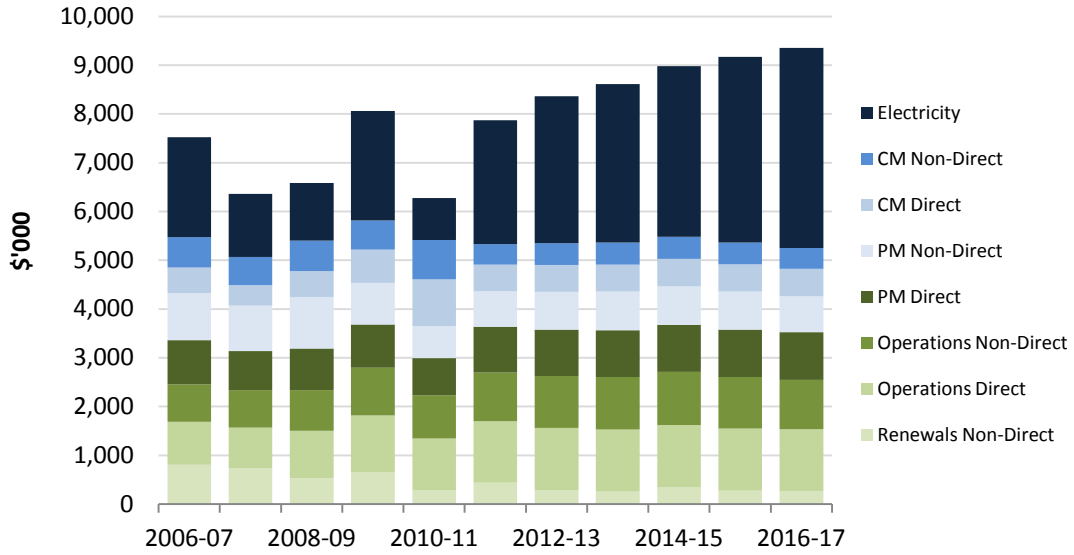


Note: Renewals direct costs are discussed in the previous chapter. Renewals non-direct costs are the non-direct operating costs allocated to renewals. Totals vary from NSP due to the inclusion of renewals non-direct costs, SunWater's revised approach to insurance and electricity, exclusion of revenue 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 Bundaberg Distribution System (all sectors) is shown in Figure 5.2 and Table 5.1 and

Table 5.2.

Figure 5.2: Total Operating Costs – Bundaberg Distribution System (Real $'000)



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

Table 5.1: Expenditure by Activity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	1,652	1,597	1,807	2,148	1,943	2,261	2,335	2,353	2,359	2,334	2,286
Electricity	2,046	1,292	1,179	2,245	859	2,540	3,011	3,245	3,498	3,808	4,104
Preventive Maintenance	1,866	1,738	1,910	1,734	1,423	1,667	1,728	1,747	1,758	1,748	1,712
Corrective Maintenance	1,151	998	1,151	1,281	1,764	962	997	1,008	1,015	1,008	988
Renewals Non-Direct	806	739	534	652	288	438	290	256	351	275	266
Total	**7,520**	**6,363**	**6,581**	**8,060**	**6,275**	**7,869**	**8,361**	**8,611**	**8,981**	**9,174**	**9,355**

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 (2011).

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	1,179	940	1,145	1,399	1,216	1,447	1,469	1,469	1,469	1,469	1,469
Electricity	2,046	1,292	1,179	2,245	859	2,540	3,011	3,245	3,498	3,808	4,104
Contractors	103	140	215	217	309	148	150	152	154	156	156
Materials	549	468	449	552	693	565	573	582	590	599	599
Other	484	503	542	571	561	584	584	584	584	584	584
Non-Direct	3,158	3,019	3,051	3,077	2,637	2,585	2,574	2,579	2,686	2,558	2,443
Total	**7,520**	**6,363**	**6,581**	**8,060**	**6,275**	**7,869**	**8,361**	**8,611**	**8,981**	**9,174**	**9,355**

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 (2011).

In its NSP, SunWater submitted that the operating costs for this system averaged $6.3 million per year over the period of the current price path. [Operating costs as defined in the NSP exclude the indirect and overhead costs allocated to renewals expenditure.] The projected efficient average operating costs in the NSP for 2011-16 are $7.1 million per annum.

Other Stakeholders

CANEGROWERS (2011a) submitted that operations costs in the distribution system are estimated to increase by 14% over the next five years in real terms which is around 37% in nominal terms by 2015-16. Also 32% of operating costs are overheads. Electricity is a major component of costs at $29/ML or $2.3 million in total. Also insurance is $475,000 for the distribution system which is 5% of total costs.

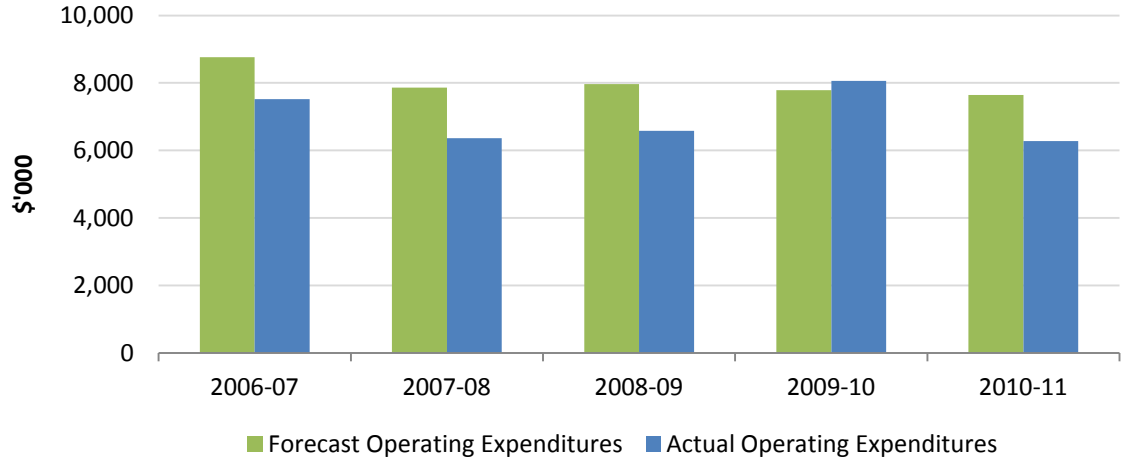
Authority's Analysis

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

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

In 2011, the Authority engaged Indec to assess whether SunWater achieved the cost savings forecast in 2005-06. A comparison of forecast and actual operating costs for the Bundaberg Distribution System is shown in Figure 5.3 below. For this scheme, SunWater's actual operating costs were less than Indec's forecast efficient operating costs by $5,222,000 over the period. Indec noted that anomalies could arise for the service contracts from linked bulk and distribution systems and the solution was to review them as bundled schemes. See Volume 1.

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



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

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

Following the Draft Report, further information was received from SunWater about how savings from SLFI are taken into account in its operating cost estimates. This information is set out in Volume 1.

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, and are addressing key regulatory compliance and business requirements; and to ensure a high degree of flexibility across SunWater's workforce.

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

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

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

Previous Review

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

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

Draft Report

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 5.3). SunWater's approach to the forecasting of non-direct operating expenditures is detailed in Volume 1.

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

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

Total non-direct costs and those allocated to the Bundaberg Distribution System are in Table 5.3 below including non-direct costs attributed to renewals.

Table 5.3: SunWater's Actual and Proposed Non-Direct Costs (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	27,831	25,097	25,872	24,579	21,130	23,770	23,512	24,244	24,055	23,708	25,089
Bundaberg Distribution	3,158	3,019	3,051	3,077	2,637	2,585	2,574	2,579	2,686	2,558	2,444

Source: SunWater (2011)

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

Other Stakeholders

No other stakeholders commented on this matter.

Authority's Analysis

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

In seeking to establish prudency and efficiency, the Authority commissioned Deloitte Touche Tohmatsu (Deloitte) to review SunWater's non-direct costs. Deloitte carried out benchmarking to assess where potential efficiencies within SunWater may be achieved. Deloitte identified savings of $495,314 (in 2011 real terms) per annum in finance, human resources, information technology, and health, safety, environmental and quality areas (for the whole of SunWater).

Deloitte was unable to draw any definitive conclusions from an attempt to benchmark against Pioneer Valley Water Board (PVWater) and other Australian rural water service providers. Deloitte noted that PVWater's non-direct costs were higher than those of SunWater as a percentage of total operating costs – but that there are differences between PVWater and SunWater which made the comparison unreliable[2].

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

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

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

On this basis, the Authority 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 was intended to ensure 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.

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

Submissions Received from Stakeholders on the Draft Report

Non-direct costs were subject to detailed comments during the round 3 consultation. Irrigators raised the following concerns:

(a) there has been a very large increase in non-direct costs in the past five years;

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

(b) SunWater central costs are now more than 40% higher than was agreed in 2005-06, which irrigators consider is too high. Irrigators suggested that reducing non-direct costs by 2.7-8.9% [as per the Authority's Draft Report] is inadequate;

(c) Pioneer Valley Water Board (not a SunWater business) is far more efficient than SunWater channel service contracts despite Deloitte's findings. Deloitte's figures are considered wrong and at odds with the Authority's Draft Report. When placed into the Deloitte study – most SunWater channels come out with 50% overhead costs compared to 38% of overheads in Pioneer Valley Water Board;

(d) irrigation service contracts are allocated a larger portion of non-direct costs than non-irrigation service contracts. The analysis by Deloitte is on SunWater as–a-whole rather than just irrigation service contacts where non-direct costs are much higher. SunWater's irrigation non-direct costs should be compared against Deloitte's sample – rather than SunWater as a whole;

(e) irrigators' suggested that SunWater wins contracts all over Australia with very high overhead costs because SunWater put less overheads into non-irrigation contracts to make them competitive and allocates more costs to irrigation service contracts. Irrigators are considered to be paying the overheads for commercial projects;

(f) irrigation customers cannot leave, so SunWater spends more time/effort in seeking new commercial business. Therefore, more non-direct costs should be allocated to the commercial service contracts; and

(g) the Authority should reduce non-direct costs to 34% in Bundaberg, which is the whole SunWater average.

BRIG (2011e) submitted that high levels of non-direct costs cannot be justified. BRIG recommended that the Authority review proposed non-direct costs on an annual basis until transparency is achieved.

BRIG are concerned that irrigators are paying a share of overhead costs associated with the Infrastructure Development Unit. BRIG are unsure of the functions of this unit but assumes it deals with "new water" projects. If this is so, BRIG believes these costs should not be met by existing schemes.

ISIS Central Sugar Mill (2012) submitted that the simple allocation of non-direct costs based upon direct labour disadvantages extensive distribution systems that have higher direct labour than other schemes. Whilst it is acknowledged Deloitte identified some alternative cost allocation bases, it is requested that QCA identify a more accurate and therefore more equitable basis for allocation which does not disadvantage the Bundaberg Distribution System.

CANEGROWERS Isis (2011b) understood that the Bundaberg Bulk has an indirect and overhead cost greater than 52% and the Bundaberg Distribution is greater than 30%. However, SunWater allocates indirect costs and overheads to other service contracts at 24%. The Deloitte Report and QCA report SunWater's total indirect and overheads percentage of total costs is 34%.

CANEGROWERS Isis questions why the indirect costs and overheads should not be applied at 34% of total costs.

During consultation, stakeholders also raised that SunWater seem to have taken out too much insurance. They asserted that SunWater is a big company and should be able to carry some risk. Questions were raised as to whether SunWater needs professional indemnity insurance. Other

insurances are typically competitively sourced but professional indemnity insurance is expensive and unnecessary. This insurance would be most needed for the consulting contracts and non irrigation service contracts. Stakeholders asserted that the Authority should remove the cost of professional indemnity insurance.

Authority's Response to Submissions Received on the Draft Report

Quantum of Non-Direct Costs

In response to concerns raised during round 3 consultation in (a) and (b) above on the amount of SunWater's non-direct costs, the Authority notes that SunWater's non-direct costs have not increased markedly in total or for the Bundaberg WSS over the past five years. The Authority's review of SunWater's non-direct costs against available benchmarks identified savings as per the Draft Report.

Following the Draft Report, further information was received from SunWater about how savings from SLFI are taken into account in its operating cost estimates. This information is set out in Volume 1.

Proportion of Non-direct to Total Costs

In relation to the proportion of non-direct to total costs (as raised in items (c) through (f) and by other stakeholders), the Authority notes that in many schemes (including Bundaberg WSS), irrigators considered that the non-direct costs allocated to their schemes appeared to be high, and in some cases much higher than the SunWater-wide average ratio of non-direct to total costs. The reason for the wide variation of non-direct to total cost ratios across service contracts is because non-direct costs are allocated on the basis of DLC. It follows that if a service contract has a relatively high proportion of labour costs it will attract a relatively high proportion of non-direct costs.

In addition, the greater the indirect resources absorbed by a particular scheme, the higher will be the ratio of non-direct costs to direct labour costs. Together, these factors result in a relatively high non-direct to total cost ratio for irrigation service contracts.

Irrigators concerns in (c) above regarding the finding of Deloitte' review of operating costs is noted. Deloitte first reviewed SunWater's total non-direct costs and then the allocation of these costs to service contracts. Deloitte did not recommend that non-direct costs be allocated to service contracts using a SunWater average percentage figure. Therefore, the Authority does not recommend (item (g)) that a SunWater wide average of overhead costs should be adopted in the Bundaberg Distribution System. Instead the Authority believes that costs should be allocated as accurately as possible to each scheme based on an appropriate allocation methodology (see below).

Allocation of Non-directs to Service Contracts

In regard to the allocation of non-direct costs to irrigation service contracts, the Draft Report recommended a change to SunWater's approach to allocating non-direct costs for Infrastructure Management (IM) and Infrastructure Development (ID). The Authority recommended (regionally) targeted DLC. SunWater recommended state-wide DLC, consistent with SunWater's general approach to the allocation of other non-direct costs.

However, as set out in Volume 1, in the light of new information submitted by SunWater, the Authority now considers that the benefit of using targeted DLC is unlikely to outweigh the additional complexity and cost of implementing and maintaining this alternative approach. It is proposed to adopt the approach initially proposed by SunWater.

Accordingly, the Authority has amended its recommendation (removing the recommendation to adopt targeted DLC for these cost centres).

Deloitte (2011) reviewed cost allocation methods and supported the use of direct labour costs (DLC) for the reasons outlined in the Draft Report. Essentially, SunWater's costs are predominantly driven by the requirement to maintain and operate assets. Non-direct costs are closely related to such activities which draw primarily on labour. To the extent that head office staff direct their activities to revenue generating activities, their costs are allocated to direct labour costs (as suggested). DLC is therefore regarded as an appropriate basis for allocating non-direct costs.

Remaining Scheme Specific Concerns

The Authority has not recommended an annual review of non-direct costs (as suggested by BRIG), as SunWater bears the risk of any costs that exceed the Authority's recommended non-direct costs. The Authority agrees that the transparency of SunWater's costs could be improved. The Authority has made recommendations regarding consultation.

In relation to BRIG's concerns regarding Infrastructure Development Unit costs, the Authority notes that, as outlined in the Deloitte report, the functions of the Infrastructure Development Unit are to undertake all infrastructure projects internal to SunWater and those with external clients. Accordingly, Infrastructure Development are not involved exclusively with new infrastructure projects but are involved in the infrastructure requirements of existing WSSs.

As noted in Volume 1, Deloitte have confirmed that SunWater does not recover ID costs related to new water projects from existing customers, as this is effectively a research and development function of the business for new clients, and not existing customers.

