QUEENSLAND COMPETITION AUTHORITY

Draft Report

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

November 2011

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SUBMISSIONS

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

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

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The **closing date** for submissions is **23 December 2012**.

Confidentiality

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

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

Public access to submissions

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

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

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GLOSSARY

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

EXECUTIVE SUMMARY

Ministerial Direction

The Authority has been directed by the Minister for Finance and The Arts and 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.

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	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	1.16	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. nr – not relevant. Source: Actual Prices (SunWater, 2011al) and Recommended Prices (QCA, 2011).

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	539.85	553.35	567 18	581.36	595.90

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, 2011).

Draft Report

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

Volume 2, which comprises scheme specific reports, should be read in conjunction with Volume 1. Also relevant is the Draft 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 on key issues; and, publication of Issues Papers.

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

1. 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. 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);

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

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

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

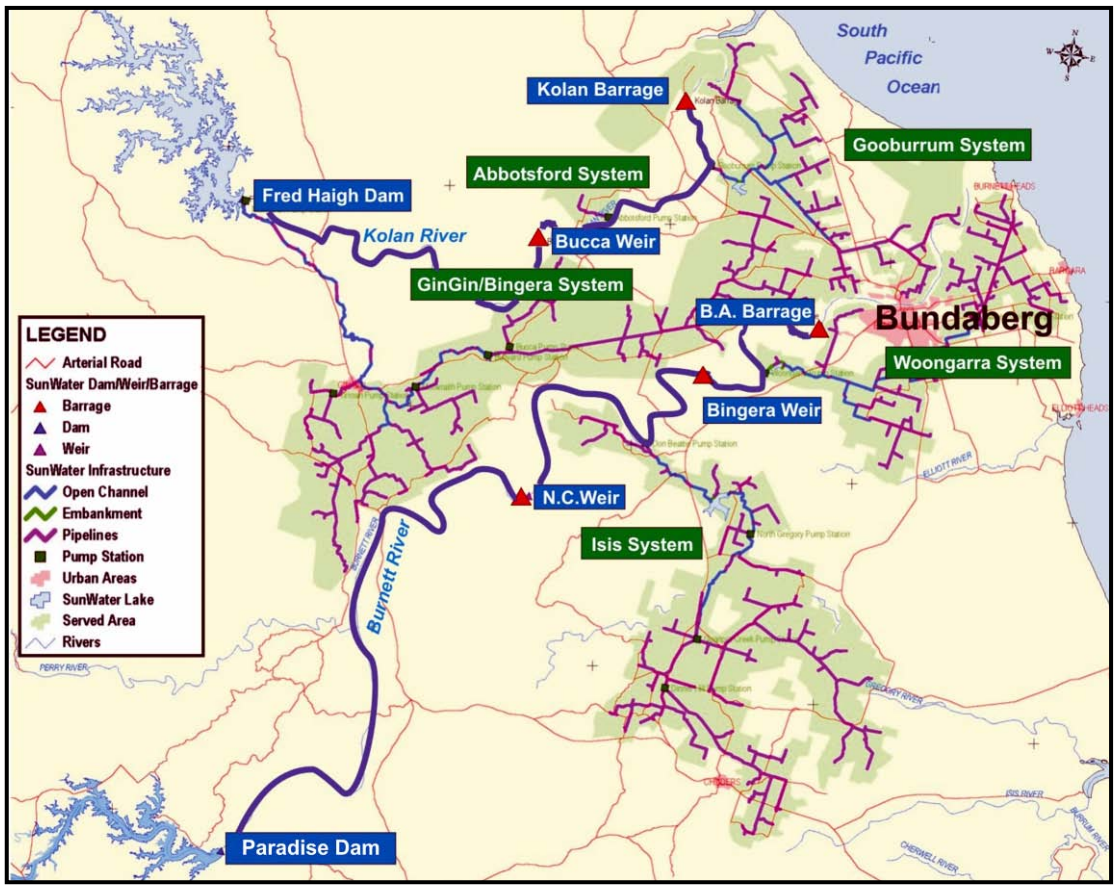
(f) considered all submissions and reports in preparing this Draft Report for comment.

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

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

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

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 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.

2.3 Authority's Analysis

The Authority has, in Volume 1 analysed the general nature of the risks confronting SunWater and recommended that an adjusted price cap apply 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.

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.

Stakeholder Submissions

SunWater

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

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

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, is addressed in a subsequent chapter. 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 notes 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 considers that the pricing structure should neither encourage nor discourage conversion of MP WAE to HP WAE. The Authority considers 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 recognises that tariff structures are only part of a mix of institutional arrangements in Queensland designed to direct water to its highest and best use from the overall community perspective. In addition to these institutional arrangements, normal commercial profit motives and water trading are relevant to ensuring water is directed to its highest and best use.

