QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater
Irrigation Price Review: 2012-17
Volume 2
Mareeba-Dimbulah 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 2011**.

Confidentiality

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

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

Public access to submissions

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

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

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GLOSSARY

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

EXECUTIVE SUMMARY

Ministerial Direction

The Authority has been directed by the Minister for Finance and The Arts and the Treasurer for Queensland to recommend irrigation prices to apply to particular SunWater water supply schemes (WSS) from 1 July 2012 to 30 June 2017 (the 2012-17 regulatory period). A copy of the Ministerial Direction forms **Appendix A** to Volume 1.

Summary of Price Recommendations

The Authority's recommended irrigation prices to apply to the Mareeba-Dimbulah Distribution System for the 2012-17 regulatory period are outlined in Table 1 together with actual prices since 1 July 2006.

Although prices for the bulk costs of the Mareeba-Dimbulah WSS are also presented in Table 1, the review of the underlying costs is set out in detail in the report for the Mareeba-Dimbulah Bulk WSS.

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

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 Mareeba-Dimbulah 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.

Table 1: Recommended Prices for the Mareeba-Dimbulah 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***
	Access Charge^	475.40	489.20	512.76	528.88	545.00	564.48	578.59	593.06	607.88	623.08	638.66
Bulk	**River (Tinaroo Falls/Barron)**											
	Fixed (Part A)	2.80	2.88	3.00	3.12	3.20	3.32	14.36	14.72	15.09	15.47	15.86
	Volumetric (Part B)	14.06	14.47	15.16	15.64	16.11	16.69	0.74	0.76	0.78	0.80	0.82
Distribution System – unbundled	**River (Supplemented Streams & Walsh River)**											
	Fixed (Part C)	11.84	12.16	12.76	13.16	13.56	14.04	7.68	7.87	8.07	8.27	8.47
	Volumetric (Part D)	-3.60*	-3.70*	-3.87*	-4.00*	-4.11*	-4.26*	6.60	6.76	6.93	7.10	7.28
	Outside a re-lift up to 100 ML											
	Fixed (Part C)	22.96	23.64	24.80	25.56	26.32	29.28	21.82	22.93	23.50	24.09	24.69
	Volumetric (Part D)	6.19	6.37	6.68	6.89	7.11	7.36	11.49	11.78	12.07	12.37	12.68
	Outside a re-lift 100 to 500 ML											
	Fixed (Part C)	19.28	21.48	23.44	24.12	24.88	27.76	21.82	22.93	23.50	24.09	24.69
	Volumetric (Part D)	-0.03*	0.99	1.62	1.67	1.73	1.78	11.49	11.78	12.07	12.37	12.68
	Outside a re-lift more than 500 ML											
	Fixed (Part C)	15.88	17.24	18.08	18.60	19.20	21.88	11.99	14.34	16.80	19.37	22.06
	Volumetric (Part D)	-2.21*	-1.70*	-1.77*	-1.83*	-1.88*	-1.95*	11.49	11.78	12.07	12.37	12.68
	Re-lift											
	Fixed (Part C)	29.56	32.04	35.28	38.12	40.92	44.36	33.74	34.58	`35.45	36.336	37.24
	Volumetric (Part D)	6.48	7.69	9.15	10.54	11.89	12.32	43.37	44.45	45.56	46.70	47.87

		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Distribution System – bundled	**River Supplemented Streams & Walsh River**											
	Fixed (Part A)	14.64	15.04	15.76	16.28	16.76	17.36	nr	nr	nr	nr	nr
	Volumetric (Part B)	10.46	10.77	11.29	11.64	12.00	12.43	nr	nr	nr	nr	nr
	Outside a re-lift up to 100 ML											
	Fixed (Part A)	25.76	26.52	27.80	28.68	29.52	32.60	nr	nr	nr	nr	nr
	Volumetric (Part B)	20.25	20.84	21.84	22.53	23.22	24.05	nr	nr	nr	nr	nr
	Outside a re-lift 100 to 500 ML											
	Fixed (Part A)	22.08	24.36	26.44	27.24	28.08	31.08	nr	nr	nr	nr	nr
	Volumetric (Part B)	14.03	15.46	16.78	17.31	17.84	18.47	nr	nr	nr	nr	nr
	Outside a re-lift more than 500 ML											
	Fixed (Part A)	18.68	20.12	21.08	21.72	22.40	25.20	nr	nr	nr	nr	nr
	Volumetric (Part B)	11.85	12.77	13.39	13.81	14.23	14.74	nr	nr	nr	nr	nr
	Re-lift											
	Fixed (Part A)	32.36	34.92	38.28	41.24	44.12	47.68	nr	nr	nr	nr	nr
	Volumetric (Part B)	20.54	22.16	24.31	26.18	28.00	29.01	nr	nr	nr	nr	nr

*Note: ^ Annual fixed charge per customer. Prior to 2012-13, channel tariffs were a bundled price for bulk and distribution services. Thus, the fixed Part C tariffs for 2006-12 represent a notional unbundled distribution system price calculated by deducting Part A Regulated Section prices from Part A Channel prices. The same process was applied to determine Part D prices. *Notional negative prices arise from the unbundling process. Source: Actual Prices (SunWater, 2011al) and Recommended Prices (QCA, 2011).*

Table 2: Recommended Termination Fees (Nominal $/ML)

	Actual Prices				*Recommended Prices*				
	2008-09	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Outside Relift <100 ML to:									
Outside Relift 100-500 ML	12.18	12.35	13.59	15.68	0.00	0.00	0.00	0.00	0.00
Outside Relift >500 ML	60.16	59.71	67.19	76.33	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	107.80	106.38	120.41	157.19	182.79	187.36	192.05	196.85	201.77
Tinaroo Falls /Barron	222.04	219.29	248.36	302.01	456.98	468.40	480.11	492.12	504.42
Outside Relift 100-500 ML to:									
Outside Relift >500 ML	47.99	47.36	53.60	60.65	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	95.62	94.03	106.82	141.52	182.79	187.36	192.05	196.85	201.77
Tinaroo Falls /Barron	209.86	206.93	234.77	286.33	456.98	468.40	480.11	492.12	504.42
Outside Relift >500 ML to:									
Supp. Streams & Walsh River	47.63	46.67	53.22	80.87	182.79	187.36	192.05	196.85	201.77
Tinaroo Falls /Barron	161.87	159.57	181.18	225.68	456.98	468.40	480.11	492.12	504.42
Relift to:									
Outside Relift <100 ML	93.83	107.76	137.77	155.54	0.00	0.00	0.00	0.00	0.00
Outside Relift 100-500 ML	106.00	120.11	151.36	171.22	0.00	0.00	0.00	0.00	0.00
Outside Relift >500 ML	153.99	167.47	204.95	231.87	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	201.62	214.14	258.17	312.74	182.79	187.36	192.05	196.85	201.77
Tinaroo Falls /Barron	315.86	327.04	386.13	457.56	456.98	468.40	480.11	492.12	504.42
Supplemented Streams & Walsh River to:									
Tinaroo Falls /Barron	114.24	112.90	127.96	144.82	274.19	281.04	288.07	295.27	302.65

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

1. MAREEBA-DIMBULAH DISTRIBUTION SYSTEM

1.1 Scheme Description

The Mareeba-Dimbulah Distribution System, located on the Atherton Tablelands, services 1,008 customers with both medium and high priority water access entitlements (WAEs). Customer allocations comprise 146,883 ML of medium priority WAE and 266 ML of high priority WAE (Table 1.1). These WAEs are inclusive of WAEs for customers who take water from the Walsh River and other supplemented streams. SunWater also holds 37,000 ML of medium priority WAE and 8,000 ML of high priority WAE for distribution losses.

Table 1.1: Water Access Entitlements (ML)

Customer Group	*Irrigation WAE*	*Total WAE*
Medium Priority	144,304	146,883
Medium Priority Distribution Losses	36,285	37,000
High Priority	0	266
High Priority Distribution Losses	7,845	8,000
Total	**188,434**	**192,149**

Source: SunWater (2011am).

1.2 Distribution System Infrastructure

The Mareeba-Dimbulah Distribution System diverts water from the Tinaroo Falls Dam[1] to five major sub-systems: Tinaroo, Walkamin, Dimbulah, Mareeba and Paddy's Green. These systems include 375 km of channels and pipelines and 61 km of drains. Figure 1.1 shows the location of the Mareeba-Dimbulah Distribution System and key infrastructure.

Tinaroo/Walkamin Sub-Systems

The Tinaroo sub-system is characterised by bench flume sections and large earth channels. The first section of channel, which is directly downstream of the dam's outlet, is the start of the West Barron main channel. The channel is the primary irrigation delivery system for the Mareeba-Dimbulah Distribution System and consists of 13 km of bench flume and 7 km of open channel.

The Walkamin Operational Area consists of a variety of channel sections and a balancing storage with the Mareeba main channel, Nardello's Lagoon, the Atherton main channel and the B-section as the main components.

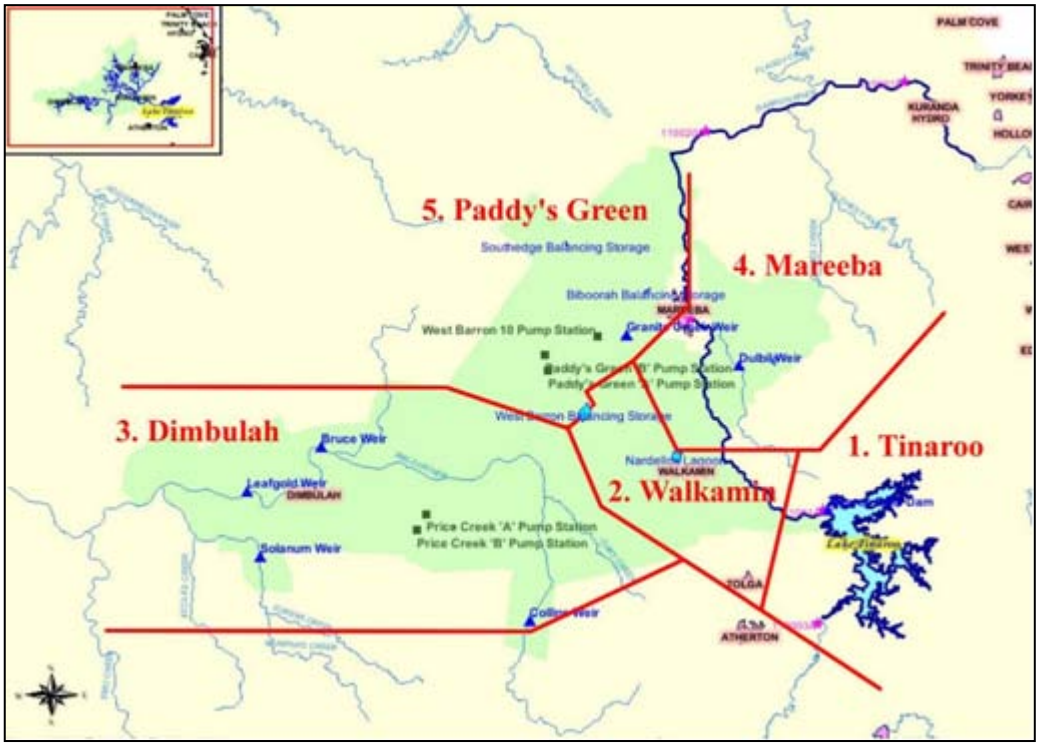
Atherton Creek main channel draws water from Nardello's Lagoon. It has a design capacity of 98 ML/day and is characterised by its concrete lining, siphons and lateral pipelines. Atherton Creek main channel is approximately 9 km long.

The B-Section is characterised by a mixture of earth and concrete lined channels, flume sections and numerous drop and check structures. The B-Section traverses the Great Dividing Range, moving water from the eastern side of the range to the western side. The B-Section incorporates fish screens designed to prevent the transfer of fish eggs between adjoining catchments.

[1] The Tinaroo Falls Dam and other bulk infrastructure are described in the Mareeba-Dimbulah WSS Draft Report.

The last main lateral channel diverting flow from B-Section is the Arriga main channel, which is unique in that it is one of the smallest channels supplying some of the largest customers. The Arriga main channel has a design capacity of 121 ML/day.

Figure 1.1: Mareeba-Dimbulah Distribution System Locality Map



Source: SunWater (2011).