In regard to professional indemnity insurance, the Authority considers it appropriate that such costs are included. The efficient costs are allowed for in overhead costs.

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

Table 5.4: Recommended Non-Direct Costs (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	3,158	3,019	3,051	3,077	2,637	2,585	2,574	2,579	2,686	2,558	2,443
Authority Draft							2,477	2,463	2,531	2,375	2,235
Authority Final							2,497	2,479	2,536	2,383	2,241

Source: SunWater (2011ap) and SunWater (2011ao).

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.

Draft Report

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

SunWater's forecast direct operating expenditure by activity is set out in Table 5.5 below. These estimates reflect SunWater's most recent positions and differ from the NSP. The estimates also reflect the most recent information provided by SunWater to the Authority in October 2011.

Table 5.5: SunWater Direct Operating Expenditures by Activity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	884	831	971	1,165	1,058	1,262	1,273	1,273	1,272	1,273	1,273
Electricity	2,046	1,292	1,179	2,245	859	2,540	3,011	3,245	3,498	3,808	4,104
Preventive Maintenance	905	801	854	887	763	938	952	959	965	972	972
Corrective Maintenance	528	420	526	687	959	543	551	555	559	563	563
Total	**4,362**	**3,344**	**3,530**	**4,983**	**3,638**	**5,284**	**5,787**	**6,032**	**6,295**	**6,616**	**6,912**

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	1,179	940	1,145	1,399	1,216	1,447	1,469	1,469	1,469	1,469	1,469
Electricity	2,046	1,292	1,179	2,245	859	2,540	3,011	3,245	3,498	3,808	4,104
Contractors	103	140	215	217	309	148	150	152	154	156	156
Materials	549	468	449	552	693	565	573	582	590	599	599
Other	484	503	542	571	561	584	584	584	584	584	584
Total	**4,362**	**3,344**	**3,530**	**4,983**	**3,638**	**5,284**	**5,787**	**6,032**	**6,295**	**6,616**	**6,912**

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

Authority's Analysis

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

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

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

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

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

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

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

(f) retrieving information regarding individual assets was difficult.

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

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

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

(a) attain greater operating efficiency;

(b) achieve greater transparency;

(c) facilitate future price reviews; and

(d) promote more meaningful stakeholder engagement..

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

Final Report

As noted in Volume 1, to achieve greater transparency, the Authority has also recommended that SunWater's Statement of Corporate Intent (and relevant legislation) require SunWater to consult with customers in relation to forecast and actual operating expenditure and publish on its website, annually updated NSPs (containing this and renewals information) commencing by 30 June 2014. The NSPs should be enhanced to present details of SunWater's proposed operating expenditure and to account for significant variances between previously forecast and actual material operating expenditure.

In this manner, greater transparency will be achieved over time.

Review of Operating Expenditure

Item 1 - Operations

Stakeholder Submissions

SunWater noted that 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, administration, and environmental and land management.

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

Specific items raised in SunWater's NSP relating to this system relate to:

(a) scheduling releases and delivering water;

(b) operating pump stations and regulating structures;

(c) cleaning of trash and weed screens;

(d) recording and reporting releases, water use and system losses;

(e) reading meters;

(f) undertaking system surveillance to ensure that customer standards are being met;

(g) liaising with customers; and

(h) notifying customers of interruptions.

SunWater's proposed operations costs are set out in Table 5.5 above.

No other stakeholders commented on this item prior to the Draft Report.

Aurecon's Review

Aurecon reviewed SunWater's operations costs in more detail as shown in Table 5.7.

Table 5.7: Operations Expenditure by Type ($2010-11, $'000)

Type	***Actual***					***Forecast***				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***
Labour	388	312	376	565	690	671	677	677	681	692
Materials	17	20	17	25	10	11	11	11	12	12
Contractors	1	1	50	18	115	1	1	1	1	122
Other	478	499	529	556	511	508	505	505	505	504
Total Direct Costs	*884*	*831*	*971*	*1,165*	*1,404*	*1,191*	*1,194*	*1,194*	*1,199*	*1,330*
Indirects	372	390	403	353	365	312	360	369	375	375
Overheads	397	376	432	630	707	679	689	697	703	701
Total Operations	**1,653**	**1,597**	**1,807**	**2,148**	**2,398**	**2,182**	**2,243**	**2,260**	**2,277**	**2,406**

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

Particular observations by Aurecon were that:

(a) operations costs comprise between 28% and 35% of total operating costs;

(b) water usage in 2006-07 and 2009-10 were at similar levels, however operations costs were $1.65 million in 2006-07 and $2.14 million in 2009-10; and

(c) cost items in the 'other' category included insurance ($475,000 in 2010-11), rates ($20,000) and other administrative costs ($16,000).

Aurecon provided a summary of the operations costs by activity for the four years 2006-10 (Table 5.8).

Table 5.8: Operations Expenditure by Activity ($2010-11, $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*
Customer Management	68	-	-	157
WHS	-	-	-	91
Environmental Management	-	-	7	2
Water Management	-	-	-	29
Scheme Management	468	571	821	1,174
Dam Safety	14	12	14	32
Schedule /Deliver	1,085	944	899	604
Metering	31	68	63	57
Facility Management	16	-	-	-

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

Significant items include:

(a) customer management – customer interfacing and enquiries, billing and account management and water trading activities;

(b) scheme management – energy management, land and property management, manual development, scheme strategies, facility contingency plans and emergency action plans, system leakage management plans (SLMPs), insurance, rates and land taxes;

(c) schedule/deliver – scheduling, releasing, operations of pump stations and SCADA, monitoring of water entitlements, reporting of breaches, water harvesting, ROP compliance of water levels and flows; and

(d) metering – costs incurred in reading meters.

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

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

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

(b) cost estimates for metering be based on 2009-10 costs (assuming that is the first time all installed meters were read, and major labour efficiency measures were gained in comparison to 2008-09); and

(c) the Dam Safety forecast 2010-11 costs is reduced by $5,100 to account for the transfer of activities to Preventive Maintenance.

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

Authority's Analysis

The Authority noted that Aurecon was unable to validate the prudency and efficiency of SunWater's Operations costs due to insufficient information. The Authority noted that Aurecon did not recommend any adjustment to forecast operations costs, and has therefore included SunWater's proposed operations costs in its recommended tariffs.

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

The Authority noted that Aurecon did not recommend any adjustment to operations costs for this scheme.

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

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

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

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.

Typical examples of preventive maintenance are:

(a) mechanical and chemical weed control including Acrolein injections;

(b) desilting of channels and drains;

(c) electrical and mechanical servicing of regulating gates, valves, meters and water level sensors;

(d) mechanical and electrical servicing of pumps, motors and filter systems; and

(e) servicing batteries and back-up systems.

SunWater's proposed preventive maintenance costs are identified in Table 5.5 above.

Other Stakeholders

M and K Hetherington (2010) submitted that hourly rates for meter servicing are excessive at $117 per hour. Even fully trained electricians are not paid this amount.

Authority Analysis

Aurecon's Review

Aurecon observed that:

(a) in 2007, costs that should have been coded to refurbishment were included in preventive maintenance causing a spike in these costs. Corrective maintenance costs were likewise understated;

(b) although preventive maintenance should be correlated to usage to some degree, Aurecon did not find a consistent correlation;

(c) in 2010-11, 44.9% of preventive maintenance costs were indirect costs and overheads, 28.9% was labour and 18.9% was materials. The 2010-11 cost structure was used as a basis for 2012-17;

(d) the total cost of labour at $484,000 in 2010-11 was higher than the average of $456,000 for 2006-07 to 2009-10; and

(e) weed control activities around the storages varied from $931,000 (2009-10) to $1.2 million (2006-07), with labour component averaging $236,000 (between 2006-07 and 2009-10).

Aurecon noted that SunWater's proposed labour costs for preventive maintenance of $484,000 in 2010-11 are comprised of weed control ($213,000) and servicing and condition monitoring ($256,000). Aurecon noted that PB recommended 3,318 hours of labour for servicing and condition monitoring in 2010-11 at a total cost of $140,439. This included 126 hours of new monitoring and inspection activities. Aurecon noted that the proposed hours of labour is substantially less than what has historically occurred.

Aurecon noted that SunWater included $256,000 for Servicing and Condition Monitoring which is approximately $120,000 more than that recommended by PB.

Aurecon was unable to determine whether forecast preventive maintenance costs are prudent and efficient and recommended that SunWater provide justification as to why labour costs over and above that recommended by PB were adopted.

SunWater's Response

SunWater stated that Aurecon incorrectly assumed that forecast preventive maintenance costs were a simple extrapolation of 2009-10 actual costs and then proceeded to disaggregate costs at a sub-activity level using partial information from the PB report.

SunWater submitted that the forecast for corrective maintenance was made based on the expected operating conditions over 2012-16, which was made at the activity level. These costs cannot be disaggregated to the sub-activity level.

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

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

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

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

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

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

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

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

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

Conclusion

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

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

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

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

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

For this system, the Authority noted SunWater's objections to Aurecon's recommendations. In objecting to Aurecon's findings regarding weed control, SunWater submitted that costs be reviewed on a scheme-wide basis, rather than on a sub-activity basis. However, the Authority considered that it is necessary to understand the sub-activities performed by SunWater staff to be able to evaluate the efficiency of labour costs.

In the absence of further information from SunWater, the Authority accepted Aurecon's recommendation that SunWater's preventive maintenance costs cannot be considered prudent and efficient. In particular, the Authority noted that SunWater's proposed labour costs exceed those recommended by PB by $120,000 per annum, a difference that Aurecon could not reconcile. As a consequence, the Authority excluded $120,000 per annum from SunWater proposed preventive maintenance costs in its recommended tariffs.

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Item 3: Corrective Maintenance

Draft Report

SunWater's Submission

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

SunWater identifies two types of corrective maintenance activities:

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

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

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

Typical corrective maintenance examples on drains and channels are:

(a) erosion repairs;

(b) flow meter repairs and replacements;

(c) removing weed blockages;

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

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

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

SunWater's proposed corrective maintenance costs are set out in Table 5.5 above.

Aurecon's Review

Aurecon noted that corrective maintenance costs mainly related to indirect costs and overheads (44.6%), labour (28.7%), materials (14.2%) and other (8.4%).

Aurecon noted the difficulty in forecasting corrective maintenance costs, and that SunWater's approach of using historical expenditure as a basis for forecasting is commonly used by other water utilities. On this basis, the annual average direct cost was $540,000 (excluding indirect costs and overheads). This compares to SunWater's forecast of $536,000 for the period starting at 2010-11. Aurecon considered SunWater's forecast to be prudent and efficient.

Authority's Analysis

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

For this system, the Authority accepted Aurecon's recommendations, and accepts SunWater's forecast corrective maintenance costs as prudent and efficient.

Stakeholder Submissions Received on the Draft Report

BRIG (2011e) submitted that the 2012-13 Dinner Hill pump station replacement project (reviewed above) refers to labour savings. BRIG noted that there is no indication that these have been considered in the operating cost budget.

Authority's Response to Submissions Received on the Draft Report

The Authority notes that it has not reviewed direct labour costs on a scheme by scheme basis, but has instead focussed on the activity that costs relate to (such as corrective maintenance). The Authority has considered general direct labour savings in Volume 1, which recommends general efficiency savings for direct costs of at least 4% and further labour cost savings of 0.75% per annum. The Authority considers that reduced direct labour costs related to corrective maintenance at the Dinner Hill Pump Station will be included in these general efficiency savings. On this basis, the Authority has not made a specific adjustment to direct labour costs in the Bundaberg Distribution System.

Item 4: Electricity

Draft Report

SunWater's Submission

SunWater submitted that electricity costs mostly relate to the operation of the pump stations. Other electricity using facilities use little by comparison.

SunWater submitted that electricity costs are difficult to forecast accurately because volumes pumped, electricity consumption and electricity prices cannot be reliably projected. SunWater proposed that a risk sharing approach be applied to pumping costs going forward as outlined below:

(a) electricity cost to be forecast based on electricity prices escalated at CPI;

(b) volumes pumped to be forecast based on projected water use volumes;

(c) reconciliations of forecast cost vs. actual cost to be maintained; and

(d) appropriate overs and unders price adjustment to be incorporated into the next price path beginning 1 July 2016.

Table 5.9 sets out the average forecast electricity cost per ML for projected deliveries in 2011-12. For subsequent years, the price of electricity will change, affecting the costs per ML pumped. However, the forecast average annual volume remains the same.

Table 5.9: SunWater's Forecast 2011-12 Electricity Costs ($2010-11, $'000)

	Estimated Cost per ML $/ML	***Projected Water Usage ML/annum***	***Projected Cost ($'000)***
SunWater	29.12	75,652	2,203
Burnett Water	28.45	3,410	97
Total		**79,062**	**2,300**

Source: SunWater (2011)

SunWater submitted that the projected electricity cost associated with pumping WAE associated with Burnett Water Pty Ltd have been identified in Table 5.9 above and will need to be taken into account when setting tariffs for the distribution system. All other costs associated with the transportation of Burnett Water WAE have been treated in accordance with the arrangement negotiated with distribution systems customers in 2005.

SunWater (2011h) 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 (2011ak) 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 5.5 above.

Aurecon's Review

Aurecon did not review SunWater's electricity costs.

Authority's Analysis

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

As noted in Volume 1, the Authority proposed 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.

In the Draft Report, the Authority did not accept an escalation rate that makes an explicit allowance for carbon price impacts prior to them becoming enacted legislation.

The Authority accepted SunWater's proposal to allocate $97,000 of electricity costs to Burnett Water.

The Authority adjusted proposed electricity costs as set out in Table 5.10 below.

Stakeholder Submissions Received on the Draft Report

During Round 3 of consultation, stakeholders questioned how the Authority can be certain that the electricity escalation forecasts are correct. They asserted that the Authority needs to verify the starting balance of electricity costs.

BRIG (2011e) submitted that annual, cost pass through for electricity should be introduced with a Part E tariff exclusively for electricity. This cost pass through should be in arrears and subject to regulatory over-sight.

BRIG (2011) also asserted that the uncertainty and impacts associated with the proposed carbon tax, the Authority's pending review of Queensland electricity tariffs and the proposed annual review of the cost differential between contestable and franchise tariffs, means that electricity costs cannot be estimated with any acceptable level of confidence.

Accordingly, the proposed approach for an end of regulatory period adjustment for electricity (should electricity costs increase by more than 7.41%) is not acceptable on the basis that it could lead to inter-generational shifts in price.

Authority's Response to Submissions Received on the Draft Report

The Authority considers that it is accepted regulatory practice for a five year price path to be based on forecast costs, including electricity. Indeed, the use of forecasts is a necessity in order to achieve a critical benefit of 5-year price paths, which is price stability. This in turn should provide sufficient certainty for customers to make related medium term business decisions.

However, the Authority recognises that the Draft Report did not explicitly address the methodology applied by SunWater in preparing its proposed electricity cost forecasts. In preparing this Final Report, therefore, the Authority has taken further steps to increase the transparency, accuracy and robustness of these forecasts. Further detail is provided in Volume 1.

In relation to the concept of a Part E charge, the Authority considered that a further charge would add unnecessary complexity. While a purely electricity charge would provide marginal signals for the cost of additional electricity, the Authority considers that the Part B + Part D charge provides the appropriate marginal pricing signal as it includes other costs that are variable over the short and medium terms.

While the Part E charge could be adjusted to pass through actual electricity increases, this can also be done in the Part D charge.