The volumes of permanent and temporary water traded for the 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 recognises that a change in tariff structure may impact the value of entitlements, and therefore incentives to trade. This matter is addressed further below in the context of pricing recommendations.

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.

Stakeholder Submissions

SunWater

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.

Other Stakeholders

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

The Authority's approach results in a multiple of about 13.8 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 compares with SunWater's 2011-12 termination fees which are 9.4 times the 2011-12 distribution system fixed charge. These multiples all include GST.

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).

Stakeholder Submissions

SunWater

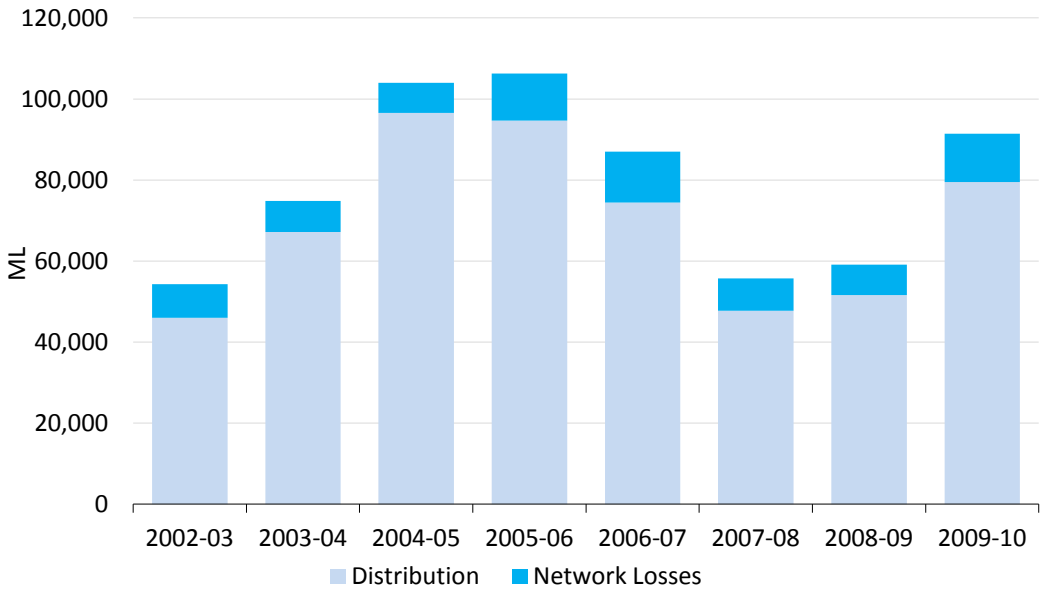
The available supply of water is determined by the announced allocations which are set according to rules contained in the resource operations plan (ROP).

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 does not consider that water use forecasts are relevant to establishing cost-reflective prices for SunWater.

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

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

Distribution losses are addressed in section 3.5.

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).

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 Volume 1, the Authority's general view is 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 notes that, historically, SunWater have 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 is 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 accepts 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 recommends that distribution prices be calculated on the basis of total loss WAEs.

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

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.

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 accepts 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 notes 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 has 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 accepts that this is a slight reduction in service standards from that prevailing. However, it is 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 notes 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 considers 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 considers 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 notes 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 does 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 are 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 has 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.