Dimbulah Sub-System

The Dimbulah sub-system commences at the Walsh Bluff control structure. This section of the scheme is characterised by long sections of open channel with numerous lateral pipelines, many of which are pressurised. The Dimbulah Sub-system also contains a relift area and a large river component, and includes the Mutchilba balancing storage. This storage holds 16 ML when full and is used to mitigate flow rate variations.

The Walsh Bluff Main Channel joins the South Walsh main channel (SWMC) on the western side of the Walsh River. The SWMC is an earth channel with short sections of concrete lining, siphons and concrete flume. The SWMC supplies water to the Towns of Mutchilba and Dimbulah and the Price Creek Relift through the Price Creek A and B pump stations and the Price Creek balancing storage.

Mareeba Sub-System

The Mareeba sub-system starts at the offtake from Nardello's Lagoon with the Mareeba main channel carrying the flow for both Mareeba and East Barron main channels until it separates into two separate channels. The Mareeba main channel is 18.1 km long and supplies 23 lateral pipelines.

The East Barron system commences at the junction with the Mareeba main channel from where it heads toward the Barron River. East Barron is characterised by a mixture of steel and concrete pipelines, siphons and earth and concrete-lined channels as well as the 273 ML East Barron balancing storage.

Paddy's Green Sub-System

The Paddy's Green sub-system commences from the West Barron balancing storage and is characterised by a mixture of earth and concrete channels sections, a large re-lift area and numerous lateral pipelines. The Paddy's Green re-lift pump station consists of two pump stations, two 1 ML balancing storages and seven pipelines, inclusive of the rising main.

Drainage Infrastructure

The Mareeba-Dimbulah drainage system has been provided to remove storm runoff. Customers are required to discharge water from their farm blocks through the drain inlet provided. Drainage discharge rates cannot be increased without major expenditure to augment capacity and any augmentation that does occur would do so on a commercial basis and after negotiation with customers.

Stakeholder Submissions

CANEGROWERS (2011b) and the Mareeba-Dimbulah Irrigation Area Council (MDIAC, 2011) noted that the Bruce, Collins, Leafgold and Solanum Weirs are listed as assets in the Bulk Network Service Plan (NSP), yet there is renewals expenditure listed against these assets in the Distribution System NSP.

MDIAC (2011) also noted that supplemented streams have been included in the Distribution System NSP, yet currently they are separate and their costs are based on releases by SunWater versus natural flows into the streams. MDIAC noted that the weirs have never been part of the distribution system before, and requested SunWater to justify why they have made this change. The inclusion of weirs in the distribution system will increase costs to the distribution system which is unacceptable.

Authority's Analysis

The Bruce, Collins, and Leafgold Weirs are located on the Walsh River and the Solanum Weir is on Eureka Creek, one of the many other supplemented streams. These streams are substantially supplied through the distribution system system.

Although nominated in the NSPs as bulk assets, SunWater has included all operating and renewals costs associated with these weirs in its Mareeba-Dimbulah distribution system NSP.

The Authority requested advice from SunWater on the nature of these assets and the treatment of their costs. SunWater advised that these assets have only a small storage capacity (1,120 ML over the four weirs) and are operated as distribution system assets. The operating or capital expenditure associated with these assets is included in the Mareeba-Dimbulah Distribution System NSP. SunWater advised that the bulk water NSP covers the Barron River operating and capital expenditure only.

The Authority notes that on 28 September 2010, the Minister for Natural Resources, Mines and Energy and Minister for Trade advised the Authority of bulk assets for this review. The Minister's advice noted that the advised bulk assets did not include ancillary assets which perform water distribution functions either for bulk (river and groundwater access entitlements) or distribution system irrigators.

The Minister's advice denoted the Bruce, Collins, Leafgold and Solanum Weirs as bulk assets.

SunWater indicated that the Mareeba-Dimbulah weirs are exceptions to the general rule that weirs are storage assets and should be included in bulk costs.

The Authority recommends that the appropriate classification of the four weirs in the Mareeba-Dimbulah WSS be clarified between SunWater and the Department of Environment and Resource Management (DERM). If these assets are considered to be bulk assets, SunWater should revise its NSPs and cost data to reflect the designation of these assets as bulk assets.

As this advice was not received at the time of preparing this Draft Report, the Authority has prepared draft prices on the basis of the cost information in the current NSPs. That is, the assets are being treated as distribution system assets for the purposes of the Draft Report.

1.3 Network Service Plans

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

(a) invited submissions from interested parties;

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

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

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

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

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

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

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

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

2. REGULATORY FRAMEWORK

2.1 Introduction

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

During the negotiations that preceded the 2006-11 price paths, the Mareeba-Dimbulah Tier 2 group indicated that they were in favour of retaining the existing price cap regulatory arrangement. For 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 Mareeba-Dimbulah 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

MDIAC (2010) submitted that SunWater needs to better manage for the impact of demand variability on revenue through the implementation of efficiency measures to reduce variable costs. MDIAC also considered that a risk free revenue stream would discourage SunWater from implementing efficiency measures to reduce costs and will shift the risk solely onto irrigators.

MDIAC (2010) recommended that the current price cap form of regulation be retained as it provides stable tariffs, thus allowing irrigators to plan their crop rotations and forecast irrigation costs with some degree of certainty.

Tableland Canegrowers and Mareeba District Fruit and Vegetable Growers Association (2010) suggested that calculations should be carried out to compare whether a price cap or a revenue cap would be more appropriate for the Mareeba-Dimbulah WSS.

2.3 Authority's Analysis

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

Table 2.1: Summary of Risks, Allocation and 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 as 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.

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.

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.

In response to MDIAC, the Authority considers that SunWater does not have the ability to manage demand variability or volume risk and, under current legislative arrangements and the Ministerial Direction, customers must bear all efficient costs of supply. The risks of revenue

adequacy and price volatility are best managed by establishing a cost-reflective tariff structure that aligns with fixed and variable costs.

As noted above, the Authority also proposes to adopt an adjusted price cap for 2012-17 for all schemes. Under both forms of regulation (revenue caps and price caps) a service provider has the incentive to reduce costs at least until revenues are reset in the future. Under the price cap, the service provider also has the incentive to increase sales. To further promote efficiency the Authority has also recommended specific cost savings targets.

Adjusted price caps should provide the stable tariff structures being sought.

In response to Tableland Canegrowers and Mareeba District Fruit and Vegetable Growers Association, the Authority concluded in Volume 1 that the nature of risks is essentially the same in each scheme and, as a result, the same regulatory arrangements are recommended to apply to each scheme. The Authority also concluded that the apportionment of risks is best addressed through the setting of cost-reflective tariff structures for each scheme.

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

Historically, all customers in the Mareeba-Dimbulah WSS (including the Distribution System) have paid a fixed annual access charge.

Channel customers in the re-lift section have a two part tariff (in addition to the access charge). Channel customers outside a re-lift have a three-part declining block tariff (DBT) for both the Part A and Part B charges. The volumetric groupings or blocks are: 0-100 ML, 100-500 ML, and more than 500 ML.

Historical prices are set out in Table 1 of the Executive Summary.

Previous Review

In the 2006-11 price paths, distribution system tariffs sought to recover both bulk and distribution system costs.

During the 2005-06 price negotiations, lower bound cost tariffs were calculated by Tier 1, generally based on the recovery of 70% of costs in the fixed Part A charge, and 30% of costs in the volumetric Part B charge, taking into account forecast usage.

The Tier 1 group calculated five different lower bound cost tariffs to recover channel costs for Mareeba-Dimbulah Distribution System: channel (outside a re-lift up to 100 ML), channel (outside a re-lift 100 to 500 ML), channel (outside a relift more than 500 ML); channel (re-lift); and river (Supplemented Streams and Walsh River).

The first three tariff groups reflected the existing three-part declining block tariff for channel customers outside a relift. The Tier 1 report (2006) did not identify the rationale for cost allocation between the three tariff groups (or blocks) or the volumetric cut-offs.

Two-part tariffs were calculated for each of the channel (relift) and river (supplemented streams and Walsh River) tariff groups. Allocation of channel costs to the river (supplemented streams and Walsh River) tariff group is addressed further below (Section 3.6).

Due to the prevailing Government policy that there should be no real price decreases, where 2005-06 tariffs were above lower bound costs, SunWater included the above lower bound revenue component in the Part B tariff. Of the five channel-related tariffs, this applied to:

(a) channel (outside a re-lift up to 100 ML), where fixed charges were set to recover 65% and variable charges at 35% of revenues;

(b) river (supplemented streams and Walsh River), where fixed charges were set to recover 67% and variable charges at 33% of revenues.

Alternatives to the three-part DBT structure – including a number of two-part DBT structures – were considered.

However, the Tier 1 report stated that the modelling indicated that these alternatives were limited by the Government policy that there should be no real price decreases.

Therefore, the Mareeba-Dimbulah Tier 2 group agreed to retain the existing three-part DBT structure for the gravity distribution system tariffs.

The Mareeba-Dimbulah Tier 2 group also passed a motion that although it recognised that some tariffs in the scheme would inevitably be increased over the price path period, it did not accept these price increases. The position was taken on the grounds that the industry could not afford increases as it had endured considerable hardship over a number of years from the impact on depressed conditions and prices in the sugar market and events such as Cyclone Larry.

Stakeholder Submissions

SunWater

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

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

SunWater submitted that the DBT reflects a historic arrangement, following a tariff review in the early 1990s. There was a belief at the time that there were economies of scale in supplying larger customers.

SunWater advised it does not have cost data that indicates any material differences in the cost of supply for larger or smaller customers.

SunWater did not propose to change the minimum charge (access fee) arrangements. SunWater's preference is to stay with the pre-existing arrangements rather than (unilaterally) mandate a different suite of options without customer consultation or more detailed consideration and analysis.

Other Stakeholders

MDIAC (2010) supported a two-part tariff in which the Part A charge reflects fixed costs and the Part B charge reflects variable costs, and in which the ratio of charges be no more than that applied to each segment of the scheme under the current price path. MDIAC (2010b) subsequently advised that the Part A charge should be based on a maximum of 70% of scheme costs as SunWater does not have an incentive to provide an acceptable level of service at higher ratios.

MDIAC (2010), Tableland Canegrowers and Mareeba District Fruit and Vegetable Growers Association (2010a) expressed support for the retention of the tiered pricing structure in the 'outside of relift' areas of the distribution system. The basis for this support is that a DBT ensures that the larger irrigators (who hold the majority of WAE) have the capacity to pay which, in turn, means that smaller irrigators won't have to pick up the burden of extra costs if the larger irrigators are no longer able to afford/use their WAE.

Tableland Canegrowers and Mareeba District Fruit and Vegetable Growers Association noted that previously the tiered pricing system applied to the total amount of WAE the irrigator held in the channel system, irrespective of whether the properties it was used on were contiguous or not. However, SunWater had since advised that tiered pricing only applies to the usage of water on properties that are contiguous.

MDIAC supported the application of the DBT to the total WAE held by an irrigator in the distribution system irrespective of the geographical location of the properties to which the water is applied.

MDIAC, Tableland Canegrowers and Mareeba District Fruit and Vegetable Growers Association supported the continuation of the community service obligation (CSO) in the Relift area.

Authority's Analysis

In Volume 1, the Authority 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.

The Authority's analysis of which scheme costs constitute fixed, and which are variable costs, is addressed in a subsequent chapter.

In response to MDIAC's submission that SunWater may not have an incentive to deliver water if the fixed charge is high, the Authority notes that, under the prevailing legislative framework and contractual arrangements, SunWater has an obligation to supply existing customers with water under the announced allocation.

To the extent that SunWater holds additional WAE that have not been allocated, the higher the fixed costs, the greater the incentive for SunWater to sell permanently or make those WAE available on a temporary basis (as the fixed costs associated with SunWater's WAE are not paid for by other customers and thus represent holding costs for SunWater).

It may be considered appropriate in some circumstances to increase the volumetric charge by establishing a subjective margin over the variable costs in setting the volumetric charge for each scheme. However, putting in place scheme-specific incentives to reduce costs, rather than business wide incentives may introduce unacceptable arbitrariness at the scheme level. In responding to these scheme-specific incentives, SunWater may reduce costs in a manner which reduces the standard of service at the scheme level (for example, by reducing numbers of on-ground staff to meet efficiency targets).

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 Mareeba-Dimbulah WSS are identified in Table 3.1.