Further information relevant to electricity cost escalation was available following the Draft Report. This included the release of the Authority's Draft Determination regarding the review of regulated (franchise) tariffs, the passing of relevant legislation relating to a carbon tax and the Australian Government's forecast of the impact of carbon trading.

As a result, and as set out in Volume 1, the Authority revised its recommended escalation of electricity costs.

The Authority recommends that electricity should be escalated by 6.6% in 2011-12, 12.5% in 2012-13 and 7% per annum for subsequent years, with the exception of 2015-16 where 8% will apply (reflecting a further 1% increase from the introduction of carbon trading). Proposed electricity costs are set out further below.

Item 5: Labour Costs

Submissions Received from Stakeholders on the Draft Report

BRlG considered that Sun Water has not demonstrated any ability to manage its labour costs in an efficient manner. BRIG commented on SunWater's inability to use a zero base budgeting approach. BRIG submitted that SunWater appeared to adopt a budgeting approach that keeps employee numbers constant even though it justifies some capital expenditure by claiming labour savings.

BRIG requested the QCA consultant examine whether SunWater had appropriate levels of staffing and mix of contractors and its own employees at its operating locations. However, this issue does not appear to have been addressed in any detail. BRIG acknowledged that this issue was, however, investigated at head office.

Authority's Response to Submissions Received on the Draft Report

The Authority notes that SunWater has indicated it previously sought to apply zero-based budgeting, but without particular success. The Authority agrees that SunWater needs to strengthen the planning and management of its labour costs, including improved budgeting and variance analysis, but has made alternative recommendations relating to the need to address these matters.

In relation to the staffing and mix of contractors, the Authority reviewed whether activities in Dawson WSS and Theodore Distribution System could be undertaken more cost effectively by local contractors not SunWater staff. It was found that while tasks could be undertaken by local contractors, it would require extensive training to ensure compliance with SunWater's health and safety processes.

There was an insufficient value of works orders in these schemes to justify SunWater vetting, training and commissioning local contractors. The Authority concluded that it is unlikely to be cost effective for SunWater to employ local contractors in these service contracts, when taking into account the associated size, number, complexity, range of skills and training required. The Authority did not review the mix of SunWater staff and local contractors in Bundaberg.

However, no evidence was found in the reviews (above) that SunWater could be more efficient through the engagement of local contractors.

Bundaberg is a larger scheme and further reviews may (or may not) have revealed different results, however, within the time constraints of the review this was not done. The Authority cannot, therefore, draw a robust conclusion, but has recommended other cost savings to ensure that staff mix Bundaberg be efficient (refer to relevant sections of this Final Report and Volume 1).

As noted above, Aurecon was able to examine labour costs in their review of preventive maintenance in the Bundaberg Distribution System, as this information was available. Aurecon's analysis resulted in a reduction of $120,000 in total preventive maintenance, to be applied to each year for the next pricing period. However, Aurecon was unable to review other direct labour costs.

Aurecon's recommendation has been accepted by the Authority.

Item 6: Cost Escalation

Draft Report

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

Direct Labour

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

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

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

Other Direct Costs

The Authority accepted 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.

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Non-direct costs

The Authority accepted 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

Draft Report

A comparison of SunWater's and the Authority's direct operating costs for the Bundaberg Distribution System is set out in Table 5.10. The Authority's proposed costs included all specific adjustments and the Authority's proposed cost escalations as noted above. As noted in Volume 1, the Authority 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.

Stakeholder Submissions Received on the Draft Report

CANEGROWERS Isis (2011a) submitted that there are no incentives for SunWater to achieve efficiencies beyond those recommended by the Authority. CANEGROWERS Isis believed that these productivity gains will become the maximum productivity gains rather than continually striving for the greatest potential gain in efficiency.

Authority's Response to Submissions on the Draft Report

The Authority notes, absent of an application for review of prices during the 2012-17 period, SunWater can retain cost savings that it makes in excess of those recommended by the Authority. In this regard, the Authority considers that SunWater does have incentive to reduce costs to the greatest extent possible. The Authority therefore recommends no change to its Draft Report recommendation, included in Table 5.10.

Further, as noted in Volume 1, in the Draft Report the Authority inadvertently understated cost saving percentage estimates. These have been corrected and as a result, the Authority has now applied a minimum 4.5% saving to direct operating costs (excluding electricity) in 2012-13. A further 0.75% saving arising from labour productivity is also applied annually.

The Authority's final recommended direct costs are shown below compared to the Draft Report recommendations.

Table 5.10: Direct Operating Costs (Real $'000)

	SunWater					Authority				
	2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17
Draft Report										
Operations	1,273	1,273	1,272	1,272	1,272	1,232	1,232	1,232	1,233	1,233
Preventive maintenance	952	959	965	972	972	922	928	934	940	940
Corrective maintenance	551	555	559	563	563	534	537	541	544	544
Electricity	3,011	3,245	3,498	3,808	4,104	2,582	2,677	2,777	2,910	3,049
Direct Operating Costs	5,787	6,032	6,295	6,615	6,911	5,269	5,375	5,484	5,627	5,766
Final Report										
Operations						1,196	1,197	1,197	1,198	1,198
Preventive maintenance						892	899	905	911	911
Corrective maintenance						518	521	525	528	528
Electricity						2,816	2,940	3,069	3,233	3,375
Direct Operating Costs						5,422	5,556	5,695	5,870	6,012

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.

Draft Report

Stakeholder Submissions

SunWater (2011j) has proposed to assign operating costs to users on the basis of their current WAE.

No other stakeholders commented on this matter.

Authority's Analysis

In Volume 1, the Authority has summarised the views of its consultants and has recommended that, in relation to distribution systems fixed operating costs in be allocated to medium and high priority customers using current WAEs. Variable costs should be allocated to medium and high priority WAE on the basis of water use.

The Authority recommended that for distribution systems insurance premiums are also allocated on the basis of nominal WAEs.

The effect for the Bundaberg Distribution System is detailed in the following chapter (as it takes into account other factors relevant to establishing total costs).

As no submissions were received on this issue following the Draft Report, the Authority proposes no change to its Draft Report conclusion.

5.6 Summary of Operating Costs

SunWater's proposed operating costs by activity and type are set out in Table 5.11. The Authority's draft recommended operating costs are set out in Table 5.12 and final operating costs in Table 5.13.

Compared to the Draft Report, the Final Report estimated operating costs take account of:

(a) an increase in non-direct costs to include the cost of options analyses and consultation with customers on renewals items ($445,000 for SunWater as a whole) which has been allocated to schemes on the basis of direct labour;

(b) lower direct operating costs reflecting higher efficiency gains; and

(c) increased electricity costs.

Taken together, total operating costs are higher than calculated in the Draft Report. The main reason for the increase is that electricity makes up a significant proportion of operating costs in the distribution system, and these costs have been significantly increased since the Draft Report.

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	684	684	684	684	684
Materials	11	11	12	12	12
Contractors	1	1	1	1	1
Other	577	577	576	576	576
Non-direct	1,063	1,081	1,086	1,061	1,013
Preventive Maintenance					
Labour	498	498	498	498	498
Materials	344	349	354	359	359
Contractors	108	110	111	113	113
Other	2	2	2	2	2
Non-direct	776	789	793	775	740
Corrective Maintenance					
Labour	286	286	286	286	286
Materials	218	221	224	228	228
Contractors	41	42	42	43	43
Other	6	6	6	6	6
Non-direct	446	453	456	446	425
Electricity	3,011	3,245	3,498	3,808	4,104
Total	**8,072**	**8,355**	**8,629**	**8,898**	**9,090**

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. These costs do not include the allocation of Gin Gin channel costs to the bulk system. Source: SunWater (2011ap) and SunWater (2011ao).

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	662	667	671	676	680
Materials	11	11	11	11	11
Contractors	0	1	1	1	1
Other	558	554	549	545	541
Non-direct	1,035	1,037	1,026	986	926
Preventive Maintenance					
Labour	482	486	489	492	495
Materials	333	335	338	340	337
Contractors	105	105	106	107	106
Other	1	1	1	1	1
Non-direct	755	757	749	721	677
Corrective Maintenance					
Labour	277	279	281	283	285
Materials	211	212	214	215	214
Contractors	40	40	40	41	40
Other	6	6	6	6	6
Non-direct	434	435	430	414	389
Electricity	2,582	2,677	2,777	2,910	3,049
Total	**7,493**	**7,603**	**7,689**	**7,748**	**7,757**

Note: These costs do not include the allocation of Gin Gin channel costs to the bulk system. Source: QCA (2011).

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	643	648	652	657	661
Materials	6	6	6	7	7
Contractors	0	0	0	0	0
Other	546	542	538	534	530
Non-direct	1,090	1,092	1,083	1,042	978
Preventive Maintenance					
Labour	467	470	474	477	480
Materials	323	325	327	329	327
Contractors	101	102	103	103	103
Other	1	1	1	1	1
Non-direct	747	748	741	713	671
Corrective Maintenance					
Labour	269	271	272	274	276
Materials	205	207	208	210	208
Contractors	39	39	39	39	39
Other	5	5	5	5	5
Non-direct	430	431	427	411	386
Electricity	2,816	2,940	3,069	3,233	3,375
Total	**7,689**	**7,827**	**7,946**	**8,035**	**8,046**

Note: These costs do not include the allocation of Gin Gin channel costs to the bulk system. Source: QCA (2011).

6. RECOMMENDED PRICES

6.1 Background

Ministerial Direction

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

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

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

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

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

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

The Ministerial Direction also requires that:

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

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

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

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

Previous Review

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

For this scheme, prices over 2006-11 were increased by CPI. In 2011-12, prices in this scheme were increase by $2/ML 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

Draft Report

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

Final Report

Since the Draft Report, the Authority undertook further analysis of revenue offsets for the Bundaberg Distribution system.

While SunWater proposed a total revenue for other fees and charges of $149,000, the Authority found that historically, this revenue averaged $213,000 over the 2006-10 period, excluding an abnormally large revenue amount in 2006-07. A further $2000 is sourced from termination fees.

SunWater (2012j) indicated that it will discontinue minimum charges over the 2012-17 price path. This source of revenue was significant in the Bundaberg distribution system due to the large number of small WAE holders. The Authority estimated revenue of $45,000 from this source in 2009-10.

The Authority therefore adopted an estimate of $170,000 ($213,000 + $2000 - $45,000) for the Final Report, which is slightly higher than Sun Water's forecast.

Table 6.1: Total Costs for the Bundaberg Distribution System (Real $'000)

	Actual Costs						*Future Costs*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
SunWater's Submitted Costs	7,575	6,732	7,232	8,875	7,526	8,724	9,435	9,796	10,094	10,439	10,630
Renewals Annuity	1,701	1,419	1,409	1,580	1,591	1,445	1,515	1,593	1,616	1,692	1,692
Operating Costs	6,714	5,625	6,047	7,408	5,987	7,431	8,072	8,355	8,629	8,898	9,089
Revenue Offsets	-841	-311	-224	-113	-53	-152	-152	-152	-151	-151	-151
Draft Report											
Authority's Total Costs	-	-	-	-	-	-	8,846	9,069	9,184	9,347	9,377
Renewals	-	-	-	-	-	-	1,545	1,658	1,686	1,790	1,810
Operating Costs	-	-	-	-	-	-	7,447	7,556	7,642	7,702	7,711
Revenue Offsets	-	-	-	-	-	-	-152	-152	-151	-151	-151
Return on Working Capital	-	-	-	-	-	-	6	6	6	6	6
Final Report											
Authority's Total Costs	-	-	-	-	-	-	8,890	9,150	9,296	9,441	9,473
Renewals	-	-	-	-	-	-	1,365	1,487	1,514	1,569	1,589
Operating Costs	-	-	-	-	-	-	7,689	7,827	7,946	8,035	8,046
Revenue Offsets	-	-	-	-	-	-	-170	-170	-169	-169	-169
Return on Working Capital	-	-	-	-	-	-	6	6	7	7	7

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. SunWater's costs do not include the allocation of Gin Gin channel costs to the bulk system (Chapter 3). The Authority's costs do include the adjustment. Source: SunWater (2011ap) Draft Report (QCA 2011) and Final Report (2012)

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 Bundaberg Distribution System and that only electricity pumping costs vary with water use.

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

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

(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; and

(d) costs that *should* vary with water use under Indec's proposed optimal (prudent and efficient) management approach (as outlined in Volume 1). On average across all SunWater's distribution systems, Indec considered 67% of costs would be fixed and 33% variable. However Indec proposed that scheme-specific tariff structures should be applied to reflect the relevant scheme costs.

For Bundaberg Distribution System WSS, Indec recommended 59% of costs should be fixed and 41% variable under optimal management. The Authority notes that this ratio differs from the current tariff structure which reflects the recovery of 70% of costs in the fixed charge and 30% of costs in the volumetric charge.

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

6.5 Allocation of Costs According to WAE Priority

Fixed Costs

The method of allocating fixed costs to priority groups is outlined in Chapter 4 – Renewals Annuity and Chapter 5 – Operating Costs. The outcome is summarised in Table 6.2. These costs are translated into the fixed charge using the relevant WAE for each priority group.

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Draft Report					
Net Fixed Costs	5,159	5,291	5,359	5,456	5,473
High Priority	61	62	63	64	64
Medium Priority	5,099	5,229	5,296	5,391	5,409
Final Report					
Net Fixed Costs	5,538	5,676	5,697	5,681	5,576
High Priority	62	63	64	63	62
Medium Priority	5,476	5,613	5,633	5,618	5,514

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

Variable Costs

Draft Report

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.

Stakeholder Submissions Received on the Draft Report

BRIG (2011e) submitted that the levels of use recorded over the 8 year period 2002-10 but excluding 2002-03, 2007-08 and 2008-09 does not reflect the usage expected over the coming price path because:

(a) storage levels were low for much of the recent past, reducing the level of announced allocation at the start of the water year (1 July). Given the current levels of both Paradise and Fred Haigh dams it is expected that storage levels will be good at the start of the 2012-13 water year.

(b) the Bundaberg Irrigation Scheme is supplementary in nature with rainfall supplying most of the crop demand. As a result, irrigation water use is only high during dry periods which follow a period of better rainfall, such as currently exists;

(c) sugar prices were low during much of the eight year period. They are now much higher with the industry now having the ability to lock in prices five years in advance;

(d) the scheme's largest irrigator used an average of 55% of allocation across the 5 years used by QCA in its calculations. Excluding the dry 2006-07 year, the largest irrigator used an average of 57% across the 4 wetter years; and

(e) in its NSP, SunWater proposed using a usage level of 50%. It would be expected that SunWater would be very conservative in making this estimate.

BRIG (2011e) belived that 58% would be a more appropriate level of water use on which to base the Part D calculation.

The ISIS Central Sugar Mill submitted that water use for the next five years is likely to be greater than recommended in the Authority's Draft Report. Isis Central Sugar Mill considered that full storages and increased sugar prices are providing incentive to fully utilise irrigation water. Isis Central Sugar Mill submitted that the 60% water usage forecast used during the 2006-11 price path should be utilised as a more accurate estimation of future water usage over the 2012-17 price path.

CANEGROWERS Isis (2011a) submitted that low water use over the last eight years has been contributed to by low announced allocations at the start of the water year and rainfall impacts. CANEGROWERS Isis suggested that when announced allocations are set at low levels at the start of the water year, irrigators are reluctant to commence irrigating until they can be more certain that they will not run out of water. CANEGROWERS Isis suggested that it would be useful to model the beneficial water available rather than simply water used as a percentage of nominal allocations across the whole year.