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

Submissions

SunWater

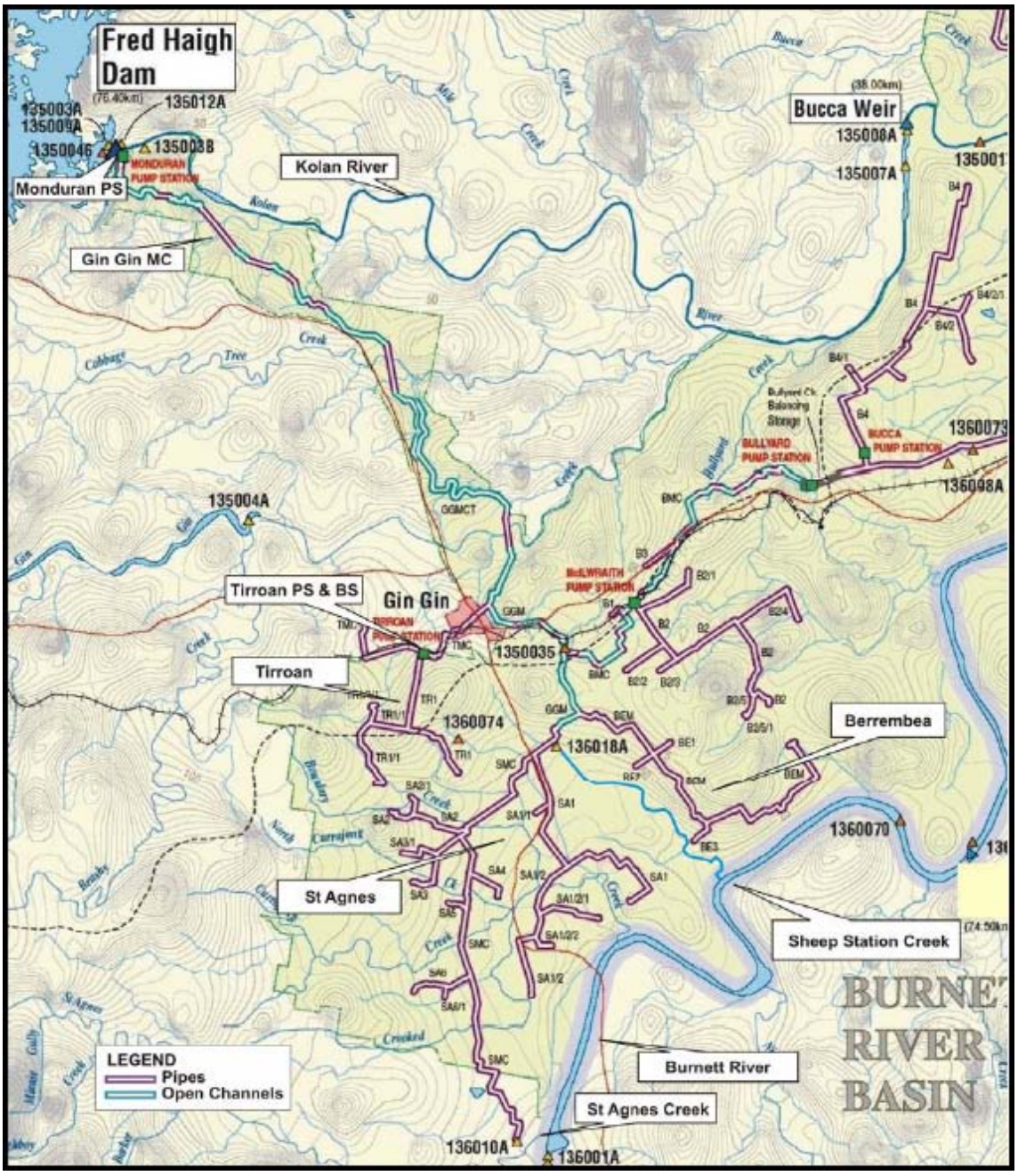
In the Bundaberg WSS NSP, a provision of 8% of the lower bound costs of Gin Gin main channel and the Monduran pump station are included in bulk costs. This reflects the occasional need to pump water from the Kolan system to supplement supplies in the Burnett.

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 notes 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 has 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 notes 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 is 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 has no reason to reject the outputs of the IQQM and proposes to accept SunWater's revised cost transfer of $61,000 in 2012-13.

The Authority notes that the cost transfer as proposed by SunWater in its NSP represents about 7% of total Bundaberg WSS total operating and renewals costs. The Authority's estimate of the cost transfer amount is derived in Chapter 6.

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 notes 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.

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.

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.

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

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

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

4.3 Past Renewals Expenditure

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

Submissions

SunWater

SunWater (2011) submitted actual renewals expenditure for the 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

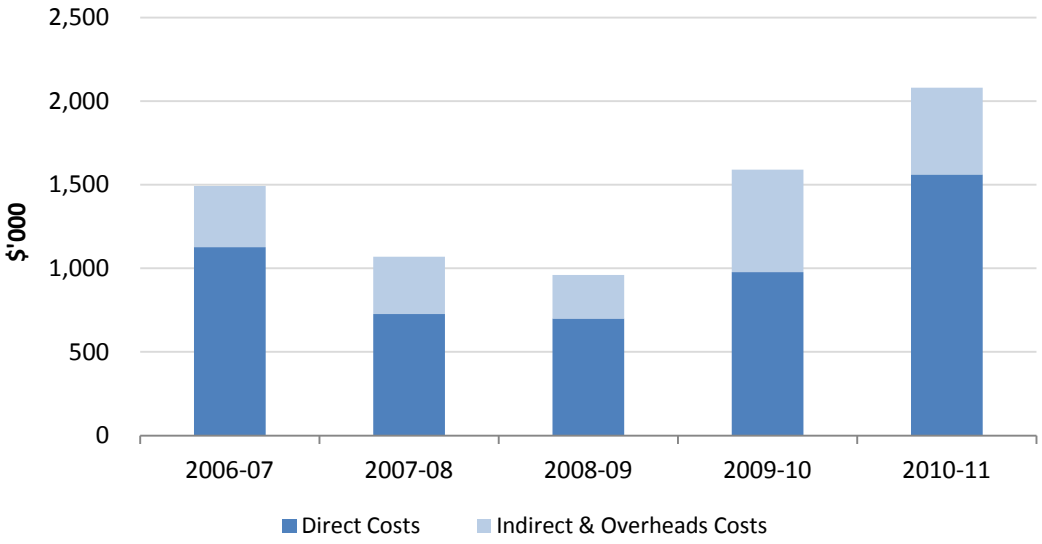
No other stakeholders have commented on these items.