Table 3.1: Volume of Water Trade in Mareeba-Dimbulah WSS (ML)

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Permanent	0	0	25	484	2,492	2,409	280	815
Temporary	27,041	16,787	10,171	9,689	16,608	13,206	14,351	11,620

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

Channel Charges (Outside of Relift)

A key issue is whether the three-part DBT structure should continue for the Part C and Part D channel charges outside of relift areas.

In general, cost reflective prices are considered to provide appropriate signals for users and service providers. A DBT is typically used by service providers where costs decrease with volumes delivered.

Economic regulators do not generally favour DBTs as the cost profile of water businesses generally does not support their application and they rate poorly in terms of efficiency particularly where marginal costs are increasing (PricewaterhouseCoopers (PwC), 2010a). DBTs are not generally applied in the rural sector, due to the difficulties in setting appropriate volume thresholds. Water usage can vary significantly between rural users and this may not necessarily reflect inefficient water use.

For urban water, the National Water Commission (NWC, 2010) advocates the use of a two-part tariff with a one tier volumetric charge based on long run marginal cost. It advocates against the use of inclining block tariffs, citing concerns around:

(a) the delay in the customer receiving the implied consumption message;

(b) the complexity of the pricing signal resulting from multiple tiers; and

(c) breaking the relationship between prices and marginal costs.

Previous Rationale

The Authority has sought to identify the rationale for the existing three-part DBT structure in the Mareeba-Dimbulah, and in particular whether it reflects differences in the cost of supply.

The Authority understands that the DBT was introduced to reflect the higher costs (accounts, metering etc) of servicing the large number of small irrigators (with less than 100 ML of WAE) that are in the scheme. DERM noted that, unlike most other schemes in Queensland, the Mareeba-Dimbulah WSS has a diverse range of farm sizes, with a large number of small scale irrigators, as a consequence of the initial subdivision of the scheme which catered for tobacco farms of 40 ha and rice farms of 200 ha.

PwC (2010a) found that the Mareeba-Dimbulah DBT was put in place historically to accommodate the different water use characteristics of the crops that were dominant at the time of the scheme's development. The water-intensive rice industry used far more water than the less water-intensive tobacco industry. The use of the DBT also reflected concerns in the area regarding the loss of major (industrial) users, which may impact on the future viability of the scheme.

In the 2005-06 review of 2006-11 price paths, the Tier 1 report calculated different lower bound prices for each of the three declining blocks, but did not identify the basis or rationale for doing so (as noted previously). The Tier 1 report also identified lower bound costs as determined in 2005-06.

Over the 2006-11 period, the 0-100ML block tariff remained unchanged in real terms as the charges were assessed as already exceeding the bundled lower bound cost. Tariffs for the 100-500 ML and the >500 ML blocks were increased to meet the defined lower bound target by 2010-11. This led to a slightly flatter DBT structure being introduced over the 2006-11 period – the difference between the 0-100 ML and >500 ML blocks decreased from $15.06/ML in 2005-06 to $13.67/ML in 2010-11 ($2005-06). However, the lower bound cost differential between the 0-100 ML and >500 ML blocks was by comparison $9.89/ML.

The Authority understands that the flattening of the lower bound DBT reflected a view that:

(a) any differences in the cost of supply across the blocks were lower than the differences in existing tariffs across the blocks; and/or

(b) small, medium and high water users should face a more similar price per ML.

The Tier 2 group considered an alternate two-part DBT in place of the existing three-part declining block structure, but concluded that alternatives were limited by Government policy that tariffs for the price path could not be less than existing tariffs.

Table 3.2: Declining Block Tariff compared to Lower Bound Cost ($/ML, $2005-06)

	2005-06 Declining Block Tariff			***Lower Bound Costs Declining Block Tariff (Tier 1)***		
	0-100 ML	*100-500 ML*	*Over 500 ML*	*0-100 ML*	*100-500 ML*	*Over 500 ML*
Part A	23.80	16.24	16.04	25.04	23.81	18.99
Part B	20.92	18.60	13.37	15.90	15.12	12.06
Total	**44.72**	**34.84**	**29.41**	**40.94**	**38.93**	**31.05**

Source: SunWater (2006b)

Current Circumstances

As noted above, SunWater has submitted that it does not have the cost data to indicate whether there are material differences in the cost of supply to larger or smaller customers.

Other stakeholders indicated their support for the DBT as it ensures that the irrigators, who hold the majority of WAE, have the capacity to pay which, in turn, means that smaller irrigators will not have to pick up the burden of extra costs if the larger irrigators are no longer able to afford/use their water entitlement.

To some extent, the Authority notes that the diverse characteristics of water users in the scheme remain in place. There are a large number of small scale irrigators and a small number of large scale irrigators – 459 customers have less than 100 ML of WAE and 38 have more than 500 ML of WAE in the distribution system segment where the DBT applies. In total, SunWater has 1,140 customers in the scheme accounting for 23% of its total state-wide irrigation scheme customer base.

Sugar and horticulture crops have become the significant crops in the scheme, essentially replacing rice and tobacco. Sugar cane water usage is high at around 8-10 ML/ha/year, and has displaced rice as the high water use crop grown on larger scale farms in the scheme.

However, the Authority notes that other schemes have a mix of large and small water users. A DBT is not in place or recommended for those schemes.

Under the Ministerial Direction, the three blocks are distinct tariff groupings that must be adopted. However, the Direction does not require the DBT to continue, rather that separate prices must be calculated for these groups.

While the Ministerial Direction does impose a price constraint (similar to that of the previous price review), the Authority has first sought to identify the appropriate cost-based prices (as did the previous price review). The impact of any price constraint is considered in Chapter 6 – Draft Prices.

Conclusion

Taking into account all of the above, the Authority considers that cost-reflective tariffs provide the best signals to users and service providers. The Authority has no evidence of differentials in the cost of supply across the three blocks.

In the absence of specific information on customer billing costs for Mareeba-Dimbulah, and given that it has been proposed to generally base prices on the basis of fixed and variable costs, and in the absence of specific cost information which would suggest that variable costs change for different volumes of usage, the Authority proposes to remove the DBT.

The Ministerial Direction requires that the Authority consider whether to phase in any price change greater than inflation. The Authority recommends Part A tariffs for customers under 500 ML be adjusted immediately, and the Part A tariff for users over 500 ML be adjusted over the price path. The same Part B charge will apply to all users immediately.

In relation to the matter of how the DBT would apply where the WAE is held by one owner of non-contiguous land areas, the Authority's proposed approach should obviate the need for further adjustments to reflect the number of separate holdings and whether they are contiguous or not.

The appropriateness of CSOs is a matter for Government.

Customer Access Charge

The Authority's preference is to set tariffs that reflect costs. The Authority acknowledges that some activities (and costs) are likely to vary per customer, rather than with WAE. Such activities may include meter reading, billing and customer service.

SunWater has not provided to the Authority any disaggregated cost data to allow the Authority to determine the quantum of costs that vary per customer. In the absence of specific cost information, the Authority proposes to maintain the customer access charge in real terms.

For the purposes of the access charge, there are 109 customers in the Barron River, 59 in channel relift, 298 in Walsh River and supplemented streams, and 647 in channel non-relift (459 in the 0-100ML category, 150 in the 100-500ML category and 38 in the over 500ML category).

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 ten years of annual fixed distribution charges or 9.4 times the 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 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 (discounted by the Authority's recommended weighted average cost of capital (WACC)). Consistent with this approach, the Authority recommended that the termination fee for each year will reflect 20 years of fixed costs (which include forecast renewals and fixed operating expenditure), although due to the rolling annuity 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 compared with the ACCC's guidance of up to 11 times the unbundled distribution system charge. SunWater's 2011-12 termination fees (for high and medium priority) which reflect 9.4 times the 2011-12 distribution system fixed charge. These multiples all include GST.

SunWater's past termination fees and the Authority's recommended termination fees, are detailed in Chapter 6 – Draft Prices.

3.3 Water Use Forecasts

Introduction

For the 2006-11 price path, water use forecasts played an essential role in the determination of the tariff structures.

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

For the Mareeba-Dimbulah Distribution System, an annual water usage of 67.5% of WAE was assumed (SunWater, 2006b). Water usage for high and medium priority irrigation WAE were not separately identified.

Stakeholder Submissions

SunWater

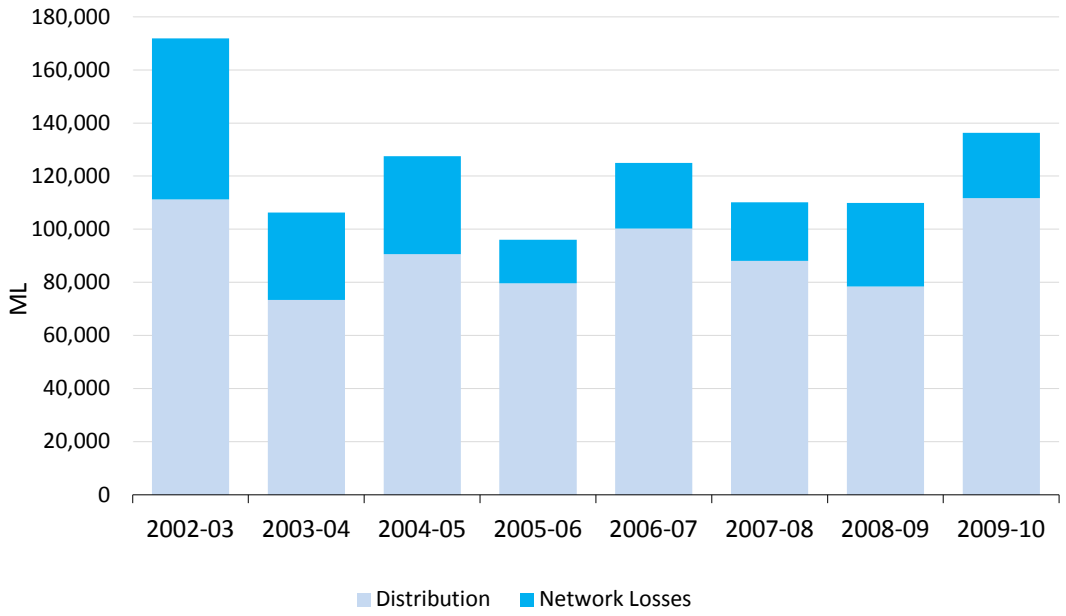
The available supply of water is determined by the announced allocations which are set according to rules contained in the resource operations plan (ROP).

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

SunWater's usage forecast for 2012-17 are made having regard to historic averages over an eight year period and the usage forecast applied for the 2006-11 price path. The forecast use for the distribution system is 60% of WAE and medium priority distribution losses, plus 100% of high priority losses.

Table 3.1 shows the historic usage information for the Mareeba-Dimbulah Distribution System submitted by SunWater (2011). SunWater stated that over the past eight years, total water use in the distribution system has been 62% of current WAE.

Figure 3.1 – Water Usage for the Mareeba-Dimbulah Distribution System



Source: SunWater (2011).

Other Stakeholders

Tableland Canegrowers and Mareeba District Fruit and Vegetable Growers Association (2010) submitted that water use forecasts need to be reviewed for the scheme.

MDIAC (2010) submitted that water demand forecasting should be based on historical data over the last seven years, but if there is a significant increase in demand over two consecutive years that yields a revenue windfall to SunWater the prices charged to irrigators in the following years of the price path should be adjusted down.

Authority's Analysis

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

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

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

3.4 Tariff Groups

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

In the previous review, four tariff groupings were nominated for the Mareeba-Dimbulah Distribution System (SunWater, 2006b):

(a) Channel (Outside relift up to 100 ML);

(b) Channel (Outside relift 100-500 ML);

(c) Channel (Outside relift more than 500 ML); and

(d) Channel (Relift).

As noted previously, the costs of the River (Walsh River and Supplemented Streams) tariff group are included in SunWater's Mareeba-Dimbulah Distribution System NSP. In accordance with the Ministerial Direction, the Authority has also included this fifth tariff group in the Mareeba-Dimbulah Distribution System.

3.5 Distribution Losses

Introduction

Distribution losses are incurred in the delivery of water to the Mareeba-Dimbulah 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.

Stakeholder 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 WAE 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.

SunWater did not include the costs of distribution losses in its NSP costs, stating that these cannot be determined until the Authority establishes the level of the bulk water charges.