CANEGROWERS Isis also requested the Authority model 60% water use, as used in the previous 2006-11 price path. To support its request, CANEGROWERS Isis noted that:

(a) current storage levels are at full supply level;

(b) improved commodity prices exist for the foreseeable future;

(c) irrigators are demonstrating a higher level of optimism; and

(d) climate change (more variability in rainfall).

CANEGROWERS Isis noted that sugarcane growers and millers can now fix prices 3 years forward and at current prices many are doing so. CANEGROWERS Isis therefore argued that water use during the next five years is likely to be at a higher level than the previous five years.

CANEGROWERS Isis also requested that the Authority model the effects of the recommended water prices on water usage.

Authority's Response to Submissions Received on the Draft Report

As previously noted, following the Draft Report, the Authority reviewed SunWater's electricity model, including SunWater's forecasts of water use.

To estimate the variable costs for final prices, therefore, the Authority has now adopted SunWater's water use estimate in the context of forecasting the per ML cost of electricity for this scheme. In addition, the Authority has divided the balance of variable costs for all sectors (excluding electricity) by the Authority's historical total water use for all sectors. This now provides a more accurate estimate of variable costs per ML for this scheme.

The Authority notes that its estimates of water use for this purpose are not forecasts, rather they allow total costs to be converted into a per ML volumetric charge.

6.6 Cost-Reflective Prices

Cost-reflective prices reflect the Authority's estimates of prudent and efficient costs, recommended tariff structures, and the allocation of costs to different priority groups.

The cost-reflective prices in the Draft Report are contrasted with its Authority's final cost-reflective prices below.

Draft Report

Table 6.3: Draft Cost Reflective Prices for the Bundaberg Distribution System ($/ML)

	Actual Prices						*Draft 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 (Unbundled)											
Fixed (Part A)	6.20	6.36	6.68	6.88	7.08	7.36	5.94	6.09	6.25	6.40	6.56
Volumetric (Part B)	9.66	9.94	10.42	10.75	11.08	11.47	1.10	1.13	1.15	1.18	1.21
Channel (Unbundled)											
Fixed (Part C)	28.20	30.60	33.64	34.72	35.80	39.04	39.26	40.24	41.25	42.28	43.34
Volumetric (Part D)	14.91	16.46	18.39	18.97	19.54	20.25	62.26	63.82	65.42	67.05	68.73
Channel (Bundled)											
Fixed (Part A)	34.40	36.96	40.32	41.60	42.88	46.40	nr	nr	nr	nr	nr
Volumetric (Part B)	24.57	26.40	28.81	29.72	30.62	31.72	nr	nr	nr	nr	nr

Note: nr – not relevant. Source: Actual Prices (SunWater, 2011al) and Draft Cost Reflective Prices (QCA, 2011).

Table 6.4: Draft Termination Fees ($/ML)

	Actual Prices						*Draft Cost Reflective Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Channel to River	n.d.	n.d.	301.18	297.87	337.82	402.68	539.85	553.35	567.18	581.36	595.90

Note: Fees include GST. Source: Actual Prices (SunWater, 2011al) and Draft Cost Reflective Prices (QCA, 2011).

Final Report

Table 6.5: Cost-Reflective Prices for the Bundaberg Distribution System ($/ML)

	Actual Prices						*Cost Reflective Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
River (Unbundled)											
Fixed (Part A)	6.20	6.36	6.68	6.88	7.08	7.36	6.35	6.51	6.67	6.84	7.01
Volumetric (Part B)	9.66	9.94	10.42	10.75	11.08	11.47	1.10	1.13	1.16	1.19	1.22
Channel (Unbundled)											
Fixed (Part C)	28.20	30.60	33.64	34.72	35.80	39.04	37.93	38.88	39.85	40.84	41.86
Volumetric (Part D)	14.91	16.46	18.39	18.97	19.54	20.25	49.58	50.82	52.09	53.39	54.73
Channel (Bundled)											
Fixed (Part A)	34.40	36.96	40.32	41.60	42.88	46.40	44.28	45.38	46.52	47.68	48.87
Volumetric (Part B)	24.57	26.40	28.81	29.72	30.62	31.72	50.68	51.95	53.25	54.58	55.94

Source: Bundled prices are for information only. Actual Prices (SunWater, 2011al) and Cost Reflective Prices (QCA, 2012).

Table 6.6: Termination Fees ($/ML)

	Actual Prices						*Cost Reflective Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Channel to River	n.d.	n.d.	301.18	297.87	337.82	402.68	417.20	427.63	438.32	449.28	460.51

Note: Fees include GST. Source: Actual Prices (SunWater, 2011al) and Cost Reflective Prices (QCA, 2012).

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.

Draft Report

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

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

To ensure that distribution customers are not disadvantaged by unbundling, the comparison included both bulk and distribution system revenues.

On this basis, current revenues are below the level required to recover prudent and efficient costs (Table 6.5).

In Volume 1, the Authority recommended that, after tariff rebalancing, fixed charges should increase by $2/ML per annum in real terms until cost recovery is achieved. This is consistent with the rate of increase in 2006-11 prices. Volumetric charges are to reflect variable costs from 2012-13.

At this rate of increase, cost reflective charges were not achieved by the end of the 2012-17 regulatory period. The recommended (unbundled) charge is then calculated by deducting the recommended river charge from the bundled charge.

Stakeholder Submissions Received on the Draft Report

CANEGROWERS Isis (2011) submitted that it was under the impression that by the end of the 2006-11 price path, the distribution system would be paying close to lower bound costs. CANEGROWERS Isis questioned what has caused an increase in costs that current prices provide revenue that is so far below prudent and efficient costs.

The ISIS Central Sugar Mill (2012) submitted that the 2006-11 price path was expected to see Bundaberg Distribution System irrigators paying very near lower bound costs. On this basis, the ISIS Central Sugar Mill questioned the assumptions underlying the Authority's recommendation that 2012-13 prices were approximately 30% below lower bound costs. ISIS Central Sugar Mill noted that the 2012-13 cost reflective revenue of $10.3 million in Table 6.5 is well above the highest actual costs incurred over the 2006-11 period shown in Table 6.1 [$8.9 million in 2009-10].

The ISIS Central Sugar Mill also submitted that the Authority had applied a smoothing of forecast costs over a 20 year period which has the effect of inflating the costs within the 2012-17 period that otherwise would be the case. The ISIS Central Sugar Mill requested that the impact of smoothing be removed from the 2012-17 period.

CANEGROWERS Isis submitted that the Authority should give consideration to a 10-year Price Path with full cost reflective prices achieved by Year 10.

Authority's Response to Submissions on the Draft Report

In response to the ISIS Central Sugar Mill and CANEGROWERS Isis concerns regarding lower bound costs, the Authority notes that the $10.3 million of revenue presented in Table 6.5 of the Draft Report is not directly comparable to the $8.9 million of actual costs included in Table 6.1 above. Table 6.1 presents costs in real terms, before allowing for inflation. Table 6.5 presented revenues in real terms, but also accounts for the effect of smoothing of cost-reflective prices. Price smoothing in the Draft Report resulted in prices at the beginning of the price path being slightly above the lower bound revenue requirement, whereas later in the pricing period prices will be below the lower bound revenue requirement. This is because the lower bound prices have been escalated by CPI, whereas many lower bound cost components are escalated at rates above CPI. For example, labour costs are forecast to increase at 4% per annum. However, the net present value of revenue from smoothed cost reflective tariffs equals the net present value of lower bound costs over the 2013-17 pricing period.

A more appropriate comparison can be made within Table 6.1 of the Draft Report, which showed that recommended lower bound costs in 2012-13 of $8.85 million were slightly below SunWater's actual costs in 2009-10 of $8.88 million.

In response to ISIS Central Sugar Mill's concerns about smoothing, the Authority has revised its price smoothing methodology in the Final Report. The Authority is now smoothing prices over 5 years rather than 20 years. This has the effect of reducing the temporary disparity between lower bound costs and cost reflective prices during the 2007-12 period.

The Authority considers that, as noted in Volume 1, the price path for schemes below cost-reflective prices is the $2/ML annual increase in real terms that was adopted for the 2006-12 price path. While the Authority has not conducted a capacity to pay analysis, it notes that a 10-year price path to full cost recovery would represent large annual price increases for some schemes.

Table 6.7: Comparison of Current Revenues and Cost-Reflective Revenues ($2012-13)

Tariff and Priority Group	*2010-11 Prices $/ML (indexed to 2012-13)*		*Irrigation WAE (ML)*	*Irrigation Water Use (ML)*	*Current Revenue ($)*	*Revenue from Smoothed Cost-Reflective Tariffs ($)*	*Difference ($)*
	Fixed	*Variable*					
Draft Report							
Channel bundled	45.05	32.17	149,210[1]	56,073	8,525,892	10,298,105	-1,772,213
Final Report							
Channel bundled	45.05	32.17	149,210[1]	51,326	8,373,188	9,207,703	-834,515

Note: [1]Irrigation WAE excludes WAE held by Burnett Water customers. Source: SunWater (2011al), SunWater (2011ao) and QCA (2011 and 2012).

6.8 The Authority's Recommended Prices

The Authority's draft and final recommended prices to apply to the Bundaberg Distribution System for 2012-17 are outlined below, 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).

Draft Report

Table 6.8: Draft Prices for the Bundaberg Distribution System ($/ML)

	Actual Prices						*Draft Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
River (Unbundled)											
Fixed (Part A)	6.20	6.36	6.68	6.88	7.08	7.36	11.14	11.42	11.70	12.00	12.30
Volumetric (Part B)	9.66	9.94	10.42	10.75	11.08	11.47	1.10	1.13	1.15	1.18	1.21
Channel (Unbundled)											
Fixed (Part C)	28.20	30.60	33.64	34.72	35.80	39.04	20.13	22.68	25.35	28.14	31.05
Volumetric (Part D)	14.91	16.46	18.39	18.97	19.54	20.25	62.26	63.82	65.42	67.05	68.73
Channel (Bundled)											
Fixed (Part A)	34.40	36.96	40.32	41.60	42.88	46.40	nr	nr	nr	nr	nr
Volumetric (Part B)	24.57	26.40	28.81	29.72	30.62	31.72	nr	nr	nr	nr	nr

Note: Prior to 2012-17, channel tariffs were a bundled price for bulk and distribution services. Thus, the fixed Part C tariffs for 2006-12 represent a notional unbundled channel price calculated by deducting Part A River prices from (bundled) Part A Channel prices. Source: Actual Prices (SunWater, 2011am) and Draft Prices (QCA, 2011).

The Authority's draft termination fees to apply to the Bundaberg Distribution System during 2012-17 were outlined in Table 6.9 together with actual termination fees since 2008-09. The Authority's draft recommended termination fees were higher than those charged by SunWater, as the Authority's approach:

(a) recovered 20 years of fixed costs with SunWater bearing the remaining fixed costs. SunWater's approach recovers 10 years of fixed costs with remaining fixed costs paid for by other users;

(b) reflected the Authority's estimate of fixed costs in the cost-reflective fixed charge. The Authority's cost-reflective fixed charge recovers all fixed costs. SunWater's fixed charges recover only a portion of fixed costs. Therefore, some fixed costs are excluded from SunWater's termination fees;

(c) reflected the Authority's cost-reflective fixed charge and not the Authority's recommended fixed charge; and

(d) resulted in a multiple of up to 13.8 times the Authority's cost reflective fixed charge. SunWater's multiple is up to 9.4 of its fixed charge (Chapter 3).

Table 6.9: Draft Termination Fees ($/ML)

	Actual Prices						*Draft Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Channel to River	n.d.	n.d.	301.18	297.87	337.82	402.68	539.85	553.35	567.18	581.36	595.90

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

Stakeholder Submissions Received on the Draft Report

CANEGROWERS Isis noted that a large quantity of unsold Burnett Water exists and the potential for SunWater to sell allocation into the channel system from where WAE has been transferred back to the river becomes available. CANEGROWERS Isis submitted that the more spare capacity existing in a channel, the greater the chance SunWater has to sell 'Peak' water thereby advantaging SunWater through the sale of 'peak' vs 'off-peak' water.

Authority's Response to Stakeholder Submissions

The Authority accepts that the circumstances of the Bundaberg Distribution System may vary from other channel systems operated by SunWater due to the construction of Paradise Dam.

However, the Authority understands that there is a maximum additional volume that can be sold into the channel system. Prices charged to Burnett Water users include a capital component which is intended to provide a contribution towards eventual channel capacity upgrades.

The Authority considers that the presence of unsold Burnett Water entitlements therefore does not unfairly advantage SunWater in relation to exiting channel irrigators. On this basis, the Authority considers that a consistent methodology for calculating termination fees across all Distribution Systems (including Bundaberg) is equitable.

The Authority proposes no changes to its Draft Report recommendations. The Authority's Final recommended charges are presented below.

In regard to termination fees, the Authority reviewed the approach to estimating termination fees (see Chapter 4, Volume 1). The net effect is that the Authority adopted a multiple of 11 including GST.

Table 6.10: Recommended Prices for the Bundaberg Distribution System ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
River (Unbundled)											
Fixed (Part A)	6.20	6.36	6.68	6.88	7.08	7.36	10.99	11.26	11.55	11.83	12.13
Volumetric (Part B)	9.66	9.94	10.42	10.75	11.08	11.47	1.10	1.13	1.16	1.19	1.22
Channel (Unbundled)											
Fixed (Part C)	28.20	30.60	33.64	34.72	35.80	39.04	26.31	29.02	31.85	34.80	36.74
Volumetric (Part D)	14.91	16.46	18.39	18.97	19.54	20.25	49.58	50.82	52.09	53.39	54.73
Channel (Bundled)											
Fixed (Part A)	34.40	36.96	40.32	41.60	42.88	46.40	37.30	40.29	43.39	46.63	48.87
Volumetric (Part B)	24.57	26.40	28.81	29.72	30.62	31.72	50.68	51.95	53.25	54.58	55.94

Note: Bundled prices are for information only. Prior to 2012-17, channel tariffs were a bundled price for bulk and distribution services. Thus, the fixed Part C tariffs for 2006-12 represent a notional unbundled channel price calculated by deducting Part A River prices from (bundled) Part A Channel prices. Source: Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2012).

Table 6.11: Final Recommended Termination Fees ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Channel to River	n.d.	n.d.	301.18	297.87	337.82	402.68	417.20	427.63	438.32	449.28	460.51

Source: Actual Prices (SunWater, 2011am) and Recommended Prices (QCA, 2012).

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).

Stakeholder Submissions Received on the Draft Report

During Round 3 consultation, stakeholders queried whether the Authority's model had taken into account how a change in price would affect water use.

CANEGROWERS Isis (2011b) asserted that high water prices will:

(a) force irrigators to stretch their irrigation rotations in a hope that it will rain, thus saving irrigation costs; and

(b) hinder investment in infrastructure including the adoption of technological enhancements in irrigation systems.

CANEGROWERS Isis submitted further that the law of diminishing returns is applicable here, where; less water used leads to lower crop yield, which affects irrigators' incomes. Less income affects irrigators' capacity to but water resulting in lower future yields and less future income.

Authority's Response to Stakeholder Submissions

The Authority's water use assumptions are detailed in Volume 1. The Authority notes that its recommended prices include a transition to cost-reflective prices, as required under the Ministerial Direction. Capacity to pay is outside the Authority's remit.

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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.