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)



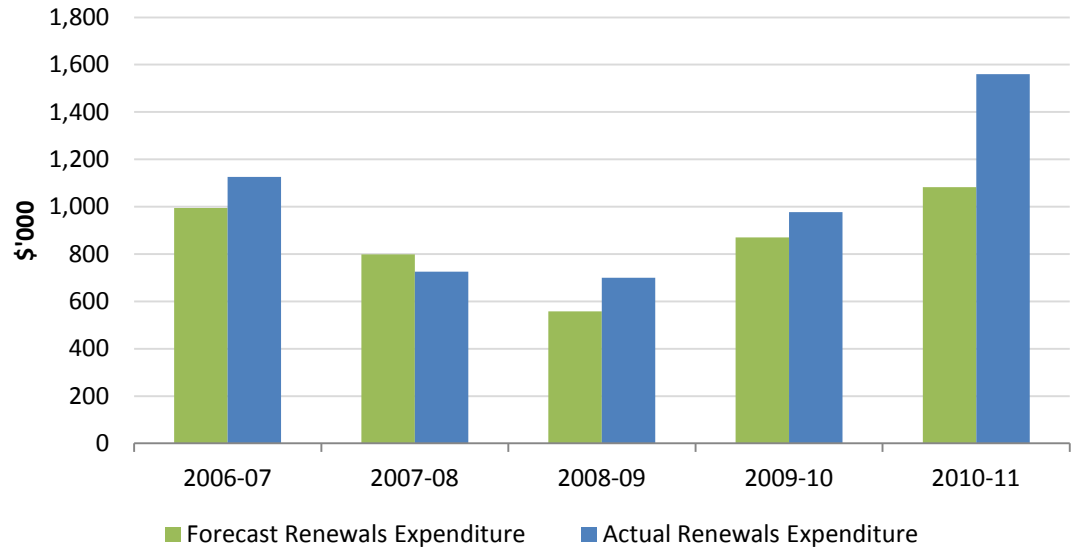
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011. Source: Indec (2011d).

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.

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)

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.

SunWater

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.

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

Item 2: Monduran Pump Station – Roof and Gutter Replacement

SunWater

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).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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 accepts Aurecon's conclusion that the replacement of roof and guttering at Monduran Pump Station is prudent and efficient.

Conclusion

In summary, two items for the Bundaberg Distribution System were sampled. On the basis of the consultants review, the Authority considers that both items are prudent and efficient and have been retained as past expenditure.

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

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*	*Authority's Findings*	*Recommended*
Sampled Items				
1. Woongarra Pump Station – Replacement of Electrical Control System	2010-11	$60,500	Prudent and efficient	$60,500
2. Monduran Pump Station – Roof and Gutter Replacement	2008-09	$280,132	Prudent and efficient	$280,132
Non-Sampled Items				**10% saving applied**

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

4.4 Opening ARR Balance (at 1 July 2012)

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, and the proposed methodology for unbundling ARR balances, the recommended opening ARR balance for 1 July 2011 for Bundaberg Distribution is $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.

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.

4.5 Forecast Renewals Expenditure

Planning Methodology

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

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

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

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's proposed 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.