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 medium priority loss WAEs reflect the same usage percentage as other medium priority WAE in the distribution system. Therefore, in the case of the Mareeba-Dimbulah Distribution System, usage against the high priority loss WAE is assumed to be 8,000 ML per annum and usage against the medium priority loss WAE is estimated at 60% of 37,000 ML or 22,200 ML per annum.

Other Stakeholders

CANEGROWERS (2011a) noted that distribution loss allocation is 45,000 ML while the historical average is around 30,000 ML.

CANEGROWERS (2011b) and MDIAC (2011) advised that significant expenditure has been incurred by SunWater and irrigators to minimise distribution losses, yet significant losses are still occurring due to poor management.

CANEGROWERS (2011a) submitted that channel overflows that flow into waterways end up being environmental flows. Hence it is difficult to understand why channel irrigators should pay extra for these environmental flows when bulk water users do not pay for environmental losses in the river.

MDIAC (2011) submitted that under the ROP, SunWater manages environmental flows by offsetting the distribution losses against the environmental flow targets. This has a two-fold impact of putting costs onto irrigators for environmental flows while SunWater has no incentive to reduce distribution losses. MDIAC recommended an incentive, in the form of a 50:50 split between SunWater and irrigators based on actual distribution losses, be introduced to address this issue.

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 the specific issues raised by stakeholders, the Authority notes that actual distribution losses will vary every year, depending on weather patterns, operational activity (e.g. channel shut down for maintenance) and volumes of water delivered through the channels. Hence, actual losses could be less than the distribution loss allocation as noted by CANEGROWERS. SunWater advised that the loss allocation volumes are determined at the time of scheme establishment and set to cover a variety of conditions including extreme dry periods.

In Volume 1, the Authority recommends that, to ensure least cost service delivery, SunWater should explore cost-reducing opportunities including whether it holds excess WAE. Further, the Authority has recommended that DERM review loss WAE to ensure that distribution system customers do not pay for loss WAE held by SunWater in excess of requirements.

In relation to overflows, SunWater advised that it endeavours to operate the channels at maximum water efficiency and overflows are minimal. Any spillage outflows are unplanned and are not accounted for as environmental flows by DERM. During the peak irrigation season, water must be driven through channel networks at full capacity to enable offtakes through meters. Any onset of rainfall at these times can result in overflow losses as irrigators' demands are negated and inflows pass through the systems. The upstream controlled system is heavily dependent on irrigators extracting exact volumes of ordered water and there is a lag time of up to four hours. SunWater advised that there are no planned releases from channels to meet environmental flow requirements.

The Authority's proposed treatment of distribution losses is consistent with that of the preceding 2006-11 price path. Therefore there is no particular increase in prices as a result of the approach adopted by the Authority in respect of distribution losses.

3.6 Walsh River and Supplemented Streams – Natural Flows

The Walsh River and supplemented streams are identified as a separate tariff grouping. The 2011-12 prices for this group lie above the River (Tinaroo/Barron) prices and below both of the gravity and relift channel tariff groups.

The constructed channels in the Mareeba-Dimbulah WSS are used to supplement a number of natural watercourses. Overflow weirs are used to divert water from the channels. The Barron River ROP identifies 18 supplemented streams, including the Walsh River.

Volumes released into the streams are relatively small, with the largest maximum discharge rates as defined in the ROP applying for Walsh River, Granite Creek and Two Mile Creek.

The Walsh River is regulated by the Collins, Bruce and Leafgold Weirs, and is supplemented from the North Walsh and South Walsh Main Channels. The Solanum Weir is on Eureka Creek, a tributary of the Walsh River and one of the supplemented streams.

In total, there is 28,069 ML of WAE and 298 irrigators in the supplemented streams and Walsh River sections.

Previous Review

The Tier 1 Final Report stated that the reference tariffs for the Mareeba-Dimbulah WSS were initially calculated on the basis that 40% of the costs associated with the Walsh River and supplemented streams section were allocated to the channel segments of the scheme. This was to reflect an assumption that, on average, 40% of water delivered to this section was sourced from natural stream flows and 60% was sourced through the channel system.

The Mareeba-Dimbulah Tier 2 group was advised that there had been an adjustment to the Tier 1 reference tariffs to correct the methodology of how the 40% cost transfer was implemented in the original tariff calculations. This adjusted methodology resulted in the tariffs for the non-relift channel sections needing to be increased above the Tier 1 reference (lower bound) tariffs. To then avoid an increase in prices above the Tier 1 reference tariffs, the assumption of the volume of water sourced from natural stream flows could be amended.

The 40% adjustment effectively reduces the lower bound costs applicable to the Walsh River and supplemented streams tariff group. The Tier 1 group found that the existing 2005-06 tariff was already well above the resulting lower bound cost. Additional modelling at the time indicated that 24% was the lowest value of natural stream flows that could be assumed before the reference tariff (that is, lower bound costs) for the Walsh River and supplemented streams section would be higher than the current tariffs.

A revised set of tariffs based on the revised calculation methodology and 24% natural stream flows in the Walsh River and supplemented streams section were tabled for consideration by the Tier 2 group. The assumption for natural flows that was eventually adopted in final tariffs was not stated in the Tier 1 report.

Stakeholder Submissions

SunWater submitted that it has not forecast costs separately as the weirs on Walsh River and supplemented streams are considered part of the distribution system for pricing purposes.

MDIAC (2011) also noted that supplemented streams have been included in the Distribution System NSP, yet currently they are separate and their costs are based on releases by SunWater versus natural flows into the streams.

Authority's Analysis

The Authority has previously noted SunWater's advice that separate costings for the weirs on the Walsh River and supplemented streams were not made. Pending clarity about whether these assets are bulk or distribution assets, the Authority had to use the cost information provided by SunWater which includes these costs in the distribution system.

The current issue relates to the adjustment to Walsh River and supplemented streams tariffs on the basis that a proportion of flows are natural flows.

The Authority's analysis of the 2006-11 tariffs indicates that, as a result of the cost transfer, the (bundled) revenue from Walsh River and supplemented streams on a ML basis that was expected to be achieved in 2010-11 was reduced by 29%, and revenue per ML from the non-

relift areas was increased by 8%[2]. Although not explicit, it would appear that the Tier 1 group opted to transfer 29% of costs rather than the tabled 24%. This resulted in the reference tariff in 2005-06 for lower bound costs being lower than the then current tariffs for Walsh River and supplemented streams.

The Authority considers that the approach of manipulating assumptions of natural flows to manage pricing impacts is not appropriate.

The Authority's preferred approach is to base the assumption of natural flows on available hydrological assessment. However, SunWater has not been able to provide any recent assessment of the hydrology of the supplemented streams and Walsh River.

The Authority proposes to identify lower bound costs on a ML basis for the non-relift channel and relift channel sections separately. A cost transfer consistent with past practices from the supplemented streams and Walsh River to the non-relift sections will then be calculated; that is, based on available hydrological evidence that 40% of flows are natural flows. This analysis is provided in Chapter 6 – Draft Prices.

[2] Based on 2010-11 charges as planned in the 2005-06 review and assuming 67.5% usage of WAEs. On the assumptions made at the time, the differentials reflect a reduction in Walsh River and supplemented streams revenue of $8.90/ML (from $29.95/ML to $21.05/ML) and a revenue increase of $2.25/ML for non-relift channel areas (from $29.95 to $32.20/ML).

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 distribution system 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) an assessment of 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;

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

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

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

(d) the methodology to calculate the renewals annuity.

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

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

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

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

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

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

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

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

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

SunWater submitted that the opening balance for the Mareeba-Dimbulah WSS (including the Distribution System) was $2,888,000. Excluding the Mareeba-Dimbulah WSS, SunWater submitted that the opening balance for Mareeba-Dimbulah Distribution System at 1 July 2006 was $2,674,000.

In creating its opening ARR balances for 2006-11, SunWater sought to identify if any of the unbundled balances appeared to be spurious. SunWater considered that the Mareeba-Dimbulah Distribution System unbundled ARR as at 30 June 2006 to be inappropriate and subjectively adjusted the balance by $100,000, as noted in Volume 1.

The Authority recommends an unbundled opening ARR balance for Mareeba-Dimbulah Distribution System of $2,574,000, compared to SunWater's $2,674,000.

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 paths. The Authority has also sought to compare the original expenditure forecasts underlying the 2006-11 price paths with actual expenditure, to establish the accuracy of SunWater's forecasts.

Submissions

SunWater

SunWater (2011) submitted actual renewals expenditure for the Mareeba-Dimbulah Distribution System for 2006-11 (Table 4.1). This expenditure included indirect and overhead costs which are subject to a separate review by the Authority (see Chapter 5 – 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	1,137	1,339	1,479	3,021	3,092

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

Other Stakeholders

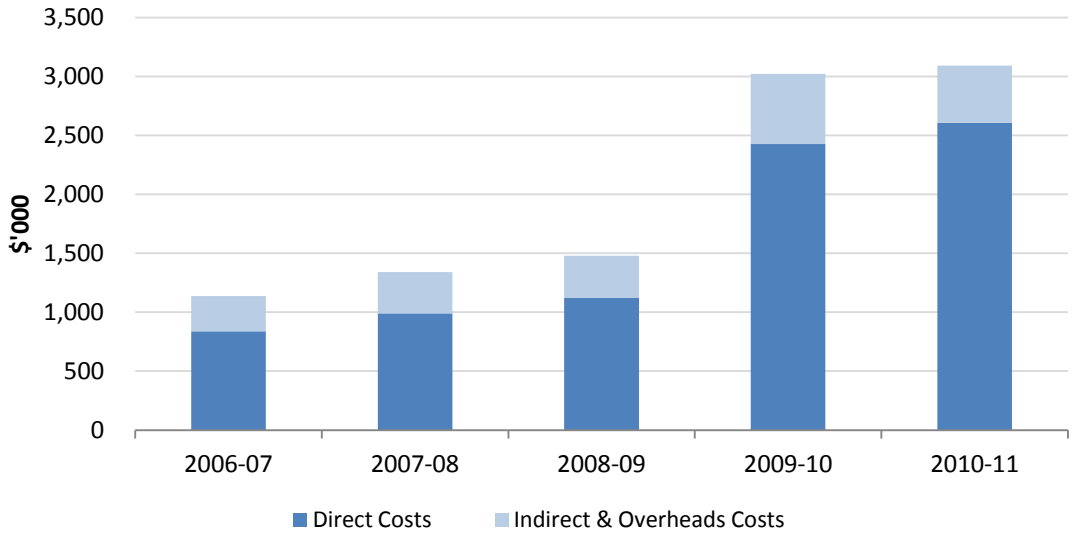
Stakeholder comments in regard to specific renewals expenditure items are summarised below.

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)



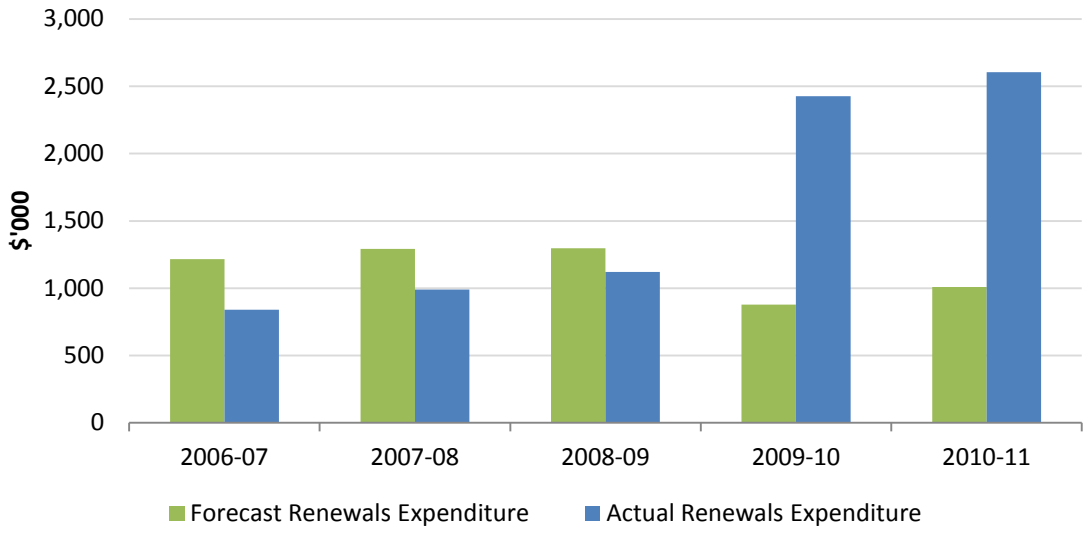
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011. Source: Indec (2011d).