Scheme	*Year*	*Description*	*Value ($'000)*
Abbotsford Distribution	2024-25	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	33
		Refurbish Pipework - refurbish fixings & valves, minor replacements as required	22
Abbotsford Pump Station	2011-12	Refurbish Abbotsford #2 Submersible Pump	22
	2012-13	Refurbish pump station building	28
	2014-15	Study: Review requirement for PLC and SCADA system	23
	2015-16	Replace Switchboard, Low Voltage	179
	2016-17	11BIA09 REFURBISH #1 PUMP UNIT	26
	2017-18	Documents, Drawings, Specs and Cost Estimate for PLC and SCADA s	79
		Refurbish Abbotsford #2 Submersible Pump	23
	2018-19	Supply, Implement, Install, Commission PLC and SCADA system	169
	2020-21	Replace Structure Of Building	181
		Replace Submersible Pump, No.1	57
	2021-22	Replace Submersible Pump, No.2	56
	2022-23	Refurbish pump station building	28
		11BIA09 REFURBISH #1 PUMP UNIT	25
	2023-24	Refurbish Abbotsford #2 Submersible Pump	22
	2028-29	11BIA09 REFURBISH #1 PUMP UNIT	25
	2029-30	Refurbish Abbotsford #2 Submersible Pump	22
	2032-33	Replace Cable	342
		Refurbish pump station building	28
	2033-34	Replace Pipework	14
	2034-35	11BIA09 REFURBISH #1 PUMP UNIT	25
	2035-36	Refurbish Abbotsford #2 Submersible Pump	22
Berrembea Distribution	2021-22	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	67
		09BIA04 WHS: REFURBISH SCOUR VALVES	42
	2029-30	Replace Structure, 200Mm Meter Outlet	23
	2031-32	Replace Slide Gate	22
		Replace Pressure Relief Valve 11132.58	15
		Replace Pressure Relief Valve 601.44 M	15
	2034-35	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	67
		09BIA04 WHS: REFURBISH SCOUR VALVES	42
Bingera Distribution	2011-12	Refurbish scour valves (replace lid)	14
	2012-13	Refurbish Fencing - party fencing issues, repairs only	13
	2013-14	Replace Screen	10
	2014-15	10BIA25 REFURB SCREEN - RECOAT	12
	2015-16	Refurbish bulkhead gate guides on SI04 - Bingera Main Channel	29
		10BIA27 REFURB SCREEN - RECOAT	23
		Refurbish bulkhead gate guides at SI03 - Bingera Main Channel	11
	2018-19	Refurbish Gate - remove, repaint, anodes & bearings, install	17
	2019-20	10BIA23 REFURBISH FENCE 8019M - 10089M	37
		Refurbish: Isolation valves (5) in the bingera system. Rolling program no 1	28
		Refurbish Gate - remove, repaint, anodes & bearings, install	17
		10BIA25 REFURB SCREEN - RECOAT	12
	2020-21	Replace Winch -Trash Screen	41
		Refurb 20 Scour Valve Lids - rolling program	23

Scheme	*Year*	*Description*	*Value ($'000)*
		Refurbish: Isolation valves (2) in the bingera system..Rolling program no 2. Only 3 left to do (JK Nov 04)	17
		Replace Safety Screen	16
	2021-22	Replace Safety Screen	32
		10BIA27 REFURB SCREEN - RECOAT	22
		Refurbish Gate - remove, repaint, anodes & bearings, install	17
	2022-23	10BIA24 REFURBISH SCOURLIDS BING-B02	31
		Refurbish Fencing - party fencing issues, repairs only	13
	2023-24	Replace Bulkhead Gate Guides	40
		Refurbish bulkhead gate guides on reg gate RG01- Bingera Main Channel	11
		Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	11
	2024-25	Replace Inlet Structure	59
		10BIA25 REFURB SCREEN - RECOAT	12
	2025-26	Change Out Guides - place stainless steel guides	22
		Replace Bulkhead Gate Guides	12
	2026-27	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	22
		Refurbish: Operator identifies individual bays which need replacement at budget meeting Nov 05	13
	2027-28	Refurbish bulkhead gate guides on SI04 - Bingera Main Channel	28
		10BIA27 REFURB SCREEN - RECOAT	22
		Replace 6 bays previously identified by operators in CA's	22
		Refurbish bulkhead gate guides at SI03 - Bingera Main Channel	11
	2028-29	Replace Safety Handrails	12
	2029-30	10BIA23 REFURBISH FENCE 8019M - 10089M	37
		Refurbish Gate - remove, repaint, anodes & bearings, install	17
		10BIA25 REFURB SCREEN - RECOAT	12
	2031-32	Refurbish Gate - remove, repaint, anodes & bearings, install	17
	2032-33	Replace Concrete Lining	2360
		Replace Screen	15
		Replace Bulkhead Gate Guides	13
		Refurbish Fencing - party fencing issues, repairs only	13
	2033-34	Replace Screen	217
		Replace Regulator Structure (109.42M)	102
		09BIA05WHS: REFURBISH SCOUR VALVES	30
		10BIA27 REFURB SCREEN - RECOAT	22
		Refurb 20 Scour Valve Lids - rolling program	22
		Replace Bulkhead Gate Guides	19
		Refurbish Gate - remove, repaint, anodes & bearings, install	17
	2034-35	Replace Concrete Lining	2706
		Replace Safety Screen	29
		Refurbish: Isolation valves (5) in the bingera system. Rolling program no 1	28
		Replace Bulkhead Gate Guides	25
		Replace Screen	17
		Replace Bulkhead Gate Guides, Simpsons Rd Xing	13
		Replace Bulkhead Gate Guide	12
		10BIA25 REFURB SCREEN - RECOAT	12
	2035-36	Replace Screen, Gin Gin Rd Xing	32
		10BIA24 REFURBISH SCOURLIDS BING-B02	31
		Replace Screen	29
		11BIAXX REFURBISH SCOUR VALVES	27
		Refurbish: Isolation valves (2) in the bingera system..Rolling program no 2. Only 3 left to do (JK Nov 04)	17
		Refurbish bulkhead gate guides on reg gate RG01- Bingera Main	11

Scheme	*Year*	*Description*	*Value ($'000)*
		Channel	
Bucca Distribution	2020-21	Refurbish Metalwork on SURGE TANK 467.72M ON B4	11
	2022-23	Replace Air Valve, 50Mm Ari	11
	2025-26	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	100
	2032-33	Replace Structure, 150Mm Meter Outlet	121
		Replace Structure, 50Mm Meter Outlet	100
		Replace Structure, 200Mm Meter Outlet	71
		Replace Security Fencing And Gates	29
		Replace Structure, 100Mm Meter Outlet	14
	2035-36	Replace Screens On Inlet/Outlet	37
		Refurbish Metalwork on SURGE TANK 467.72M ON B4	11
Bucca Pump Station	2014-15	Study: Review requirement for PLC and SCADA system	23
	2015-16	Documents, Drawings, Specs and Cost Estimate for PLC and SCADA system (from 2016 study)	46
	2016-17	Supply, Implement, Install, Commission PLC and SCADA system	170
		Refurbish pump	17
		Refurbish Motor - bearings, bake etc	11
	2017-18	Refurbish Pump - bearings, casing, wear rings etc - made actual dollars in Dec 03	17
		Refurbish Motor - bearings, bake etc	11
	2021-22	Replace Cable	126
		Replace Switchboard, Low Voltage	124
	2023-24	Replace Reflux Valve	31
		Replace Suction Valve	11
	2025-26	Refurbish pump	17
	2026-27	Refurbish Pump - bearings, casing, wear rings etc - made actual dollars in Dec 03	17
	2027-28	Replace Actuator, Electric	11
	2029-30	Refurbish Motor - bearings, bake etc	11
	2030-31	Refurbish Motor - bearings, bake etc	11
	2031-32	Replace Pump	63
		Replace Electric Motor	14
	2032-33	Replace Pump	63
		Replace Electric Motor	14
	2034-35	Refurbish pump	17
	2035-36	Refurbish Pump - bearings, casing, wear rings etc - made actual dollars in Dec 03	17
Bucca Weir	2012-13	REFURBISH TRASH RACKS AND GUIDES	72
	2021-22	REFURBISH TRASH RACKS AND GUIDES	74
	2030-31	REFURBISH TRASH RACKS AND GUIDES	74
Bullyard Distribution	2015-16	Refurbish Valve, paint & refurbish - BMC BP01	14
	2017-18	Refurb Air Vent - pole leans and needs straightening - also WHS issue	23
	2018-19	Refurbish Protection Works - stabilise and replace as required	11
	2021-22	Refurbish Gate - remove, repaint, anodes & bearings, install	17
		Replace Air Valve, 50Mm Ari	14
	2022-23	Replace Air Valve, 50Mm Ari	43
	2023-24	Replace Air Vent At 1637.00 M	11
	2024-25	Replace Submerged Disk Valve	97
	2025-26	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	111
		Refurbish Valve - paint & refurbish	13
		Refurbish Valve, paint & refurbish - BMC BP01	13
		Refurbish Metalwork - corrosion treatment, fixings, minor replacements as required	11
	2026-27	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring	177

Scheme	*Year*	*Description*	*Value ($'000)*
		asset	
	2027-28	Refurb Air Vent - pole leans and needs straightening - also WHS issue	22
	2031-32	Refurbish Gate - remove, repaint, anodes & bearings, install	17
	2032-33	Replace Structure, 150Mm Meter Outlet	529
		Replace Structure, 200Mm Meter Outlet	268
		Replace Structure, 200M Meter Outlet	40
		Replace Structure, 250Mm Meter Outlet	30
		Replace Crossing, Railway	18
		Replace Pipe, 200Mm Upvc	15
	2034-35	Replace Slide Gate	62
		Replace Structure, 50Mm Air Valve	15
		Replace Screen	15
	2035-36	Replace Pressure Relief Valve 4984.50	28
		Replace Pressure Relief Valve 393.80	28
		Replace Pressure Relief Valve 2224.45	28
		Replace Pressure Relief Valve 3041.33	28
		Replace Screen	26
		Replace Pressure Relief Valve 1599.30	15
		Replace Pressure Relief Valve 2081.90	15
		Replace Pressure Relief Valve 6248.43	15
		Replace Pressure Relief Valve 1217.19	15
		Replace Pressure Relief Valve 3736.50	15
		Replace Pressure Relief Valve 230.80	15
		Replace Pressure Relief Valve 472.20	15
		Replace Pressure Relief Valve 2389.41M	15
		Replace Pressure Relief Valve 8085.05	15
		Replace Pressure Relief Valve 8727.20	15
		Replace Pressure Relief Valve 206.30	15
		Replace Pressure Relief Valve 327.92	15
		Refurbish Valve, paint & refurbish - BMC BP01	13
Bullyard Pump Station	2015-16	Refurbish Building - paint, fixtures, fittings, electrical installation etc	34
		Refurbish Valve - corrosion, seals, bearings etc	11
	2016-17	Refurbish motor	23
	2017-18	Refurbish Motor - bearings, bake etc	23
	2018-19	Refurbish Pump - bearings, casing, wear rings etc-actual cost	45
		Refurbish motor	23
		Refurbish Motor - bearings, bake etc	23
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required- Actual Cost	17
		Refurbish Valve - corrosion, seals, bearings etc- actual cost	11
	2019-20	Refurbish Pump - bearings, casing, wear rings etc	45
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	22
		Refurbish Valve - corrosion, seals, bearings etc	11
	2020-21	Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	45
		Refurbish Pump - bearings, casing, wear rings etc	45
		Refurbish Valve - corrosion, seals, bearings etc	11
	2021-22	Replace Cable	631
		Replace Switchboard, Low Voltage	276
	2023-24	09BIA07 REFURBISH MOTOR	18
	2024-25	Replace Reflux Valve	45
	2025-26	Replace Suction Valve	144
		Replace Reflux Valve	90
		Replace Discharge Valve	88
		Refurbish Building - paint, fixtures, fittings, electrical installation etc	33

Scheme	*Year*	*Description*	*Value ($'000)*
		Refurbish Valve - corrosion, seals, bearings etc	11
	2029-30	Refurbish motor	22
	2030-31	Refurbish Motor - bearings, bake etc	22
		Refurbish Valve - corrosion, seals, bearings etc	11
	2031-32	Replace Motor, 315Kw 415V Cmg	64
		Refurbish Motor - bearings, bake etc	22
		Refurbish motor	22
	2033-34	Replace Reflux Valve	45
		Refurbish Pump - bearings, casing, wear rings etc-actual cost	44
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required- Actual Cost	17
		Refurbish Valve - corrosion, seals, bearings etc- actual cost	11
	2034-35	Refurbish Pump - bearings, casing, wear rings etc	44
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	22
		Refurbish Valve - corrosion, seals, bearings etc	11
	2035-36	Replace Steel Gantry Structure	120
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	44
		Refurbish Pump - bearings, casing, wear rings etc	44
		Refurbish Building - paint, fixtures, fittings, electrical installation etc	33
		Refurbish Valve - corrosion, seals, bearings etc	11
Childers Distribution	2012-13	Refurbish: Refurbish Slide Gates	17
	2019-20	Replace Valve, 900Mm Butf	49
		Replace Air Vent At 8931.89M	13
		Replace Air Vent At 5077.75M	11
		Replace Air Vent At 8397.56M	11
	2021-22	Refurbish: refurbish break pressure structure	22
	2022-23	Refurbish: Refurbish Slide Gates	17
	2024-25	Replace Valve, 200Mm Gate Tyco	32
		Replace Air Vent At 5.20M	11
	2030-31	Replace Valve, 1050Mm Disk Stewarts	26
		10BIA84 REPLACE ISOLATION VALVE	21
	2031-32	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	206
		Replace Isolating Valve	66
		Replace Air Valve At 3494.24M	18
		Replace Air Valve At 3950.37M	14
		Replace Air Valve At 3350.41M	14
		Replace Air Valve At 1896.78M	14
		Replace Air Valve At 3820.79M	14
		Replace Air Valve At 2244.78M	14
		Replace Air Valve At 406.61M	14
		Replace Air Valve At 3230.64M	14
		Replace Air Valve At 1007.67M	14
	2032-33	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	56
		Refurbish: Refurbish Slide Gates	17
	2034-35	Replace Valve, 250Mm Prv Singer	12
Dinner Hill Distribution	2029-30	Replace Air Vent At 1848.04M	11
		Replace Air Vent At 1589.08M	11
	2031-32	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	128
Dinner Hill Pump Station	2011-12	Documents, Drawings, Specs and Cost Estimate for PLC and SCADA system	55
	2012-13	Supply, Implement, Install, Commission PLC and SCADA system	168
	2015-16	Refurbish Motor - bearings, bake etc	11