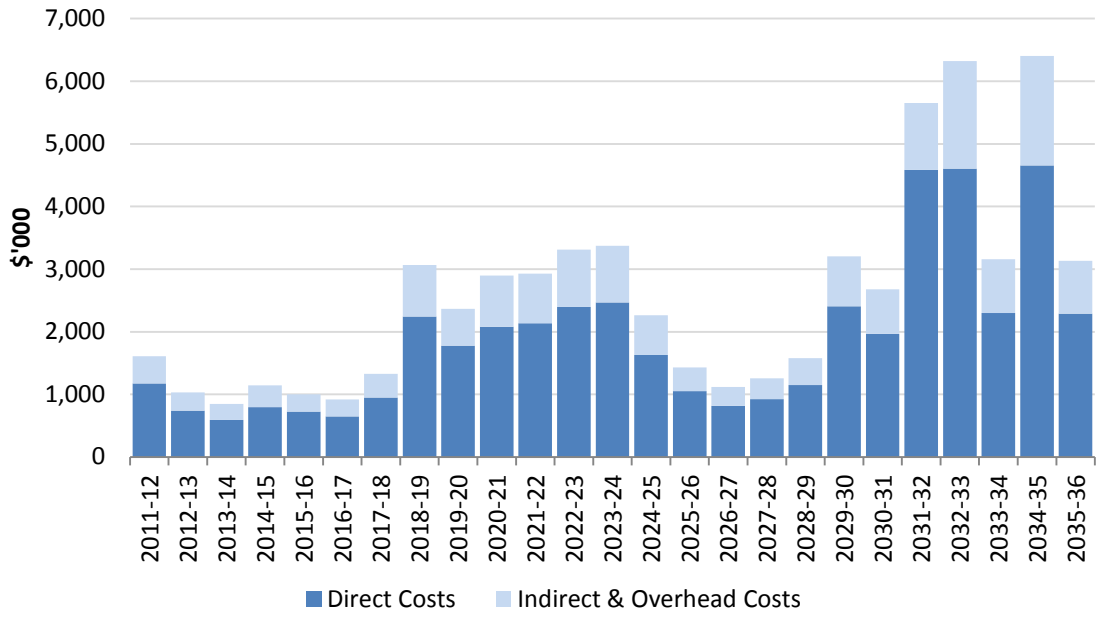
BRIG (2011) submitted that it has noticed that the renewals are massively back ended. BRIG wishes to be assured that their assumptions are valid as it does not wish to see the next generation [of irrigators] have to pay for underfunding now or vice versa.

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 has 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 notes 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 considers that this recommendation addresses some of BRIG's concerns about the large amount of renewals over the 2031-35 period.

Item Review

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

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

SunWater

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.

Other Stakeholders

No other stakeholders have commented on this item.

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

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

SunWater

At the Woongarra Balancing Storage, SunWater has 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).

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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 accepts 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.

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

SunWater

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.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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 accepts 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.

Item 4: Bingera Distribution - Replace Screens

SunWater

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.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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 accepts 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 has therefore not made any specific adjustments to this item.

Item 5: Bingera Distribution – Replace Concrete Lining

SunWater

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.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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

The Authority accepts 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 has therefore not made any specific adjustment to this item.

Item 6: Bullyard Distribution – Replace Meter Outlet Structures

SunWater

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.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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 accepts 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.

Item 7: Don Beattie Pump Station – Replace Common Controls

SunWater

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.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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.

(a) Available Information

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 4.4: 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).

(b) Prudency Review

Asset Replacement/Refurbishment Date Determination

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).

Timing of Renewal/Refurbishment

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.

(c) 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.

Renewal/Replacement Project Cost Evaluation

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 4.5 below:

Table 4.5: 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.

Conclusion on Efficiency Evaluation

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.

(d) 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

The Authority accepts 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 notes 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 has 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 has been included in the Authority's recommended tariffs.

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

SunWater

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

Other Stakeholders

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

Consultant'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 notes 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 has not made any specific adjustment to the value of this expenditure item, but has allocated it to the Bundaberg WSS.

Conclusion

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

(a) four items are prudent and efficient and have been retained as forecast expenditure;

(b) two items are prudent but insufficient information has been provided by SunWater to establish efficiency; and

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

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

In total, the Authority recommends the direct renewals expenditure as shown in Table 4.6.

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

Item	*Year*	*SunWater ($000)*	*Authority's Findings*	*Recommended ($000)*
Sampled Items				
1. Woongarra Pump Station – Replacement of Electrical Control System (2012)	2011-12	262	Prudent and efficient	262
2. Woongarra Balancing Storage - Refurbish Control Gate and Replace Weed Screen	2011-12	45	Prudent and efficient	45
3. Dinner Hill Pump Station - Replace Electrical Control System	2011-12, 2012-13	224	Prudent and efficient	224
4. Bingera Distribution - Replace Screens	2033-34	217	Insufficient information.	10% saving applied
5. Bingera Distribution – Replace Concrete Lining	2032-33, 2034-35	5,066	Insufficient information.	10% saving applied
6. Bullyard Distribution – Replace Meter Outlet Structures	2032-33	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
8. Bucca Weir – Refurbishment of Trash Racks and Guides	2012-13	72	Transferred to the Bundaberg WSS	0
Non-Sampled Items				**10% saving applied**

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

4.6 SunWater's Consultation with Customers

Submissions

SunWater

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

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

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

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

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

Other Stakeholders

CANEGROWERS (2011b) submitted that the reduction in service standards in recent years without approval of customers was a major concern. E.g. 48 to 72 hours for shut downs. Also if SunWater does not meet its service standards there is no action so do the service standards 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 recommends that there be a legislative requirement for SunWater to consult with its customers about any changes to its service standards and proposed renewals expenditure program. SunWater should also be required to submit the service standards and renewals expenditure program to irrigators for comment whenever they are amended and that irrigators' comments be documented and published on SunWater's website and provided to the Authority.