Comparison of Forecast and Actual Costs

The Authority was able to source forecast direct renewals expenditure at a scheme level from Indec, who undertook the analysis for the 2005-06 review.

A comparison of forecast and actual direct renewals expenditure in the Mareeba-Dimbulah 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 $1,085,515 (direct costs) higher than forecast for the period.

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

items. For example, the installation of fencing on the West Barron costed 65% less than budgeted.

Arup noted that the opening ARR balance is positive and that this is a notable change from the negative balance in 2005-06. However, Arup were not able to comment on whether this was due to a failure to implement the renewals expenditure program, actual expenditure was significantly lower than forecast or if works identified were not actually necessary upon detailed investigation due.

Arup noted that large renewals expenditure for 2006-11 was incurred on the following projects:

(a) South Walsh SW12, SW12-2 and SW13 pipeline replacement. Arup noted that SunWater had assessed the impact of leakage from the system and, through a cost-benefit analysis, revealed that long term maintenance costs would increase and become financially unviable. The risk to standards of service was also discussed, revealing that the increased frequency of maintenance would pose a serious risk to service standard.

    The Authority notes that Arup did not conclude on the prudency and efficiency of this past renewals expenditure item but did provide commentary on a future pipeline replacement as set out in the forecast renewals expenditure section below;

(b) replacement of timber bridges with concrete bridges at Cherry Creek and Springs Creek. Arup did not comment on this item; and

(c) Intersafe projects to replace gates (see Item 1).

Item 1: Intersafe Gated Project

SunWater

The Intersafe gated project was rolled out by SunWater to maintain appropriate workplace health and safety (WHS) standards for its employees. In 2005, SunWater engaged consultants, the Intersafe Group Pty Ltd (Intersafe), to undertake a pilot study in Mareeba to review distribution infrastructure to identify WHS risks. Intersafe identified 43 potentially damaging tasks with 27 considered to be high risk. In 2007, Intersafe was asked to extend the review to other regions.

The works included modifications and installation of handrails, walkways, steps, ladders, safety screens pit covers, control gates and associated metal work.

Intersafe expenditure in the Mareeba-Dimbulah Distribution System was $3.1 million over 2009-10 and 2010-11.

Other Stakeholders

No other stakeholders have commented on this item.

Consultants' Review

Arup

Arup noted that the Intersafe strategy started in Mareeba-Dimbulah where Intersafe identified 43 operational health and safety (OHS) issues including pulling channel drop boards, operating slide gates, operating valves and lifting scour pit lids. Due to the risk posed by these OHS issues, the SunWater board resolved in 2007 to rectify high risk assets within three years, followed by the development of a strategy for the remainder of the state.

Arup considered that SunWater had demonstrated the implementation of its procurement policy to ensure a more cost efficient outcome for its customers as part of the Intersafe strategy.

Arup also noted that there has been an underspend on the implementation of the Intersafe non-gated project for this scheme.

The Intersafe expenditure was also reviewed in detail by Halcrow and SKM, as discussed below.

Halcrow

As noted in Volume 1, the Authority has accepted Halcrow's (2011) findings on the overall Intersafe Program (of $13.6 million across all schemes) which 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

SKM reviewed the procedures used by SunWater to assess and develop, where possible, standard solutions to different risks types. SKM noted that SunWater's Asset Management group developed an internal procedure for identifying, ranking and developing solutions to infrastructure related WHS risks. The major tasks in the program were:

(a) develop a standardized risk assessment template;

(b) train regional staff in risk assessments;

(c) engage regional staff to undertake risk assessments;

(d) engage regional staff to select solutions to reduce high and extreme risk hazards;

(e) upload risk assessments and maintenance items into the Works Management System (WMS) Planning; and

(f) establish procurement contracts for standardised solutions.

SKM considered that that these systems were robust and hence will have led to the development and implementation of efficient solutions, in that, by developing standard infrastructure, implementation costs will have been reduced through economies of scale.

SunWater's Board initiated a program of work to take place over three years to address WHS risks associated with SunWater's distribution infrastructure.

Given that the risks have been identified through a two-part process (appointment of specialist consultants and through a formal internal mechanism as described above), SKM considered the timing of the works to be prudent and should be implemented as swiftly as possible.

In absence of benchmarking information, SKM reviewed the procurement process undertaken by SunWater in implementing the program of works. The procurement process adopted for most of the works was via an open tender process, which in the Ayr region was via an invitation

released on the Queensland Government e-Tender website. SunWater evaluated tender returns received against a number of criteria including cost.

SunWater prepared a Tender Evaluation Plan to assess tender returns and select the preferred tendering party. This included the formation of an evaluation committee consisting of senior technical and procurement staff. Tenders were subjected to a detailed analysis via an assessment matrix which contained assessment criteria and weightings to enable structured comparison and evaluation. The selection criteria being:

(a) commercial conformity of tender;

(b) demonstrated capacity to provide the works;

(c) financial;

(d) management;

(e) technical;

(f) suitability of gates and associated equipment; and

(g) any other factors.

This assessment yielded a weighted score for each tendering party. SunWater deemed that two tenderers scored sufficiently high to allow progress to the next stage of the selection process. These tenderers were invited to interview.

SKM considered that there may have been merit in SunWater adopting a standard tender return assessment process for all regions and all work packages. However, SKM concluded that the costs incurred by SunWater in implementing the works have been subjected to competitive forces and hence can be considered to be efficient.

Authority's Analysis

The Authority notes that while its consultants have not conducted a detailed assessment of the past Intersafe renewals expenditure items for Mareeba-Dimbulah Distribution System, they have reviewed the program as a whole and found it to be prudent and efficient.

On the basis of its consultants' advice, the Authority considers that the Intersafe Program is prudent and efficient.

Conclusion

In summary, one item for the Mareeba-Dimbulah WSS was sampled. This item was found to be prudent and efficient.

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 items.

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

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

Item	*Date*	*SunWater ($'000)*	*Authority's Findings*	*Recommended ($'000)*
Sampled Items				
1. Intersafe	2009-10, 2010-11	3,102	Prudent and efficient	3,102
Non-Sampled Items				10% saving applied

Source SunWater (2011), Arup (2011), Halcrow (2011), SKM (2011) and QCA (2011).

4.4 Opening ARR Balance (at 1 July 2012)

Submissions

SunWater

SunWater indicated that the renewals opening ARR balance as at 1 July 2011 was negative $1,818,000 for the Mareeba-Dimbulah Distribution System. This estimate reflects the most recent information provided by SunWater to the Authority in September 2011 and may differ from the NSP.

Other Stakeholders

CANEGROWERS (2011a) noted that the renewals balance in the NSP is $244,000, which is much lower than two years before.

MDIAC (2011) submitted that while they accept the current ARR balance for the scheme is positive, it should be credited to and offset against the next five years of the annuity program. Further, while the scheme is in the fortunate position of starting the new price path with a positive renewals balance, this is either due to forecasting inaccuracy or they have not spent money on renewing assets which they should have.

Authority's Analysis

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 Mareeba-Dimbulah Distribution System is negative $1,244,000.

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

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

(b) adding 2006-11 renewals annuity revenue;

(c) subtracting 2006-11 renewals expenditure; and

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

To establish the closing ARR balance as at 30 June 2012 of negative $463,000, the Authority:

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

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

(c) adjusted for interest over the year.

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

In response to MDIAC, the Authority notes that the ARR is used to fund future renewals over the entire 24-year planning, and that the ARR balance will fluctuate depending on the renewals expenditure in any given period.

4.5 Forecast Renewals Expenditure

Planning Methodology

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

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

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

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's forecast renewals expenditure for 2011-16 for the Mareeba-Dimbulah Distribution System, as provided in its NSP, is presented in Table 4.3 (this was submitted prior to the Government's announced interim prices for 2011-12).

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

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Arriga Distribution	-	-	5	-	47
Arriga Drainage	-	22	-	23	-
Atherton Distribution	30	-	181	253	9
Biboohra Distribution	16	35	-	6	49
Biboohra Drainage	-	17	-	-	-
Biboohra Pump Station	10	-	79	40	-
Bruce Weir	2	-	-	-	-
Collins Weir	2	-	-	-	-
East Barron Distribution	62	76	6	-	52
Leafgold Weir	2	-	-	-	-
Mareeba Distribution	143	24	67	42	53
Scada	100	73	58	-	384
North Walsh Distribution	-	-	30	14	25
North Walsh Relift	-	23	11	47	109
Paddys Green 'A' Pump Station	41	6	43	12	43
Paddys Green 'B' Pump Station	9	-	-	121	156
Pipe Replacement	-	540	548	556	565
Price Ck 'A' Relift Pump Station	24	40	65	182	-
Price Ck 'B' Relift Pump Station	5	11	143	-	6
Price Creek 'A' Rising Main	-	10	-	-	-
Price Creek 'B' Rising Main	-	-	-	-	-
Price Creek Relift Distribution	68	58	-	6	2
Solanum Weir	2	-	-	-	-
South Walsh Distribution	71	44	55	151	180
South Walsh Drainage	-	22	-	23	-
Southedge Distribution	88	22	37	-	16
System	-	-	-	-	34
Walsh Bluff Distribution	18	-	34	22	37
West Barron Distribution	259	342	95	168	153
Total	**953**	**1366**	**1459**	**1666**	**1918**

Source: SunWater (2011).

The major items incorporated in the above estimates are:

(a) refurbishment of Amil Gates from 2011-16 at an estimated cost of $221,000;

(b) pipe replacement program at an estimated costs of $2,210,000 in 2012-13;

(c) refurbishment of bracing beams at the West Barron main channel Bench Flume (36.2km to 38km) an estimated cost of $213,000 in 2012-13;

(d) replacement of 13 scour valves from 2012-16 at an estimated cost of $254,000;

(e) replacement of pump at Price Creek 'A' relift pump station from 2011-15 at an estimated cost of $268,000; and

(f) replacement Supervisory Control and Data Acquisition (SCADA) Operating System Software at an estimated cost of $607,000 from 2011-16.

The major expenditure items from 2016-17 are:

(a) refurbishment of channels in South Walsh distribution at an estimated cost of $4.9 million in 2025-26;

(b) refurbishment of channels in South Walsh distribution at an estimated cost of $3.2 million in 2032-33; and

(c) refurbishment of channels in West Barron distribution at an estimated cost of $2.8 million in 2032-33.

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

Other Stakeholders

CANEGROWERS (2011a) noted that the estimated spend in the last year of the renewals program (2035-36) is extremely high at $8 million and seems unrealistic.

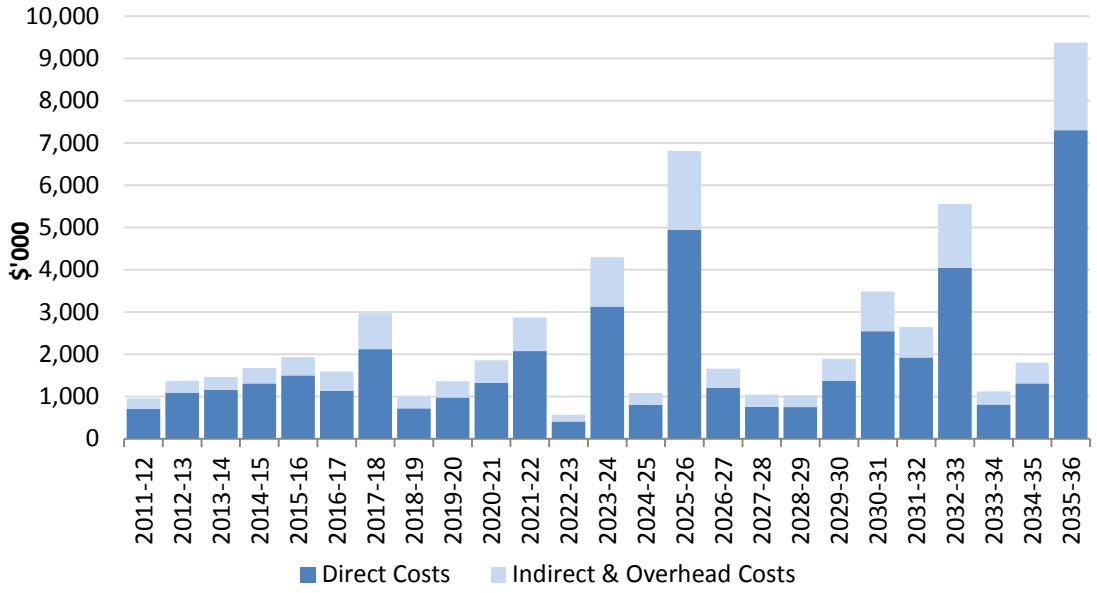
MDIAC (2011) submitted that they were not convinced that some of the large future renewals expenditures will occur.