Scheme	*Year*	*Description*	*Value ($'000)*
		Refurbish building electricals - lights, fittings ect	11
	2017-18	Refurbish Pump - bearings, casing, wear rings etc	14
	2018-19	Refurbish Pump - bearings, casing, wear rings etc- actual cost	14
	2019-20	Refurbish Pump - bearings, casing, wear rings etc	13
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	13
	2020-21	Replace Pump	100
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	11
	2021-22	Refurbish Building - Roof, paint, fixtures & fittings, electrical installation etc	17
	2022-23	Replace Suction Valve	15
	2025-26	Replace Structure Of Building	136
	2026-27	Replace Switchboard, Low Voltage	183
		Replace Cable	54
	2027-28	Refurbish Building - Roof, paint, fixtures & fittings, electrical installation etc	17
	2028-29	Refurbish Motor - bearings, bake etc	11
	2029-30	Replace Suction Valve	15
	2030-31	Replace Discharge Valve	323
		Replace Pump	104
		Replace Electric Motor	14
	2031-32	Replace Electric Motor	14
	2032-33	Replace Electric Motor	19
		Refurbish Pump - bearings, casing, wear rings etc	13
	2033-34	Refurbish Building - Roof, paint, fixtures & fittings, electrical installation etc	17
		Refurbish Pump - bearings, casing, wear rings etc- actual cost	13
		Refurbish building electricals - lights, fittings etc	11
	2034-35	Refurbish Pump - bearings, casing, wear rings etc	13
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	13
	2035-36	Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	11
Don Beattie Pump Station	2011-12	Refurbish Pwks - shotcrete slope protection - movement -bi-annual deformation survey to monitor ness	55
		11BIAXX INSTALL ACCESS LADDER TO OHC	35
	2012-13	Refurbish Building - roof, paint, cladding, fittings etc	56
	2014-15	Refurbish Lift - mech & elec overhaul - specialist contractor	34
		Refurbish Valve - corrosion, seals, bearings etc incl. air actuator as required	23
		Refurbish Protection Works - stabilise and replace as required	17
		Refurbish Circuit Breakers - new vacuum bottles etc (same as Quart Pot, failure could affect motor?)Taken out of budget so DT put to 04	17
		Refurbish Circuit Breakers - new vacc-uum bottles etc (same as Quart Pot, failure could affect motor?)	17
		Refurbish Valve - corrosion, seal, bearings	11
	2015-16	11BIA20 EEO Assessment and report	85
		Refurbish Screens - corrosion treatment and repair as required	11
	2016-17	Refurbish Motor - bearings, bake etc - Brought forward from 2007; - actual cost	51
		Refurbish Motor - bearings, bake etc - actual costs	51
	2017-18	Refurbish Pump - bearings, casing, wear rings etc - actual costs	68
		Refurbish Motor - bearings, bake etc - was ROC375 in 2002 (deferred)Taken out of budget so DT put to 04	51
	2018-19	Replace Common Controls	1220
		Refurbish Pump - bearings, casing, wear rings etc -brought forward from 2007 - actual cost	68
	2019-20	Refurbish Pipework - external paint & refurbish within pstn	101
		Refurbish Pump - bearings, casing, wear rings etc - was roc379 2002-deferred; Taken out of budget so DT put to 04	67
		10BIA103 - 10Y CRANE INSPECTION - as per	60

Scheme	*Year*	*Description*	*Value ($'000)*
		Refurbish Pipework - external blast & paint	56
		Refurbish Metalwork - structural steel, blast & paint, difficult access	45
		10BIA88 REFURBISH HV SWITCHBOARD	28
		Refurbish Pipework - above ground section external blast & paint	28
		Refurbish Guard Rails - regalvanise	28
		10BIA89 REFURBISH BULKHEAD GATE	26
		Replace Dewatering Pump No1	25
		Replace Dewatering Pump No2	25
		Refurbish Valve - corrosion, seals, bearings etc incl. air actuator as required. (increased costs from $10K; brought forward from 2012)Then taken out so DT put to 04	22
		Refurbish Ladders - replace with SS	22
		Refurbish Pipework - paint & refurbish pipework	22
		Refurbish Valve - corrosion, seal, bearings(brought forward from 2012)Taken out of budget so DT put to 04	11
	2020-21	Refurbish slope stability works - unstable slope - dropped from $1Mill in Oct 04 JK	283
		11BIA20 EEO Assessment and report	85
		Changeout Pipework - replace valves, refurbish pipework	11
	2021-22	Refurbish Screens - corrosion treatment and repair as required	11
	2022-23	Refurbish Building - roof, paint, cladding, fittings etc	56
		Refurbish Circuit Breakers - new vacuum bottles etc (same as Quart Pot, failure could affect motor?)-brought forward from 2004)	17
	2023-24	Replace Switchboard, High Voltage	893
		09BIA29 REFURBISH PUMP, MOTOR, DV	100
		Replace Suction Valve	91
		Replace Discharge Valve	83
	2024-25	Replace Switchboard, Low Voltage	73
		Refurbish Lift - mech & elec overhaul - specialist contractor	33
		Refurbish Circuit Breakers - new vacc-uum bottles etc (same as Quart Pot, failure could affect motor?)	17
		Refurbish Circuit Breakers - new vacuum bottles etc (same as Quart Pot, failure could affect motor?)Taken out of budget so DT put to 04	17
	2025-26	11BIA20 EEO Assessment and report	84
	2027-28	Refurbish Screens - corrosion treatment and repair as required	11
	2029-30	10BIA103 - 10Y CRANE INSPECTION - as per	60
		Refurbish Motor - bearings, bake etc - Brought forward from 2007; - actual cost	50
		Refurbish Motor - bearings, bake etc - actual costs	50
		Refurbish Metalwork - stairs, platforms, supports etc	45
		10BIA89 REFURBISH BULKHEAD GATE	26
		Refurbish Valve - corrosion, seals, bearings etc incl. air actuator as required	22
		Refurbish Valve - corrosion, seal, bearings	11
	2030-31	11BIA20 EEO Assessment and report	84
		Refurbish Motor - bearings, bake etc - was ROC375 in 2002 (deferred)Taken out of budget so DT put to 04	50
	2031-32	Refurbish Road - repair potholes, reconstruct table drainage, spray seal	22
	2032-33	Refurbish Pump - bearings, casing, wear rings etc - actual costs	67
		Refurbish Building - roof, paint, cladding, fittings etc	56
		Refurbish Circuit Breakers - new vacuum bottles etc (same as Quart Pot, failure could affect motor?)-brought forward from 2004)	17
	2033-34	Replace Common Controls	1206
		Refurbish Pump - bearings, casing, wear rings etc -brought forward from 2007 - actual cost	67
		Refurbish Screens - corrosion treatment and repair as required	11
	2034-35	Refurbish Pipework - external paint & refurbish within pstn	100
		Refurbish Pump - bearings, casing, wear rings etc - was roc379 2002-deferred; Taken out of budget so DT put to 04	67

Scheme	*Year*	*Description*	*Value ($'000)*
		Refurbish Metalwork - structural steel, blast & paint, difficult access	44
		Refurbish Lift - mech & elec overhaul - specialist contractor	33
		10BIA88 REFURBISH HV SWITCHBOARD	28
		Refurbish Guard Rails - regalvanise	28
		Refurbish Pipework - above ground section external blast & paint	28
		Refurbish Valve - corrosion, seals, bearings etc incl. air actuator as required. (increased costs from $10K; brought forward from 2012)Then taken out so DT put to 04	22
		Refurbish Circuit Breakers - new vacc-uum bottles etc (same as Quart Pot, failure could affect motor?)	17
		Refurbish Circuit Breakers - new vacuum bottles etc (same as Quart Pot, failure could affect motor?)Taken out of budget so DT put to 04	17
		Refurbish Valve - corrosion, seal, bearings(brought forward from 2012)Taken out of budget so DT put to 04	11
	2035-36	11BIA20 EEO Assessment and report	84
		Changeout Pipework - replace valves, refurbish pipework	11
Farnsfield Distribution	2011-12	Replace 120m length of pipeline as per option analysis hummingbird doc No. 756460	87
	2012-13	Replace 120m length of pipeline as per option analysis hummingbird doc No. 756460	90
	2017-18	Refurb air vents - see individual assessments	20
		Refurb 5 air vents	17
	2018-19	Replace Structure, 150Mm Meter Outlet	24
	2019-20	Replace a further 240m section as required (requires further analysis)	180
		Replace Security Fencing	38
		Replace Outlet Slide Gate - Fmc Pipeline	13
	2023-24	Replace Screen	21
	2025-26	Replace Valve, 375Mm Sluice	19
	2027-28	Refurb air vents - see individual assessments	20
		Refurb 5 air vents	17
		Change Out Guides - place stainless steel guides	11
	2029-30	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	89
		Replace Air Vent At 3495.00M	13
		Replace Air Vent At 5500.00M	13
		Replace Air Valve At 12310.00M	11
		Replace Air Valve At 11380.00M	11
		Replace Air Valve At 10246.69M	11
		Replace Air Vent At 1800.00M	11
		Replace Air Vent At 150.00M	11
		Replace Air Vent At 2104.00M	11
		Replace Air Vent At 950.00M	11
		Replace Air Vent At 3100.00M	11
	2030-31	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	33
	2031-32	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	156
	2034-35	Replace Air Vent At 1596.00M	19
		Replace Air Vent At 140.00M	11
Gin Gin Main Channel Distrib	2014-15	Refurbish Gate, paint gate, anodes, lifting gear - GGM OTLT2	10
	2017-18	Refurb air valves -(See individual assessments)	34
	2019-20	10BIA117 REFURBISH FENCE 20305M - 25000M	109
		10BIA117 REFURBISH FENCE 8965M - 11174M	11
	2024-25	Refurbish Bench Flume - reseal contraction joints - pending condition assessment	67
		Refurbish Gate, paint gate, anodes, lifting gear - GGM OTLT2	10
	2025-26	Replace Weed Deflector	17

Scheme	*Year*	*Description*	*Value ($'000)*
	2026-27	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	116
		Replace Air Valve At 19890.51M	19
		Replace Air Valve At 19591.30M	19
		Replace Air Valve At 19915.02M	19
	2027-28	Refurb air valves -(See individual assessments)	33
	2029-30	10BIA117 REFURBISH FENCE 20305M - 25000M	109
		10BIA116 REPLACE CONCRETE BAYS (7 OF)	27
		10BIA117 REFURBISH FENCE 8965M - 11174M	11
	2031-32	Replace Air Valve, 150Mm Double	14
	2034-35	Replace Slide Gate Actuators (3 Of)	146
		Refurbish Gate, paint gate, anodes, lifting gear - GGM OTLT2	10
	2035-36	Replace Slide Gates (3)	65
		Replace Weed Deflector	18
Givelda Distribution	2020-21	Replace Screen	12
	2022-23	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	112
		Change Out Guides - place stainless steel guides	11
	2032-33	Replace Press. Rel. Valve At 3300.00M	15
		Replace Press. Rel. Valve At 2370.00M	15
	2035-36	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	111
Gooburrum Distribution	2011-12	Replace Weed Screen	20
		11BIAXX REFURBISH FENCE 6360M - 7108M	16
	2012-13	Refurbish Gate - remove, repaint, anodes & bearings, install	28
		Replace Gate Valve At 0.50M	17
		Refurbish Gate - remove, repaint, anodes & bearings, install - BYM RG02	17
		Replace Scour Valve At 589.35M	12
	2013-14	Refurbish Gate - remove, repaint, anodes & bearings, re-install	57
		14BIAXX Refurbish Penstock Gates on Goob	42
		Replace Weed Screen	38
		Replace Safety Screen	15
		Refurbish Gate - paint gate, anodes, lifting gear	13
	2014-15	Refurbish Gate, remove, repaint, anodes & bearings, install - GMC RG03	23
	2015-16	Refurbish / Replace and upgrade security on gates - moved out from 03 master blaster - GOOB BSTR	34
		Replace Slide Gate	22
	2018-19	Replace Valve, 150Mm Prv Sw	36
		Change Out Seals - loss of steel lining, SS seals onto headwall, replace with regulator	34
		10BIA35 REFURBISH VALVE	32
		09BIA13 REFURBISH FENCING	15
		Replace Weed Deflector	15
	2020-21	Replace Fencing, Gates And Grids	170
	2021-22	11BIAXX REFURBISH FENCE 6360M - 7108M	17
	2022-23	Refurbish Gate - remove, repaint, anodes & bearings, install	28
		Refurbish Gate - remove, repaint, anodes & bearings, install - BYM RG02	17
	2023-24	Refurbish Gate - remove, repaint, anodes & bearings, re-install	56
		Replace Screen	29
		Refurbish Gate - paint gate, anodes, lifting gear	18
		Replace Screen, Vecellios Rd Xing	14
	2024-25	Replace Screen	22
		Refurbish Gate, remove, repaint, anodes & bearings, install - GMC RG03	22
		10BIA34 REFURBISH GATE	22

Scheme	*Year*	*Description*	*Value ($'000)*
	2025-26	Refurbish / Replace and upgrade security on gates - moved out from 03 master blaster - GOOB BSTR	33
	2026-27	Replace Screen	18
	2027-28	Replace Slide Gates (2)	125
		Replace Concrete Lining	113
		Replace Screens (2)	39
		10BIA35 REFURBISH VALVE	32
		Replace Slide Gate (Gmc)	16
		Replace Pressure Relief Valve 632.50M	15
		Replace Pressure Relief Valve 508.00M	15
		Replace Pressure Relief Valve 1272.45M	15
		Replace Pressure Relief Valve 1885.00M	15
		Replace Pressure Relief Valve 4253.73M	15
		Replace Pressure Relief Valve 284.00M	15
		Replace Pressure Relief Valve 2037.57M	15
		Replace Screen, Vecellios Rd Xing	15
		Replace Screen	11
	2028-29	09BIA13 REFURBISH FENCING	15
		Replace Gate, 915Mm Slide Waterman	11
	2030-31	Replace Pressure Relief Valve 870.51M	28
		Replace Pressure Relief Valve 358.60M	15
		Replace Pressure Relief Valve 13115.23	15
		Replace Pressure Relief Valve 14486.52	15
	2031-32	11BIAXX REFURBISH FENCE 6360M - 7108M	17
	2032-33	Refurbish Gate - remove, repaint, anodes & bearings, install	28
		Refurbish Gate - remove, repaint, anodes & bearings, install - BYM RG02	17
	2033-34	Refurbish Gate - remove, repaint, anodes & bearings, re-install	56
		14BIAXX Refurbish Penstock Gates on Goob	41
		Refurbish Gate - paint gate, anodes, lifting gear	12
	2034-35	Refurbish Gate, remove, repaint, anodes & bearings, install - GMC RG03	22
	2035-36	Refurbish / Replace and upgrade security on gates - moved out from 03 master blaster - GOOB BSTR	33
Gooburrum Pump Station	2011-12	Electrical Component Upgrade (from 2010/11) - Supply, Implement, Install, Commission	262
	2012-13	REPLACE AIR CONDITIONER UNIT	15
		Refurbish Bulkhead Gate - paint and seals - deferred from 03 Master blaster	13
	2015-16	11BIA11 EEO Assessment and Report	85
	2016-17	Refurbish Motor - bearings, bake etc	51
		Replace Sump Pump No1	10
	2017-18	Refurbish Pipework - repaint exposed pipe	11
	2018-19	Refurbish Pump - bearings, casing, wear rings etc - actual cost	51
	2019-20	10BIA42 - 10Y CRANE INSPECTION	60
		Refurbish Screen - corrosion treatment	13
	2020-21	11BIA11 EEO Assessment and Report	85
	2022-23	Replace Switchboard H V	688
		Replace Cable	483
		Refurbish Valve - Replace body seal and pins - blast and paint	67
		10BIA37 REFURBISH MOTOR	50
		Refurbish: Refurbish HV switchboard	17
		REPLACE AIR CONDITIONER UNIT	15
		Refurbish Bulkhead Gate - paint and seals - deferred from 03 Master blaster	13
	2024-25	10BIA37 REFURBISH PUMP	50
	2025-26	11BIA11 EEO Assessment and Report	84
	2027-28	Replace Stairways, Ladders & Handrails	153