4.7 Allocation of 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.

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 considers that distribution system costs should be allocated according to the relevant cost drivers. The Authority does not consider the HUF methodology to be an appropriate cost driver for distribution system costs.

In principle, the Authority considers 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 recommends 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 notes 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 recommends 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

In Volume 1, the Authority recommends 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 4.7. The table shows the total renewals annuity recommended by the Authority and the component amounts for high and medium priority customers. Also presented for comparison is SunWater's total renewals annuity for 2006-11 and SunWater's proposed total annuity for 2012-16. SunWater did not submit a disaggregation between high and medium priority customers.

Table 4.7: 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*
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

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).

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

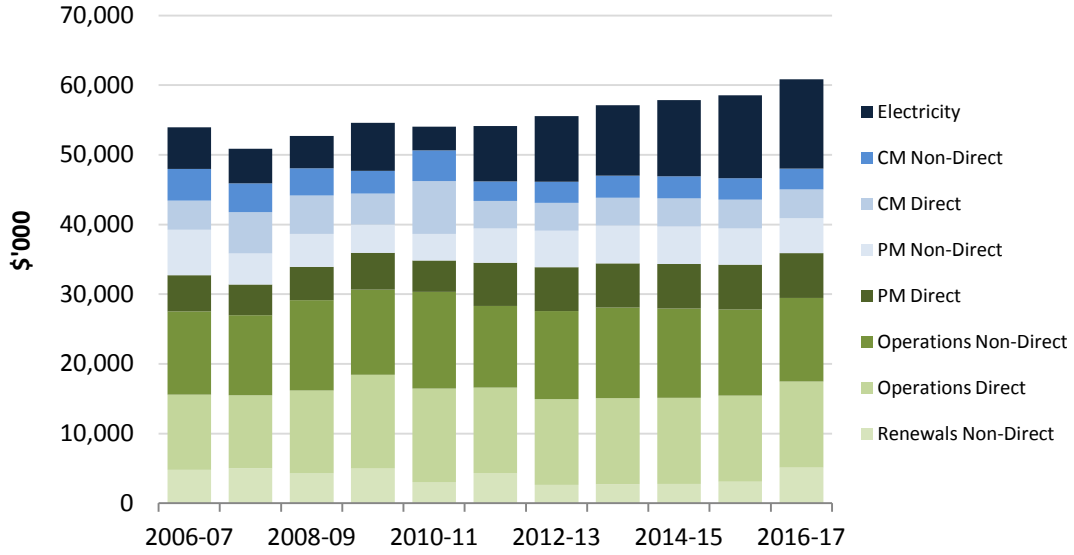
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

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.

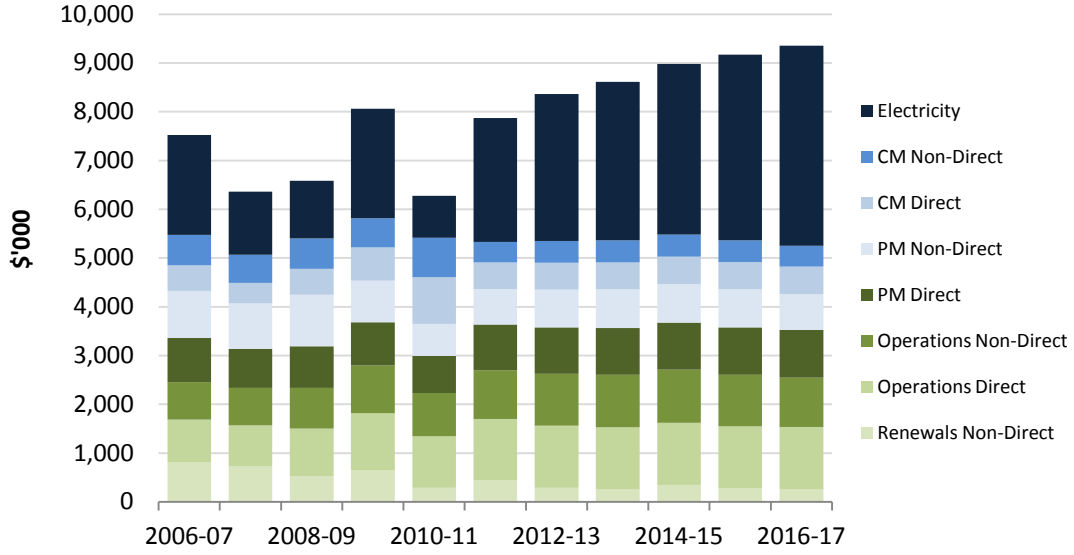
Figure 5.1: SunWater's Total Operating Costs (Real $'000) – All Service Contracts



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 Tables 5.1 and 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	2,262	2,336	2,353	2,358	2,334	2,285
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**	**8,980**	**9,173**	**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**	**8,980**	**9,173**	**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.