Authority's Analysis

Total Costs

SunWater's proposed renewals expenditure for 2011-36 for the Mareeba-Dimbulah 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).

Item Review

Arup reviewed the prudency and efficiency of a sample of forecast expenditure items, with additional analysis provided by SKM. Each of the assessed items is discussed below.

In general, Arup concluded that the annuity program appears robust and is congruent with the asset management strategy adopted by SunWater.

Arup stated that the methodology used in preparing the annuity breakdown (that is, itemising costs on a per asset basis) generates a large number of items many of which should be packaged up into single items that would probably be more economic in delivery. While Arup considered that asset life is an appropriate method for identifying works post the current financial year, they considered that SunWater should check the program out to 2035-36 and where multiple numbers of the same item occurs in any one year, there may be scope for cost savings.

Arup advised that in most cases they were not able to make an assessment around the efficiency of costs as there was insufficient detail of the actual works proposed.

Arup noted that there appears to be some significant forecast expenditure (specifically in 2025-26 and 2032-33) which will significantly influence the annuity balance. These projects have been identified based on the asset planning methodology and largely include replacement of pipelines within the South Walsh distribution area. Arup have reviewed the options analysis around pipeline replacement for this scheme and believe the work is justified based on the risk to SunWater's customers and failure to meet level of supply. Arup reviewed the Systems, Applications and Products (SAP) output and confirmed that these projects have been identified based on their estimated asset life and estimated replacement cost.

Arup further reviewed the systems and processes for the following sample items. The Authority also requested that SKM review an additional item.

Item 1: West Barron Distribution – refurbishment of bracing beams ($213,000 in 2012-13)

Stakeholder Submissions

SunWater (2011) submitted that, based on a condition assessment, refurbishment of bracing beams in the West Barron main channel Bench Flume (36.2km to 38km) is required at an estimated cost of $213,000 in 2012-13.

Arup's Review

With regards to the refurbishment of the West Barron main channel C-section bench flume, Arup reviewed outputs from the SAP system which detail the processes which have led to this work being proposed for 2012-13. A condition assessment indicated that there is some corrosion on beams and that the consequence of failure is moderate. It is expected that further examination of the options would be undertaken in the 2012-13 financial year if the project is approved to proceed.

Arup did not provide a recommendation in relation to this item.

Authority's Analysis

The Authority notes that due to insufficient information, Arup was unable to conclude on the prudency or efficiency of this item.

Item 2: Upgrade Supervisory Control and Data Acquisition (SCADA): Radios and Programmable Logic Controller – $65,000

SunWater

SunWater submitted that due to obsolescence the SCADA Operating System would be replaced at an estimated cost of $615,000 over 2011-16. A component of this renewals expenditure included the upgrade of the radios and programmable logic controller at an estimated cost of $65,000 in 2011-12.

Other Stakeholders

CANEGROWERS (2011b) submitted that there are significant renewals costs, including $615,000 over 2011-16 to replace SCADA which 'has never worked'. CANEGROWERS considered that this cost should either not be incurred since it doesn't work or it should be fixed at SunWater's cost.

Arup's Review

This is part of an ongoing program of upgrade and SCADA replacement. From information provided by SunWater, Arup noted that this specific renewals item involves the upgrade/replacement of infrastructure at eight sites. SunWater has indicated that costing is based on replacement cost, previous projects and developed in conjunction with local staff.

Arup stated that the information provided on sampled items was not sufficient to assess prudency and efficiency.

Authority's Analysis

The Authority notes that due to insufficient information, Arup was unable to conclude on the prudency or efficiency of this item.

The Authority further notes comments by CANEGROWERS and sought advice from SunWater. SunWater (P McGahan, pers comm., September 2011) indicated that the SCADA system was installed in the mid-1990s and is now due for upgrade and replacement as much of the equipment is no longer supported by the manufacturer. SunWater indicated that the system is a proven system that has worked successfully and has resulted in greater efficiencies of operation.

Item 3: Pipeline replacement – Southedge Irrigation – Lateral WB14 Pipeline 1

SunWater

Information provided by SunWater identified minor costs ($6,000) in 2013-14 relating to the development of a business case for replacement of a pipeline in the Southedge distribution system, with the replacement of the pipe scheduled to occur in 2018-19 at an estimated cost of $192,000 (including direct and indirect).

Arup's Review

SunWater provided Arup with outputs from SAP in relation to the replacement of the pipeline for the Southedge Irrigation. Additionally, Arup have been provided a range of documentation with regards to the proposed pipeline replacement program which makes up a large component of the annuity program for the Mareeba-Dimbulah Distribution System.

Arup observed that in 2004-05, SunWater started investigating a pipeline replacement strategy due to historical pipeline failures. Detailed investigation of a part of an exhumed pipeline revealed that there was degradation to the internal face of the concrete where in some cases there was only 2 mm of protection remaining before reinforcement is exposed to corrosive attack. An investigation by GHD found that the residual life of most pipelines in the area was significantly reduced with a recommendation stating that a replacement strategy be put in place within 10 years to maintain the desired levels of service.

Arup noted that the refurbishment and maintenance planning register shows that significant works are being undertaken on a regular basis to repair leaks in this pipeline. The risk register shows that there are moderate risks to production and operation, with five leaks per year with leak frequency increasing. The risks to SunWater are that the Service Targets cannot be met and that the cost associated with each leak will increase.

Arup agreed that the cost of maintenance would be excessive and that replacement is a more efficient option for dealing with pipes which originally had been designed to non standard specification.

Arup concluded that the methodology used for arriving at the cost appeared to be logical and well founded. The investigation itself is quite thorough considering the level of information available. Arup advised that replacement costs are based on one pipe material only and this may have a distorted effect when considering other more expensive materials such as DICL or MSCL or site specific construction requirements.

Arup stated that the information provided on sampled items was not sufficient to assess prudency and efficiency.

Authority's Analysis

Due to insufficient information, the Authority is unable to conclude on the prudency or efficiency of this item. In particular, the Authority has been unable to identify expenditure on this item in 2013-14, or reconcile Arup's assessment with the expenditure scheduled to occur in

2018-19. The Authority notes that there is $1.7 million of expenditure to replace pipelines in the Southedge area over the planning period (2011-36).

Item 4: South Walsh Main Channel – Concrete Bench Flume Replacement

SunWater

This renewals item is for the replacement of a concrete flume in 2025-26 at a projected cost of $1.957 million. This project is part of the proposed renewals expenditure of $4.9 million noted in the NSP for South Walsh Main Channel.

Other Stakeholders

CANEGROWERS (2011b) queried the cost of upgrading channels compared to past refurbishments and whether the expenditure is required.

SKM's Review

SunWater advised SKM that the asset was initially installed in 1956 as part of the original distribution system.

The standard object type (asset type) for this infrastructure is concrete works which SunWater has allocated a standard run to failure asset life of 80 years and a refurbishment period of 40 years. SKM considered both the run to failure asset life and refurbishment period to be appropriate for this asset type.

Prudency Review

(a) Asset Replacement/Refurbishment Date Determination

In its review of the data in SAP and the information provided by SunWater, SKM considered that SunWater has followed the policies and procedures that it has in place to determine renewals item replacement/refurbishment dates and costs for such.

SKM considered the applied run to failure asset life and refurbishment period for this asset to be reasonable and in keeping with good industry practice.

SKM viewed the WMS record for this asset confirmed that the asset has been in service since 1956.

SunWater applied its risk evaluation method to this asset and determined that it has a moderate (Score 54) rating for both Productions/Operations and Stakeholder Relationship. This together with a probability (likelihood of occurrence) score of 1 results in an overall score of 54 which places this asset in a medium risk category. For this asset type, an overall risk category of medium reduces the run to failure asset life from 80 years to 70 years and the refurbishment period from 40 years to 35 years. SKM considered this reduction in run to failure asset life and refurbishment period based on this risk assessment for asset replacement/refurbishment planning purposes to be appropriate and in keeping with good industry practice.

The condition assessment, as recorded in WMS for this asset, undertaken in 2002 scored a maximum "high level" condition rating of 3 (moderate deterioration with minor refurbishment required to ensure ongoing reliable operation). This condition rating predates SunWater's current detailed condition assessment method. This condition rating is not in line with the expected decay curve and, under SunWater's asset management methods, indicates that the expected replacement date should be moved out to 2062-63. That is, the condition assessment

revealed the asset to be in better condition than the standard asset condition decay curve would predict at that time.

In 2008, a further condition assessment was conducted, making use of SunWater's current and more detailed asset condition assessment methods. The maximum condition rating scored was a 4 (Significant deterioration with minor refurbishment required to ensure ongoing reliable operation) for Foundation Earthworks. This condition rating is in line with the standard asset condition decay curve and indicates that the expected replacement date is 2028-29.

The more recent condition assessment has been used to determine the annuity replacement date. This reliance on the most recent condition assessment report is in accordance with SunWater's asset management method and is considered to be in keeping with good industry practice. However, SKM considered that this case illustrates how sensitive the replacement/refurbishment date is to the timing and outcome of a condition assessment.

There is therefore merit, according to SKM, in SunWater considering the age of the most current condition assessment and scheduling a new condition assessment before the run to failure asset age is adjusted where the latest condition assessment was conducted outside the maximum condition assessment frequency for that asset. There may also be merit in requiring a further condition assessment at half the recommended period to confirm an earlier indication of a more rapid asset deterioration than expected before the run to failure asset life is reduced for that long term asset, particularly for high value assets.

On the assumption that SunWater's procedures for condition assessment have been followed, based on this condition assessment score, SKM considered that the timing for replacement of this renewals item is prudent.

(b) Options Evaluation

The report as referred above stipulates that two options were investigated as part of the preliminary options investigation. The two options investigated are as follows:

(a) replace like for like (Concrete lining); and

(b) replace with high density polyethylene (HDPE) Lining.

The preferred SunWater replacement option is replacing 'like for like'. SKM considered the options investigated reasonable and the level of analysis conducted at this stage of the asset life (some 15 years before the projected replacement date) appropriate and in keeping with good industry practice.

(c) Timing of Renewal/Refurbishment

Based on the 2008 condition assessment, the as expected performance of the main channel, in relation to the asset condition decay curve, and in accordance to SunWater's policies the replacement of the concrete main channel is due at the date projected (2025-26). SKM therefore considered the timing of this replacement to be prudent.

(d) Conclusion on Prudency Evaluation

On the understanding that SunWater's policies for adjusting refurbishment periods and assessing asset condition have been followed, SKM concluded that the need for refurbishment of this annuity asset has been demonstrated. As such the inclusion of this renewals item in the renewals planning period is prudent.

Efficiency Evaluation

For asset works where the planned replacement date is more than five years hence from the planning date, SunWater's planning team applies a unit rate against bill of materials quantities for the asset in question. Given the volume of renewals items that SunWater's planning team are engaged with at any point in time, this approach was considered by SKM to be reasonable and in accordance with good industry practice.

(a) Renewal/Replacement Project Cost Evaluation

SKM has not sighted as built drawings for the main channel and have not had access to dimensions of the main channel. As such, SKM was unable to develop a bench mark cost for replacing the concrete main channel from first principles.

However, SKM checked the unit rate for the various items as listed in the WMS. The unit cost of a single layer of reinforced concrete is calculated at $\$2,346.57/m^3$, based on the 1996-97 unit rate multiplied by the 2008 Cardno adaption rate and multiplied by the indirect cost factor that SunWater applies to this asset. SKM has also conducted a "bottom up" calculation based on the 2011 Rawlinson's figures. The figure was based on 12% for preliminary and general items, a 15% contingency and assuming a 2m x 2m channel with 200 mm thick walls and floor. The calculated rate is $2,134.44; only 9% less than the figure that the WMS makes use of. It was therefore deemed that the unit rate used is efficient.