Scheme	*Year*	*Description*	*Value ($'000)*
	2028-29	Replace Concrete Structure	94
	2029-30	10BIA42 - 10Y CRANE INSPECTION	60
		Refurbish Motor - bearings, bake etc	50
	2030-31	11BIA11 EEO Assessment and Report	84
	2032-33	REPLACE AIR CONDITIONER UNIT	15
		Refurbish Bulkhead Gate - paint and seals - deferred from 03 Master blaster	13
	2033-34	Refurbish Pump - bearings, casing, wear rings etc - actual cost	50
		Refurbish: Refurbish HV switchboard	17
	2034-35	Refurbish Ventilation System - screen, blower.	39
		Refurbish Screen - corrosion treatment	13
	2035-36	11BIA11 EEO Assessment and Report	84
		10BIA37 REFURBISH MOTOR	50
		Replace Fan,Fantech	39
Isis Balancing Storage	2011-12	Study: 5yr Dam Comprehensive Inspection (by 1 Oct 2011)	33
		Remove trees within 6M of embankment	29
	2016-17	Study: 5yr Dam Comprehensive Inspection (by 1 Oct 2011)	34
	2018-19	Replace Screen	21
		Change Out Guides - place stainless steel guides	11
	2021-22	Study: 5yr Dam Comprehensive Inspection (by 1 Oct 2011)	34
	2026-27	Study: 20yr Dam Safety Review (by 1 Oct 2026)	55
		Study: 5yr Dam Comprehensive Inspection (by 1 Oct 2011)	33
	2028-29	09BIA31 STUDY: DAM SAFETY REVIEW	29
	2031-32	Study: 5yr Dam Comprehensive Inspection (by 1 Oct 2011)	33
Isis Distribution	2012-13	Refurbish Gate - remove, repaint, anodes & bearings	28
	2013-14	Refurbish gate	28
		Replace Screen	19
	2014-15	Refurbish Fencing, party fencing issues, repairs only - IMC FN01	11
	2019-20	Replace Gates	11
	2020-21	11BIA18 REFURBISH REGULATOR GATE	30
	2022-23	Refurbish Gate - remove, repaint, anodes & bearings	61
	2023-24	Refurbish gate	28
		Refurbish Fencing, party fencing issues, repairs only - IMC FN01	11
	2024-25	Replace Air Vent At 20.00M	11
		Replace Air Vent At 619.05M	11
		Replace Air Vent At 580.00M	11
	2028-29	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	73
	2029-30	Change Out Guides - place stainless steel guides	223
		Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	89
		Replace Bulkhead Gate Guides	38
		Replace Air Vent At 50.00M	21
		Replace Air Vent At 1350.00M	21
		Replace Slide Gate	19
		Replace Air Vent At 18189.45M	13
		Refurbish Weir - rock protection, stabilisation as required	11
		Replace Air Vent At 2500.00M	11
		Replace Air Vent At 1340.00M	11
		Replace Air Vent At 354.70M	11
		Replace Air Vent At 441.19M	11
		Replace Air Vent At 4506.00M	11
		Replace Air Vent At 522.98M	11
		Replace Air Vent At 150.00M	11
		Replace Air Vent At 340.00M	11

Scheme	*Year*	*Description*	*Value ($'000)*
		Replace Air Vent At 16.00M	11
		Replace Air Vent At 3700.00M	11
		Replace Air Vent At 5250.74M	11
		Replace Air Vent At 445.76M	11
		Replace Air Vent At 1820.00M	11
		Replace Air Vent At 5300.00M	11
		Replace Air Vent At 1919.00M	11
		Replace Air Vent At 1147.00M	11
		Replace Air Vent At 2023.00M	11
		Replace Air Vent At 902.00M	11
	2030-31	11BIA18 REFURBISH REGULATOR GATE	30
	2032-33	Refurbish Gate - remove, repaint, anodes & bearings	61
		Refurbish Fencing, party fencing issues, repairs only - IMC FN01	11
	3033-34	Refurbish gate	28
	2034-35	Replace Air Vent At 1725.00M	11
		Replace Air Vent At 1100.00M	11
Mcilwraith Distribution	2012-13	Replace Scour Outlet At 1396.6 M	12
	2022-23	Replace Air Valve, 25Mm Ari	15
	2023-24	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	72
		Refurbish Valve - paint & refurbish	17
		Refurbish Gate - paint gate, anodes, lifting gear - Actual Cost	13
	2034-35	Replace Slide Gates On Inlet & Outlet	38
		Replace Screen	35
		Replace Screen On Inlet/Outlet	30
		Replace Pressure Relief Valve 2711.80M	28
		Replace Pressure Relief Valve 7460.72M	15
Mcilwraith Pump Station	2012-13	Study: Options analysis for Electrical Component Upgrade (PLC, SCADA)	28
		Refurbish Building - roof, fittings, fixtures, paint, electrical installation	22
	2013-14	Electrical Component Upgrade (from 2012/13) - Documents, Drawings, Specs and Cost Estimate	57
	2014-15	Electrical Component Upgrade (from 2013/14) - Supply, Implement, Install, Commission	172
		Replace Switchboard, Low Voltage	157
		Refurbish Pump - bearings, casing, wear rings etc -inspected July 04, good condition push maintena	23
		Refurbish Motor - bearings, bake etc - inspected July 04, good condition push maintenance out from 04	14
	2016-17	Refurbish Motor - bearings, bake etc	14
	2018-19	Refurbish Building - roof, fittings, fixtures, paint, electrical installation	23
		Refurbish Pump - bearings, casing, wear rings etc	23
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	17
	2019-20	Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	17
	2023-24	Replace Suction Valve	37
		Replace Electric Motor	29
		Replace Discharge Valve	26
		Replace Reflux Valve	13
	2024-25	Replace Cable	81
		Replace Electric Motor	29
		Refurbish Building - roof, fittings, fixtures, paint, electrical installation	22
		Replace Valve, 450Mm Butf Dezurick	21
		Replace Reflux Valve	13
	2027-28	Refurbish Motor - bearings, bake etc - inspected July 04, good condition push maintenance out from 04	13
	2029-30	Refurbish Pump - bearings, casing, wear rings etc -inspected July 04, good condition push maintena	22

Scheme	*Year*	*Description*	*Value ($'000)*
		Refurbish Motor - bearings, bake etc	13
	2030-31	Refurbish Building - roof, fittings, fixtures, paint, electrical installation	22
	2033-34	Replace Pump	98
		Refurbish Pump - bearings, casing, wear rings etc	22
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	17
	2034-35	Replace Pump	98
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	17
Monduran Pump Station	2020-12	Cement line suction main downstream of 84 inch guard valve	109
		Install Thermographic Windows	44
		Refurbish Motor - bearings, bake, slip rings etc	38
		Refurbish Valve - corrosion, seals, bearings etc	19
	2012-13	10BIAXX REFURBISH VALVE	40
		Review need to replace cables in 2014	22
	2013-14	Replace incomer section of cable	80
		Refurbish Building - ventilation syst, general repairs, roof, doors etc	57
		Refurbish Valve - corrosion, seals, bearings etc- actiual cost	17
	2015-16	Refurbish Common Control - replace obsolescent electrical components, spare parts	57
		Refurbish Valve - corrosion, seals, bearings etc	34
	2016-17	Refurbish Pump - casing, bearings etc	85
		Refurbish Motor - bearings, bake, slip rings etc	68
	2017-18	Replace Valve, 900Mm Butf John	121
		Replace Valve, 675Mm Butf John	39
		Refurbish Motor - bearings, bake, slip rings etc- actiual cost	28
		Replace Uninteruptable Power Supply - Misc Funct	19
		Refurbish switchboard	17
	2019-20	10BIA124 - 10Y CRANE INSPECTION - as per	72
		Replace Suction Valve (Supp)	64
		Refurbish Pump - casing, bearings etc	45
		Replace Reflux Valve (Supp)	30
		Refurbish discharge valve	17
	2020-21	Replace Suction Valve	96
		Replace Reflux Valve	65
	2021-22	Replace Suction Valve	95
		Replace Reflux Valve	64
	2022-23	Replace Suction Valve	95
		Replace Reflux Valve	64
		10BIAXX REFURBISH VALVE	13
	2023-24	Refurbish Building - ventilation syst, general repairs, roof, doors etc	56
		Refurbish Pump - casing, bearings etc(changed from $20K in 2010)	44
		Refurbish Valve - corrosion, seals, bearings etc- actiual cost	17
	2024-25	Replace Station Services, 415V	140
		Refurbish Motor - bearings, bake, slip rings etc	39
		Replace Building	22
	2025-26	11BIA21 REFURBISH VALVE	25
		Refurbish Valve - corrosion, seals, bearings etc	17
		Replace Actuator, Electric Rotork	13
	2026-27	Refurbish Valve - corrosion, seals, bearings etc	11
	2027-28	10BIAXX REFURBISH VALVE	27
	2028-29	Replace 2.4T Hoist	38
		Replace Actuator, Electric Rotork	13
	2029-30	10BIA124 - 10Y CRANE INSPECTION - as per	72
		Refurbish Motor - bearings, bake, slip rings etc	67
	2030-31	Refurbish Motor - bearings, bake, slip rings etc- actiual cost	27

Scheme	*Year*	*Description*	*Value ($'000)*
		Refurbish Valve - corrosion, seals, bearings etc	17
	2031-32	Refurbish Pump - casing, bearings etc	83
	2032-33	10BIAXX REFURBISH VALVE	13
		Study - Review requirement for replacement of common controls	11
	2033-34	Refurbish Building - ventilation syst, general repairs, roof, doors etc	56
		Refurbish Valve - corrosion, seals, bearings etc- actiual cost	26
	2034-35	Replace Common Control	469
		Replace Cable	321
		Refurbish Pump - casing, bearings etc	44
		Refurbish discharge valve	17
	2035-36	Replace Switchboard, High Voltage	873
		Refurbish switchboard	17
		Refurbish Valve - corrosion, seals, bearings etc	17
North Gregory Distribution	2013-14	Replace Screen	15
		Refurbish vertical control gate inc corrosion control	11
	2023-24	Refurbish vertical control gate inc corrosion control	11
	2024-25	Replace Air Vent At 4097.19M	13
	2027-28	Replace Security Fence	43
	2028-29	Refurbish Pipework - refurbish fixings & valves, minor replacements as required	22
		Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	17
	2029-30	Replace Air Vent At 3600.00M	13
		Replace Air Vent At 750.00M	13
		Replace Air Vent At 3800.00M	13
		Replace Air Vent At 1400.00M	13
		Replace Air Vent At 3300.00M	13
		Replace Air Vent At 2400.00M	13
		Replace Air Vent At 233.00M	11
		Replace Air Vent At 835.29M	11
		Replace Air Vent At 490.77M	11
		Replace Air Vent At 1650.00M	11
		Replace Air Vent At 1177.17M	11
		Replace Air Vent At 2100.00M	11
		Replace Air Vent At 2900.00M	11
	2033-34	Refurbish vertical control gate inc corrosion control	11
	2034-35	Replace Screen	30
North Gregory Pump Station	2013-14	Refurbish Building - roof, fixtures, fittings, electrical installation etc	28
	2016-17	Study: Review requirement for PLC and SCADA system	11
	2017-18	Documents, Drawings, Specs and Cost Estimate for PLC and SCADA system	34
		Refurbish Motor - bearings, bake etc	14
	2018-19	Supply, Implement, Install, Commission PLC and SCADA system	169
		Refurbish Pump - bearings, casing, wear rings etc- actiual cost	23
	2019-20	Refurbish Pump - bearings, casing, wear rings etc	22
		Replace Reflux Valve	14
	2022-23	Replace Structure Of Building	127
	2023-24	Refurbish Building - roof, fixtures, fittings, electrical installation etc	28
	2024-25	Replace Cable	164
		Replace Switchboard, Low Voltage	131
	2028-29	Replace Discharge Valve	37
	2029-30	Replace Electric Motor	28
	2030-31	Refurbish Motor - bearings, bake etc	13
	2033-34	Refurbish Building - roof, fixtures, fittings, electrical installation etc	28

Scheme	*Year*	*Description*	*Value ($'000)*
		Refurbish Pump - bearings, casing, wear rings etc- actiual cost	22
	2034-35	Refurbish Pump - bearings, casing, wear rings etc	22
Quart Pot Creek Pump Station	2011-12	CONSTRUCT ROOF	98
	2012-13	Refurbish Building - roof, paint, fittings, fixtures, electrical installation etc	28
	2015-16	Refurbish Motor - bearings, bake etc-actual cost	69
		Study: Review requirement for PLC and SCADA system	34
	2016-17	Documents, Drawings, Specs and Cost Estimate for PLC and SCADA system	57
		Refurbish Motor - bearings, bake etc - actual cost	45
	2017-18	Supply, Implement, Install, Commission PLC and SCADA system	283
		Refurbish Pump - bearings, casing, wear rings etc-actual cost	57
		Refurbish Motor - bearings, bake etc	45
		Refurbish: Discharge ValveValve - corrosion, seals, bearings etc	28
	2018-19	Refurbish Motor - bearings, bake etc	68
		Refurbish Pump - bearings, casing, wear rings etc -- actiual cost	56
		09BIA26 REFURBISH CIRCUIT BREAKERS	35
		09BIA27 REFURBISH CIRCUIT BREAKERS	35
		09BIA28 REFURBISH CIRCUIT BREAKERS	26
		09BIA25 REFURBISH CIRCUIT BREAKERS	26
	2019-20	Refurbish Pump - bearings, casing, wear rings etc- from quote for 03/04	56
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	28
		Replace Security Fencing	19
		Refurbish: Refurbishswitchboard, Circuit Breakers etc	17
	2020-21	Refurbish Pump - bearings, casing, wear rings etc	57
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	28
	2022-23	Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	28
		Refurbish Building - roof, paint, fittings, fixtures, electrical installation etc	28
	2023-24	Replace Switchboard, High Voltage	766
		Replace Structure Of Building	163
		09BIA30 REFURBISH ZORCS	66
	2024-25	Replace Switchboard, Low Voltage	235
		Replace Cable	98
	2028-29	Refurbish Motor - bearings, bake etc-actual cost	67
		09BIA26 REFURBISH CIRCUIT BREAKERS	35
		09BIA27 REFURBISH CIRCUIT BREAKERS	35
		09BIA25 REFURBISH CIRCUIT BREAKERS	25
		09BIA28 REFURBISH CIRCUIT BREAKERS	25
	2029-30	Refurbish Motor - bearings, bake etc - actual cost	45
		Refurbish Metalwork - corrosion treatment, fixings, minor replacements as required	22
		Replace Actuator, Magnetic	16
	2030-31	Refurbish Motor - bearings, bake etc	44
	2031-32	Refurbish Motor - bearings, bake etc	67
	2032-33	Refurbish Pump - bearings, casing, wear rings etc-actual cost	56
		Refurbish: Discharge ValveValve - corrosion, seals, bearings etc	28
		Refurbish Building - roof, paint, fittings, fixtures, electrical installation etc	28
	2033-34	Refurbish Pump - bearings, casing, wear rings etc -- actiual cost	56
	2034-35	Refurbish Pump - bearings, casing, wear rings etc- from quote for 03/04	56
		Replace Actuator, Magnetic	46
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	28
		Refurbish: Refurbishswitchboard, Circuit Breakers etc	17
	2035-36	Refurbish Pump - bearings, casing, wear rings etc	56
		Refurbish Valve - corrosion, seals, bearings etc incl. Actuator as required	28