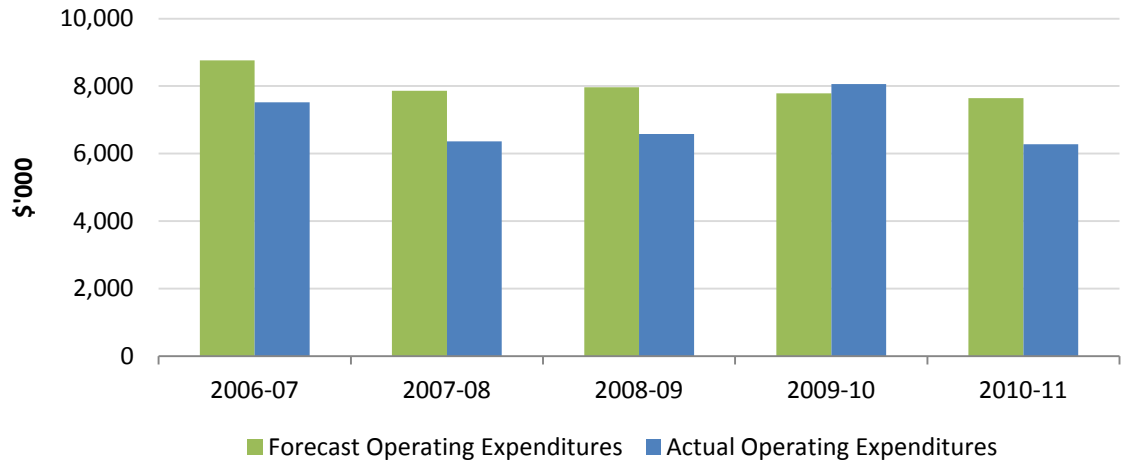
Authority's Analysis

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

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

In 2011, the Authority engaged Indec to assess whether SunWater achieved the cost savings forecast in 2005-06. A comparison of forecast and actual operating costs for the 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.

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.

Stakeholders

SunWater

As noted in Volume 1, SunWater submitted that it will incur $23.5 million in total non-direct costs in 2012-13 (Table 5.3). 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.

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	2,443

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

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

SunWater's proposed use of 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 concludes that no alternative CAB is superior to DLC and that the introduction of any alternative would likely be costly and complex.

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

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

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

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

The Authority's recommended level of non-direct costs to be recovered from the 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							2,478	2,467	2,532	2,377	2,238

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

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

5.4 Direct Costs

Introduction

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

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

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

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

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

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

Stakeholder Submissions

SunWater

SunWater estimated the costs of each activity in 2010-11, based on actual costs over the past four years (excluding spurious costs) with adjustments for known or expected changes in costs. Adjustments were also made to preventive maintenance in line with the 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	1,272	1,272
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**	**6,615**	**6,911**

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**	**6,615**	**6,911**

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

(a) attain greater operating efficiency;

(b) achieve greater transparency;

(c) facilitate future price reviews; and

(d) promote more meaningful stakeholder engagement..

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

Item 1: Operations

Stakeholder Submissions

SunWater

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

workplace health and safety (WHS) compliance, 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.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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 notes that Aurecon was unable to validate the prudency and efficiency of SunWater's Operations costs due to insufficient information. The Authority notes 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 notes that Aurecon did not recommend any adjustment to operations costs for this scheme.

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

On the basis of the consultants' reviews, the Authority has not specifically adjusted SunWater's operations cost forecast.

Item 2: Preventive Maintenance

Stakeholder Submissions

SunWater

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

Preventive maintenance includes:

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

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

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

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

Consultant'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 notes 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 considers 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 accepts Aurecon's recommendation that SunWater's preventive maintenance costs cannot be considered prudent and efficient. In particular, the Authority notes 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 has excluded $120,000 per annum from SunWater proposed preventive maintenance costs in its recommended tariffs.

Item 3: Corrective Maintenance

Stakeholder Submissions

SunWater

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

SunWater identifies two types of corrective maintenance activities:

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

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

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

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.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant'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 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 recommends that SunWater formally document its processes for the development of correct maintenance expenditure forecasts.