The preliminary options investigation includes a cost estimate, Present Value (PV) and Total Cost for both options. SKM made use of a discount rate, equivalent real rate, of 8.54% to calculate the PV and Total Cost for both options as summarised in the table below. SKM made use of the same costs and maintenance periods as applied by SunWater given that the costs and maintenance periods are deemed to be reasonable and in line with industry standards. The summary of this life cycle costing evaluation is given in the table below.

SKM noted that the Actual Total Cost figures takes into consideration maintenance and refurbishment during the lifetime of the asset to allow a lifecycle PV cost analysis to be undertaken. The 20-year life replacement cost for the HDPE lining is taken into account to provide an 80-year operating life comparison. As such, it is not possible to directly compare the Actual Total Cost with the renewals item value submitted by SunWater as the renewals item value ($1,957 million) only captures capital costs for the concrete channel replacement (not on-going maintenance costs).

Table 4.4: Comparison of 'Like for Like' and Modern Equivalent Replacement Options

Option	***PV ($)***	***Actual Total Cost over an 80-year period ($)***
Like for Like (Concrete Lining)	1,841,758	2,236,700
HDPE Liner	1,468,001	3,078,342
% Difference	-20%	+38%

Source: SKM (2011).

SKM noted there is a 20% difference between the present values of the two options with HDPE liner being 20% less on PV cost terms than a like-for-like concrete replacement. Since the timing of the project is more than five years ahead a detailed options investigation has not yet occurred. The difference in the PV is within the materiality criteria that SKM normally applies when undertaking regulatory capital expenditure forecast reviews of this type. As such, SKM

considered it is prudent to make use of the concrete lining option for costing purposes until a more detailed options investigation has been completed.

SKM have not taken into account the increased numbers of supply interruptions that would ensue with an HDPE liner given that an HDPE liner requires to be replaced every 20 years as compared to every 80 years for a concrete liner.

(b) Conclusion on Efficiency Evaluation

Given that the value submitted for this item is within 20% on PV terms of a modern equivalent alternative option and that the unit rate used for the preferred option is representative of current day costs, SKM considered the expenditure for this item to be efficient.

Summary and Conclusions

SKM concluded that SunWater's robust procedures for determining the timing of replacement of a renewals item have been followed and hence that the timing and need for replacement of this renewals item is prudent. SKM also considered the cost of the replacement to be efficient.

Authority's Analysis

The Authority accepts SKM's conclusion that planned refurbishment of the South Walsh Main Channel is prudent and efficient for the purposes of determining the renewals annuity. However, given that the alternative approach may result in a 20% saving over the life of the asset, SunWater should consider a more detailed options analysis at an earlier stage prior to proceeding with the investment.

Conclusion

In summary, four items for the Mareeba-Dimbulah Distribution System were sampled. Of these, only one item was assessed as being prudent and efficient and has been retained for forecast expenditure.

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

In total, the Authority recommends the direct renewals expenditure be adjusted as shown in Table 4.5.

Table 4.5: Review of Forecast Renewals Expenditure 2011-36 ($'000)

	Item	*Date*	*SunWater ($'000)*	*Authority's Findings*	*Recommended ($'000)*
Sampled Items					
1.	West Barron Distribution – refurbishment of bracing beams	2012-13	213	Insufficient information to determine prudency or efficiency	10% saving applied
2.	SCADA upgrade	2011-12	65	Insufficient information to determine prudency or efficiency	10% saving applied
3.	Southedge Irrigation – pipeline replacement	2018-19	192	Insufficient information to determine prudency or efficiency	10% saving applied
4.	South Walsh Main Channel – concrete bench flume replacement	2025-26	1,957	Prudent and efficient	1,957
Non-Sampled Items					10% saving applied

Source: SunWater (2011), Arup (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

MDIAC (2011) submitted that the service level agreement between SunWater and irrigators needs to have a clause added which obliges SunWater to carry out an annual consultation and approval's process of the renewals program with irrigators on both the actual spent in the last 12 months and the forecast program for the next 12 months. The consultation process should include benchmarking against 'best practice' to ensure efficient investment of the renewals reserve.

Authority's Analysis

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

Arup (2011) noted that a breakdown of talks between irrigator groups and SunWater has occurred in the Mareeba-Dimbulah WSS (including the Distribution System). They observed that this is due to a lack of:

(a) communication on the part of SunWater with regards to the changes which were to take place in the region;

(b) clarity around the role of the IAC and expectations of both the irrigators and SunWater; and

(c) understanding within the irrigation community on what issues are outside of the hands of SunWater (i.e. recreational costs, ROP costs, etc).

The Authority recommends that there be a legislative requirement for SunWater to consult with its customers about any changes to its service standards and proposed renewals expenditure program. SunWater should also be required to submit the service standards and renewals expenditure program to irrigators for comment whenever they are amended and that irrigators' comments be documented and published on SunWater's website and provided to the Authority. The Authority's recommendations are detailed in Volume 1.

4.7 Allocation of Distribution Renewals Costs According to WAE Priority

Previous Review

For 2006-11 price path, the renewals costs for the Mareeba-Dimbulah Distribution System were apportioned between priority groups using converted nominal water allocations. The conversion to medium priority WAE was determined by a pricing conversion factor (1.5:1), that is, one ML of high priority WAE was considered equivalent to 1.5 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

No other stakeholders have commented on this matter.

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 submitted by SunWater.

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 Mareeba-Dimbulah Distribution System, the recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.6. The renewals annuity for 2006-11 and SunWater's proposed annuity for 2012-16 is also presented for comparison.

Table 4.6: Mareeba-Dimbulah Distribution System Renewals Annuity (Real$'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Total SunWater	1,920	1,477	1,480	1,601	1,371	1,765	1,777	1,838	1,822	1,818	1,818
Total Authority	-	-	-	-	-	-	1,845	1,928	1,898	1,884	2,055
High Priority	-	-	-	-	-	-	4	4	4	4	4
Medium Priority	-	-	-	-	-	-	1,842	1,925	1,894	1,881	2,051

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

5. OPERATING COSTS

5.1 Background

Ministerial Direction

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

Issues

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

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

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

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

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

5.2 Total Operating Costs

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

Non-direct costs are classified as either:

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

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

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

In its NSP, SunWater described the scope of its operating activities for this system 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 26 staff are located at the Mareeba 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;

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

(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

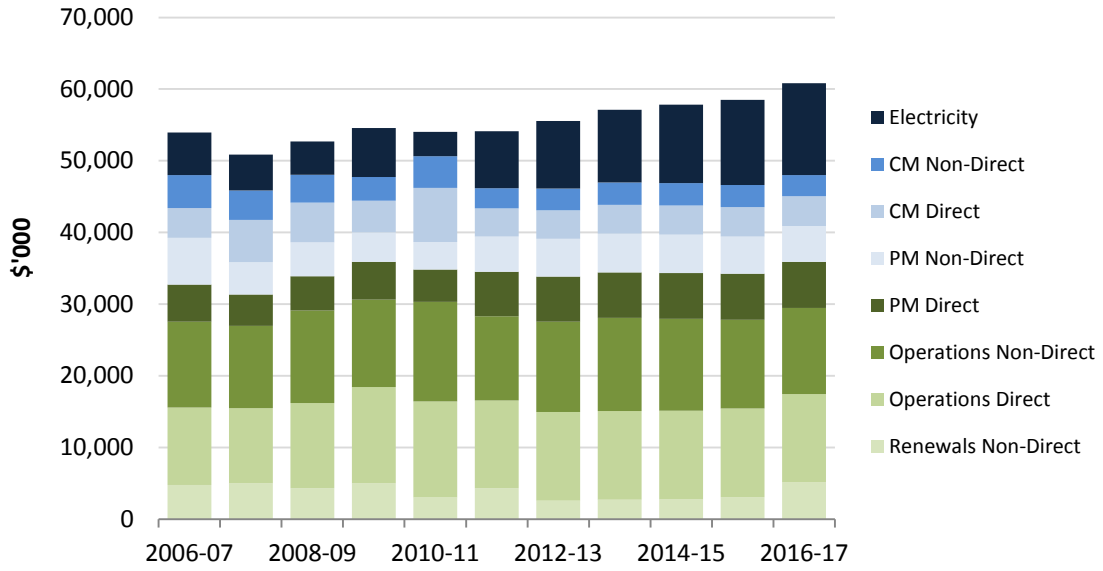
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

Stakeholder Submissions

SunWater

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

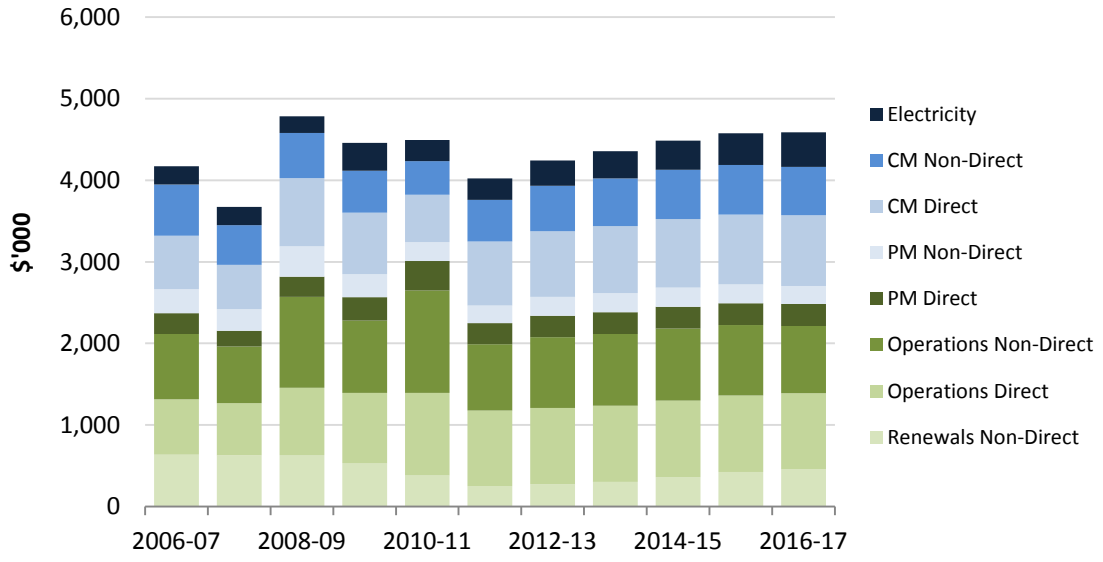
Figure 5.1: SunWater's Total Operating Costs (Real $) – All Service Contracts



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 Mareeba-Dimbulah Distribution System (all sectors) is shown in Figure 5.2, Table 5.1 and Table 5.2.

Figure 5.2: Total Operating Costs – Mareeba-Dimbulah Distribution System (Real $)



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	1,477	1,334	1,937	1,745	2,265	1,739	1,799	1,814	1,819	1,799	1,759
Electricity	223	222	206	343	258	261	310	334	360	392	422
Preventive Maintenance	550	459	620	569	592	476	494	500	503	499	488
Corrective Maintenance	1,284	1,027	1,389	1,264	995	1,294	1,364	1,406	1,442	1,461	1,459
Renewals Non-Direct	637	630	632	535	383	251	276	303	363	425	456
Total	**4,171**	**3,671**	**4,784**	**4,457**	**4,493**	**4,021**	**4,243**	**4,357**	**4,486**	**4,576**	**4,584**

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

Table 5.2: Expenditure by 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	886	713	999	969	1,034	1,039	1,064	1,075	1,085	1,095	1,105
Electricity	223	222	206	343	258	261	310	334	360	392	422
Contractors	118	108	127	30	61	51	52	53	54	54	54
Materials	282	246	544	565	541	514	522	530	537	545	545
Other	304	307	244	330	321	364	364	364	364	364	364
Non-Direct	2,358	2,074	2,664	2,220	2,278	1,791	1,931	2,002	2,086	2,126	2,093
Total	**4,171**	**3,671**	**4,784**	**4,457**	**4,493**	**4,021**	**4,243**	**4,357**	**4,486**	**4,576**	**4,584**

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 offsets (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).

In its NSP, SunWater submitted that bulk water operating costs for this scheme averaged $3,158,000 per annum 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, for the new five-year period, is $3,337,000 per annum.