Scheme	*Year*	*Description*	*Value ($'000)*
St Agnes Distribution	2020-21	Refurbish Valve - paint & refurbish	28
	2024-25	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	72
	2029-30	Replace Structure, 200Mm Meter Outlet	76
	2032-33	Replace Screen	16
		Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	172
		Replace Pressure Releif Valve 1842.4	28
		Replace Pressure Relief Vlv @ 2584.43M	15
	2034-35	10BIA28 REFURB SCOUR VALVE LIDS St Agnes	74
	2035-36	Replace 29 isolating valves	34
		11BIAXX REFURBISH SCOUR VALVES	27
System	2020-21	Refurbish: Isolation valves (2) in the bingera system.Rolling program no 1	11
	2021-22	09BIA06 WHS: REFURBISH SCOUR VALVES	41
	2034-35	09BIA06 WHS: REFURBISH SCOUR VALVES	41
	2035-36	Refurbish: Isolation valves (2) in the bingera system.Rolling program no 1	11
Tirroan Distribution	2029-30	Replace Slide Gate	22
	2030-31	Replace Air Valve, 50Mm Twin	11
		Replace Screen	48
		Replace Presure Relief Valve 1552.00 M	15
		Replace Pressure Releif Valve 2755 M	15
		Replace Pressure Relief Valve 3507.44	15
Tirroan Pump Station	2012-13	Study: Review requirement for PLC and SCADA system	28
	2013-14	Refurbish Motor - bearings, bake etc-actual cost	22
		Refurbish Pump - bearings, casing, wear rings etc	22
		Documents, Drawings, Specs and Cost Estimate for PLC and SCADA system	45
		Refurbish Building - paint, fittings, fixtures, roof, electrical installation etc	28
		Refurbish Pump - bearings, casing, wear rings etc-actual cost	23
		Refurbish Motor - bearings, bake etc	11
	2014-15	Replace Switchboard, Low Voltage	184
		Supply, Implement, Install, Commission PLC and SCADA system	92
	2021-22	Replace Electric Motor	46
		Replace Actuator, Elec Rotork	16
	2022-23	Replace Electric Motor	46
	2023-24	Refurbish Building - paint, fittings, fixtures, roof, electrical installation etc	28
		Refurbish Motor - bearings, bake etc-actual cost	22
	2024-25	Replace Cable	110
		Replace Discharge Valve	16
		Refurbish Motor - bearings, bake etc	11
	2025-26	Refurbish Pump - bearings, casing, wear rings etc	22
	2026-27	Refurbish Pump - bearings, casing, wear rings etc-actual cost	22
	2029-30	Replace Fence And Gates (Perimeter)	13
	2031-32	Replace Pump	144
	2032-33	Replace Pump	144
	2033-34	Refurbish Building - paint, fittings, fixtures, roof, electrical installation etc	28
	2034-35	Refurbish Motor - bearings, bake etc-actual cost	22
	2035-36	Refurbish Motor - bearings, bake etc	11
Walker Street Pump Station	2012-13	Refurbish Building - roof, fixtures & fittings	28
	2013-14	Refurbish motor	13

Scheme	*Year*	*Description*	*Value ($'000)*
	2014-15	Refurbish Pump - bearings, casing, changeout impeller	34
		Refurbish motor	13
	2016-17	Refurbish Pump - bearings, casing, changeout impeller	34
	2018-19	Replace Pump Cartridge, 450Mm Indeng - 47082	80
		Replace Pump, 450Mm Indeng - 47080	80
		Replace Motor, Electric 132Kw Pope - Kk2/928	38
		Refurbish Pipework - paint exposed pipework, joints & internal repairs as required	23
		Refurbish Motor - bearings, bake windings etc	17
	2020-21	Replace Discharge Valve	41
		Replace Suction Valve	31
		Replace Suction Valves	10
	2021-22	Replace Motor, 200Kw Electric Toshiba - 20411490	74
	2022-23	Replace Motor, 132Kw Electric Pope - Kk2/930	42
		Replace Motor, 132Kw Electric Pope - Kk2/929	42
		Refurbish Building - roof, fixtures & fittings	28
	2023-24	Refurbish Pump - bearings, casing, changeout impeller	33
		09BIA17 REFURBISH PUMP	31
	2025-26	Refurbish Pump - bearings, casing, changeout impeller	33
	2026-27	Refurbish motor	12
	2027-28	Replace Pump Cartridge, 450Mm Indeng - 47079	79
		Refurbish motor	12
	2029-30	Replace Bulkhead Gate Guides	10
	2030-31	Replace Cable	96
		Replace Screen	87
	2031-32	Refurbish Motor - bearings, bake windings etc	17
	2032-33	Replace Motor, 132Kw Electric Pope - Kk2/931	42
		Refurbish Pump - bearings, casing, changeout impeller	33
		Refurbish Building - roof, fixtures & fittings	28
	2033-34	Replace Pump Cartridge, 450Mm Indeng - 47081	79
		Refurbish Pipework - paint exposed pipework, joints & internal repairs as required	22
	2034-35	Refurbish Pump - bearings, casing, changeout impeller	33
Woongarra Balancing Storage	2011-12	Study: 5yr Dam Comprehensive Inspection (by 1 Nov 2011)	33
		Refurbish Gate - paint gate, anodes, lifting gear	11
	2012-13	Refurbish bulkhead gates. 2010 DS Rec 2.	15
	2016-17	Study: 5yr Dam Comprehensive Inspection (by 1 Nov 2011)	34
	2020-21	Refurbish Gate - paint gate, anodes, lifting gear	11
	2021-22	Study: 5yr Dam Comprehensive Inspection (by 1 Nov 2011)	34
		Refurbish: Replace flap valve seals on No 1& 2 gate- others completed last year	17
		Change Out Guides - place stainless steel guides	11
	2023-24	Change out: Replacement of 5 flap valves on rising main. Last changed 18 March 03	21
	2026-27	Study: 20yr Dam Safety Review (by 1 Nov 2026)	55
		Study: 5yr Dam Comprehensive Inspection (by 1 Nov 2011)	33
	2028-29	Replace INNER FACE EMBANKMENT EARTHWORKS	309
		Replace OUTER FACE EMBANKMENT EARTHWORKS	309
		09BIA20 STUDY: DAM SAFETY REVIEW	29
		07-002512 O&M Manual,SOP	17
	2029-30	Refurbish Road - fill potholes, reconstruct drainage, reseal road surface-deferred from 03 master blaster	17
		Refurbish Gate - paint gate, anodes, lifting gear	11
	2030-31	Replace Slide Gate	62
		Replace Screen	27
	2031-32	Study: 5yr Dam Comprehensive Inspection (by 1 Nov 2011)	33

Scheme	*Year*	*Description*	*Value ($'000)*
Woongarra Distribution	2032-33	Replace Gates, Flap (5 Of)	69
		Refurbish bulkhead gates. 2010 DS Rec 2.	16
	2033-34	Change Out Guides - place stainless steel guides	11
	2011-12	Replace Screen	25
		Replace Weed Screen (1215M)	23
		Refurbish Reg. Gate - remove, repaint, anodes & bearings, install - WMC RG06	22
		Remove decommissioned access crossing - WMC AC04	22
		Refurbish Reg. Gate - remove, repaint, anodes & bearings, install WMC RG07	16
	2012-13	Refurbish Gate - remove, repaint, anodes & bearings, install	28
		Refurbish Gate, remove, repaint, anodes & bearings, install - AMC RG01	22
	2013-14	Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG01	45
		Replace Screen	24
		Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG04	23
	2014-15	Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG08	17
		Refer SG strategy - ARMCO - Cast 1800*1800	14
	2015-16	Refurbish Reg. Gate, remove, repaint, anodes & bearings, install - WMC RG02	46
		Refurbish Gate, remove, repaint, anodes & bearings, install, moved from 2004 - AMC RG02	23
		Replace Screen	19
		11BIAXX Replace Slide Gate on WMC Access	16
	2018-19	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	101
		09BIA16 REFURBISH GATE	56
		10BIA47 REPLACE SECTIONS OF FENCE	35
		10BIA47 REPLACE 160M FENCE - PALAIS CRT	16
	2019-20	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	22
		Replace Screen 14867.67M	16
		Replace Valve, 150Mm Scour	12
	2020-21	11BIAXX REFURBISH REGULATOR GATE	40
	2021-22	Refurbish Reg. Gate - remove, repaint, anodes & bearings, install - WMC RG06	22
		Replace Safety Screen	20
		Refurbish Reg. Gate - remove, repaint, anodes & bearings, install WMC RG07	17
	2022-23	Refurbish Gate - remove, repaint, anodes & bearings, install	28
		Refurbish Gate, remove, repaint, anodes & bearings, install - AMC RG01	22
		Refer SG strategy - ARMCO - Cast 1800*1800	14
	2023-24	Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG01	44
		Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG04	22
	2024-25	Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG08	17
	2025-26	Refurbish Reg. Gate, remove, repaint, anodes & bearings, install - WMC RG02	44
		Refurbish Gate, remove, repaint, anodes & bearings, install, moved from 2004 - AMC RG02	22
	2027-28	10BIA47 REPLACE SECTIONS OF FENCE	35
		10BIA47 REPLACE 160M FENCE - PALAIS CRT	16
	2028-29	09BIA16 REFURBISH GATE	56
		Replace Screen 21130M	20
		Replace Screen 15096.58M	17

Scheme	*Year*	*Description*	*Value ($'000)*
		Replace Screen	16
		Replace Pres. Rel. Valve At 3405.4 M	15
		Replace Pres. Rel. Valve At 3562.9 M	15
	2029-30	10BIA55 REPLACE BULKHEAD GATE	32
		Replace Screen	31
		Replace Slide Gate - Al1 Pipeline	22
		Replace Slide Gate	16
		10BIA48 REFURB MINOR GATE, ARMCO	14
		Replace Gate, 380Mm Slide Awma	12
		Replace Structure, 150Mm Scour Outlet	11
		Replace Screen (Bench Flume)	11
	2030-31	Replace Screen	82
		Replace Metal Work	41
		Replace Safety Screen (Woodward Rd)	41
		11BIAXX REFURBISH REGULATOR GATE	39
		Replace Safety Screen (Isis Hwy)	17
		Replace Pres. Rel. Valve At 30947.74M	15
		Replace Pres. Rel.Valve At 5791.63M	15
		Replace Pres. Rel. Valve At 7086.00M	15
		Refer SG strategy - ARMCO - Cast 1800*1800	14
	2031-32	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	95
		Refurbish Reg. Gate - remove, repaint, anodes & bearings, install - WMC RG06	22
		Refurbish Reg. Gate - remove, repaint, anodes & bearings, install WMC RG07	17
	2032-33	Refurbish Gate - remove, repaint, anodes & bearings, install	28
		Refurbish Gate, remove, repaint, anodes & bearings, install - AMC RG01	22
		Replace Slide Gate	17
		Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	17
		Replace Structure, 150Mm Meter Outlet	13
	2033-34	Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG01	44
		Replace Screen	37
		Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG04	22
	2034-35	Refurbish Gate, remove, repaint, anodes & bearings, install - WMC RG08	17
		Replace Screen	15
		Replace Structure, 200Mm Meter Outlet	11
	2035-36	Refurbish Reg. Gate, remove, repaint, anodes & bearings, install - WMC RG02	44
		Refurbish Gate, remove, repaint, anodes & bearings, install, moved from 2004 - AMC RG02	22
Woongarra Pump Station	2011-12	Electrical Component Upgrade - Supply, Install, Commission (PLC, Switchboards, Cables)	262
		Refurbish Pump - bearings, casing, wear rings etc	87
		Refurbish pump	87
		Reprogram SCADA based on pumps and motors upgrade study from 2010	55
	2012-13	Refurbish Pump - bearings, casing, wear rings etc	90
	2013-14	Refurbish Pump - bearings, casing, wear rings etc	91
		Refurbish:refurbish HV switchboard	28
	2014-15	Refurbish Pump - bearings, casing, wear rings etc - New Diffuser (Reduced from $80K) - Pump 3 failed christmas 03, this job deferred	92
		Refurbish Motor - bearings, bake etc	46
	2015-16	Refurbish motor	46
	2016-17	Refurbish Motor - bearings, bake etc	45

Scheme	*Year*	*Description*	*Value ($'000)*
	2017-18	Refurbish motor	45
	2018-19	Refurbish Motor - bearings, bake etc - Pump 3 failed christmas 03, this job deferred to 05 as 04 budget already set	45
	2019-20	Replace Pump	161
		Replace Electric Motor	85
		Replace Cooling Water Unit 3	47
		Replace Cooling Water Unit 1	47
		Enhancement Security - constant vandalism problems. Fence has been ripped down. Need to upgrade to Weldmesh	22
		Replace Cooling Water Unit 2 (Spare)	21
	2020-21	Replace Pump	162
		Refurbish pump	91
		Replace Electric Motor	86
		Refurbish Cooling Water System - pump filter & pipework - New filter system was installed in 1998.(Brought forward by JK July 04)	11
		Refurbish Cooling Water System - pump filter & pipework - New filter system was installed in 1998. (Brought forward by JK July 04)	11
	2021-22	Refurbish Pump - bearings, casing, wear rings etc	179
		Replace Electric Motor	85
	2022-23	Replace Pump	160
		Refurbish Pump - bearings, casing, wear rings etc	89
	2023-24	Refurbish Pump - bearings, casing, wear rings etc - New Diffuser (Reduced from $80K) - Pump 3 failed christmas 03, this job deferred	89
	2024-25	Refurbish:refurbish HV switchboard	28
	2027-28	Refurbish Motor - bearings, bake etc	44
	2028-29	Refurbish motor	45
	2029-30	Refurbish pump	89
		Refurbish Motor - bearings, bake etc	45
	2030-31	Refurbish Pump - bearings, casing, wear rings etc	89
		Refurbish motor	44
	2031-32	Replace Common Control (2032)	2583
		Refurbish Pump - bearings, casing, wear rings etc	178
		Refurbish Motor - bearings, bake etc - Pump 3 failed christmas 03, this job deferred to 05 as 04 budget already set	44
	2032-33	Refurbish Pump - bearings, casing, wear rings etc - New Diffuser (Reduced from $80K) - Pump 3 failed christmas 03, this job deferred	89
	2034-35	Enhancement Security - constant vandalism problems. Fence has been ripped down. Need to upgrade to Weldmesh	22
	2035-36	Refurbish:refurbish HV switchboard	28
		Replace Pump, Subm Flygt	13
		Refurbish Cooling Water System - pump filter & pipework - New filter system was installed in 1998. (Brought forward by JK July 04)	11
		Refurbish Cooling Water System - pump filter & pipework - New filter system was installed in 1998.(Brought forward by JK July 04)	11
Woongarra Relift	2018-19	Replace Structure, 150Mm Meter Outlet	24
	2019-20	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	67
	2020-21	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	85
		Replace Air Valve At 1700.00M	11
		Replace Air Valve At 400.00M	11
		Replace Air Valve At 1798.00M	11
		Replace Air Valve At 600.00M	11
	2021-22	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	123
	2026-27	Replace Structure, 80Mm Meter Outlet	16
	2030-31	Refurbish Reservoir - replace lining	111
		Replace Slide Gate (Wmc)	43
		Replace Pres. Rel. Valve At 2542.10M	28

Scheme	*Year*	*Description*	*Value ($'000)*
		Replace Pres. Rel. Valve At 1347.19M	28
		Replace Pres. Rel. Valve At 5118.00M	28
		Replace Pres. Rel. Valve At 6110.86M	28
		Replace Pres. Rel. Valve At 2126.63M	28
		Replace Pres. Rel. Valve At 2009.15M	28
		Replace Pres. Rel. Valve At 2356.34M	28
		Replace Pres. Rel. Valve At 586.51M	15
		Replace Pres. Rel. Valve At 5200.27M	15
	2031-32	Replace Altitude Valve	17
	2032-33	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	67
	2033-34	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	72
	2034-35	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	117
	2035-36	Refurbish Scour Outlet - refurbish metalwork/valves - consider retiring asset	11