For this system, the Authority accepts Aurecon's recommendations, and accepts SunWater's forecast corrective maintenance costs as prudent and efficient.

Item 4: Electricity

Stakeholder Submissions

SunWater

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 forecasts 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.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Aurecon did not review SunWater's electricity costs.

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

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

The Authority accepts SunWater's proposal to allocate $97,000 of electricity costs to Burnett Water.

The Authority has adjusted proposed electricity costs as set out in Table 5.10 below.

Item 5: Cost Escalation

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

Direct Labour

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

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

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

Direct Materials and Contractors

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

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

Direct Electricity

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

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

As noted in Volume 1, the Authority proposes electricity be escalated at 6.32% per annum, based on expected growth in the four key components of electricity prices – network costs, energy costs, retail operating costs and retail margin.

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

Other Direct Costs

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

Non-direct costs

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

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Bundaberg Distribution System is set out in Table 5.10. The Authority's proposed costs include all specific adjustments and the Authority's proposed cost escalations as noted above. As noted in Volume 1, the Authority has applied a minimum 2.43% saving to direct operating costs (excluding electricity) in 2012/13. A further 0.75% saving arising from labour productivity is also applied, compounding annually.

Table 5.10: Direct Operating Costs (Real $'000)

	SunWater					***Authority***				
	2012-13	***2013-14***	***2014-15***	***2015-16***	***2016-17***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Operations	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**

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

5.5 Cost Allocation According to WAE Priority

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

Previous Review

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

Stakeholder Submissions

SunWater

SunWater (2011j) has proposed to assign operating costs to users on the basis of their current WAE.

Other Stakeholders

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 recommends 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).

5.6 Summary of Operating Costs

SunWater's proposed operating costs by activity and type are set out in Table 5.13. The Authority's recommended operating costs are set out in Table 5.14.

Table 5.13: 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**	**9,089**

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 5.14: The Authority's 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).

6. DRAFT PRICES

6.1 Background

Ministerial Direction

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

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

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

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

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

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

The Ministerial Direction also requires that:

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

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

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

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

Previous Review

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

For this scheme, prices over 2006-11 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

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.

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
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

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) and QCA (2011).

6.4 Fixed and Variable Costs

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

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

(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.

Allocation of Costs According to WAE Priority

Fixed Costs

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

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

	2012-13	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Net Fixed Costs	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

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

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

Variable Costs

Variable costs are allocated to all users on the basis of water use. Volumetric tariffs are calculated based on SunWater's eight-year historical water usage data for all sectors. However, consistent with SunWater's assumed typical year for operating cost forecasts, the Authority has removed from the eight years of data, the three lowest water-use years for each service contract. Accordingly, to determine the volumetric charge, the Authority has assumed historical total water use for all sectors to be 46.7% of WAE.

6.5 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.

Table 6.3: 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	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 Cost Reflective Prices (QCA, 2011).

Table 6.4: Termination Fees ($/ML)

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

6.6 Queensland Government Pricing Policies

As noted above, the Queensland Government has directed that:

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

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

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

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

Authority's Analysis

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

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

To ensure that distribution customers are not disadvantaged by unbundling, the comparison has 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).

Table 6.5: Comparison of Current Prices and Cost-Reflective Prices (Real $ 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 Cost-Reflective Tariffs*	*Difference*
	Fixed	*Variable*					
Channel bundled	45.05	32.17	149,210	56,073	8,525,892	10,298,105	-1,772,213

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

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.

After tariff rebalancing, the revenue-neutral bundled tariff for the Bundaberg Distribution System is a fixed charge of $29.27 per WAE and $63.36 per ML of usage, and the $2/ML real increase is applied to the fixed charge. At this rate of increase, cost reflective charges are 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.

6.7 The Authority's Recommended Prices

The Authority's recommended prices to apply to the Bundaberg Distribution System for 2012-17 are outlined in Table 6.6, together with actual prices since 2006-07. In calculating the recommended prices, a 10-year average irrigation water use has been adopted (see Volume 1).

Table 6.6: Draft Prices for the 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	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 Recommended Prices (QCA, 2011).

The Authority's recommended termination fees to apply to the Bundaberg Distribution System during 2012-17 are outlined in Table 6.7 together with actual termination fees since 2008-09. The Authority's recommended termination fees are higher than those charged by SunWater, as the Authority's approach:

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

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

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

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

Table 6.7: Draft Termination Fees ($/ML)

	Actual Prices						*Calculated 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 Recommended Prices (QCA, 2011).

6.8 Impact of Recommended Prices

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

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APPENDIX A: FUTURE RENEWALS LIST

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

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