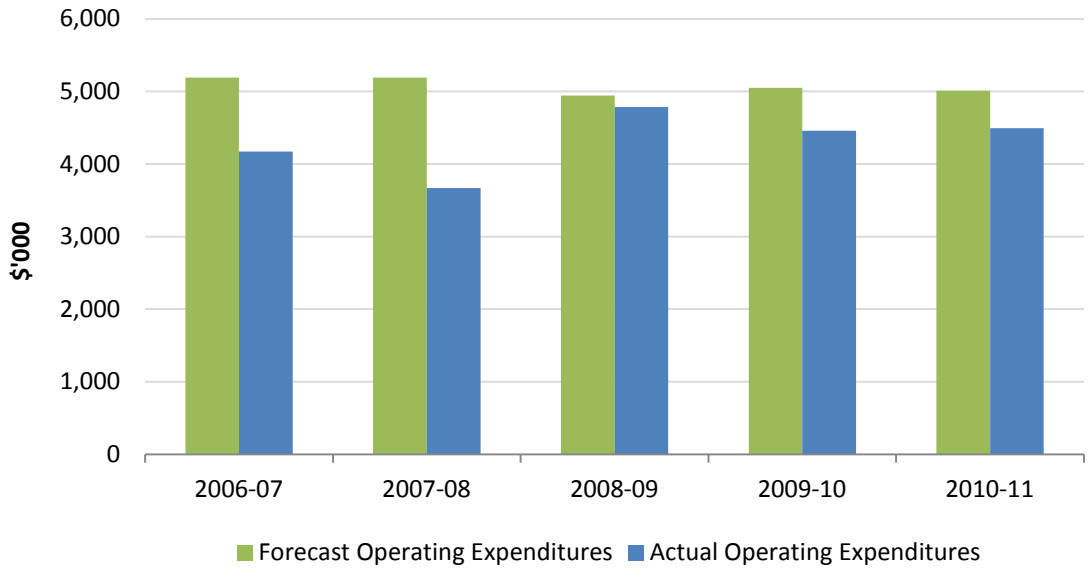
Authority's Analysis

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 2010-11, the Authority engaged Indec to assess whether SunWater achieved the cost savings forecast for 2005-06. A comparison of forecast and actual operating costs for the Mareeba-Dimbulah Distribution System is shown in Figure 5.3. Indec noted that anomalies could arise for the service contracts from linked bulk and distribution systems and the solution was to combine them into bundled schemes. See Volume 1.

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



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

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

5.3 Non-Direct Costs

Introduction

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

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

Operational works planning and maintenance scheduling is provided by regional management, although all staff positions and budgets are managed centrally. For example, spare capacity in

one region will be diverted (and billed) to regions with higher demand. Similarly, staff may be assigned to either irrigation or non-irrigation service contracts. The nature of these non-direct activities, which SunWater categorises as either overheads or indirect 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 Mareeba-Dimbulah Distribution System WSS are set out in Table 5.3.

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	25,152	23,770	23,512	24,244	24,055	23,708	25,089
Mareeba-Dimbulah Distribution System	2,358	2,074	2,664	2,220	2,278	1,791	1,931	2,002	2,086	2,126	2,093

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

CANEGROWERS (2011a) noted that overheads account for 50% of total operating costs which is alarming for a distribution system.

CANEGROWERS (2011b) also submitted that there had been a decrease in the level of service since the Mareeba office had been shut down [to the public] and questioned whether costs had decreased sufficiently to compensate for loss of service.

Tableland Canegrowers and Mareeba District Fruit and Vegetable Growers Association (2010) also noted that SunWater had attempted to implement cost savings by cutting Regional Office staff numbers. They submitted that this was not a workable solution and that SunWater needed to be encouraged to look at cost savings without reducing their level of service.

Authority's Analysis

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

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

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

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

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

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

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

Deloitte reviewed SunWater's proposal and identified alternative cost allocation bases (CABs). 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.

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,

[4] For example, PVWater has 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.

North and Far North), on the basis of DLC from each respective resource centre (targeted DLC); and

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

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

The Authority's recommended level of non-direct costs to be recovered from the Mareeba-Dimbulah Distribution System (from all customers) is set out in Table 5.4. 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	2,358	2,074	2,664	2,220	2,278	1,791	1,931	2,002	2,086	2,126	2,093
Authority	-	-	-	-	-	-	1,866	1,909	1,962	1,973	1,921

Source: SunWater (2011).

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 (PM), corrective maintenance (CM) and electricity. SunWater's operating costs were forecast using this classification. The nature of these activities and costs are identified further below.

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

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

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

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

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

Stakeholder Submissions

SunWater

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

SunWater's forecast of direct operating expenditure by activity is set out in Table 5.5. 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	678	640	825	858	1,013	926	935	935	935	936	936
Electricity	223	222	206	343	258	261	310	334	360	392	422
Preventive Maintenance	258	193	250	285	362	259	263	264	266	268	268
Corrective Maintenance	654	542	838	751	582	783	805	822	838	855	866
Total	**1,813**	**1,597**	**2,120**	**2,237**	**2,216**	**2,230**	**2,312**	**2,355**	**2,400**	**2,451**	**2,491**

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	886	713	999	969	1,034	1,039	1,064	1,075	1,085	1,095	1,105
Electricity	223	222	206	343	258	261	310	334	360	392	422
Contractors	118	108	127	30	61	51	52	53	54	54	54
Materials	282	246	544	565	541	514	522	530	537	545	545
Other	304	307	244	330	321	364	364	364	364	364	364
Total	**1,813**	**1,597**	**2,120**	**2,237**	**2,216**	**2,230**	**2,312**	**2,355**	**2,400**	**2,451**	**2,491**

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 Arup to review the prudency and efficiency of SunWater's proposed direct operating expenditure for this scheme. Arup's review involved:

(a) site inspections and discussions with local managers to appraise the efficiency of work practices, operators' knowledge of assets and day to day operation issues;

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

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

  (i) compare historical actual and forecast data;

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

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

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

Arup reviewed the extent to which SunWater's operating expenditure forecasts are based on appropriate cost drivers (including water use), and the cost escalation methods and factors used to prepare them. The assessment was undertaken having regard to the conditions prevailing in relevant markets, historical trends, relevant interstate and international benchmarks, and SunWater's service standards and compliance requirements.

Arup reported, however, that SunWater's information systems were not specifically designed for the provision of information to assess prudency and efficiency. In particular, the information provided by SunWater did not sufficiently enable costs to be connected with the discharge of specific service obligations. Arup also noted that operational and procedural changes following the SLFI review and the introduction of ROPs may have made the extraction and reconciliation of such information difficult.

Arup advised that since the information provided by SunWater did not afford the ability to "drill down" into costs to adequately review prudency and efficiency, their assessment of direct

operating expenditure was limited to a general review of SunWater's processes, procedures and trend.

On this basis, Arup considered that SunWater's policy and procedural documents are broadly consistent with industry practice, and that SunWater have demonstrated the adoption and integration of them into their management system. Site visits also showed that field personnel are gradually adopting these systems and processes.

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

Arup concluded that, in general, the procedures adopted are prudent and SunWater is undertaking work to make their operations more efficient.

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

(a) attain greater operating efficiency;

(b) achieve greater transparency;

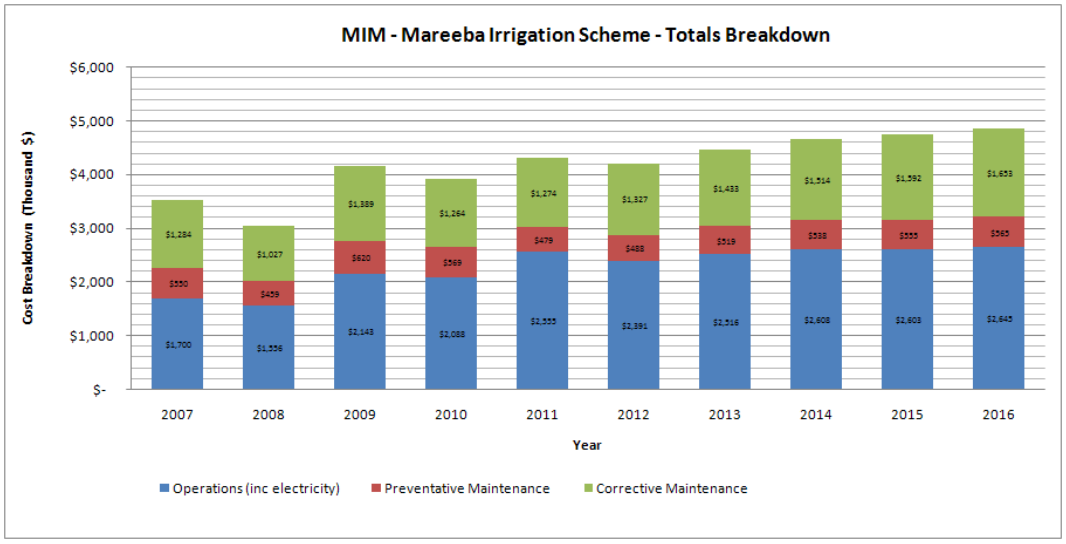
(c) facilitate future price reviews; and

(d) promote more meaningful stakeholder engagement.

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

Arup noted that operations make up the largest proportion of operating expenditure for the Mareeba-Dimbulah Distribution System, followed by corrective maintenance (Figure 5.4). Further, over the 2012-17 regulatory period, costs are forecast to rise based on indexation and are not excessive in comparison to actual costs incurred between 2006-07 and 2010-11.

Figure 5.4: Total Operating Expenditure– Mareeba-Dimbulah Distribution System



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

Item 1: Operations

Stakeholder Submissions

SunWater

Operations relate to the day to day operational activity (other than maintenance) enabling water delivery, customer management, asset management planning, financial and ROP reporting, workplace health and safety compliance, 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. SunWater's proposed operations costs are set out in Table 5.5.

Other Stakeholders

Canegrowers (2011a) noted that operations costs in the distribution system are estimated to increase by 6% over the next five years in real terms, which in around 27% in nominal terms by 2016.

Authority Analysis

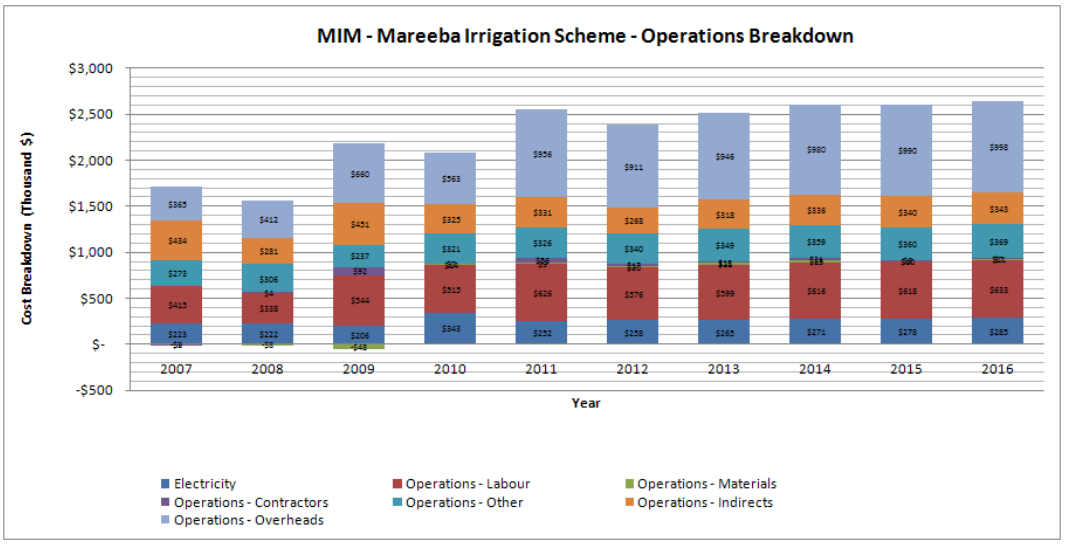
Consultant's Review

Arup noted that key drivers affecting operating expenditure include workplace health and safety and environmental obligations (such as ROLs and ROPs).

In meeting these obligations Arup considered that a smaller water service provided may be able to take a more relaxed approach and, in effect, accept a higher level of risk. However, for a large organisation such as SunWater, the financial risks of not meeting these obligations are significant.

In reviewing operations expenditure for the Mareeba-Dimbulah Distribution System, Arup noted that labour, electricity and insurance are the largest components of operations expenditure (Figure 5.5).

Figure 5.5: Operations Cost Breakdown – Mareeba-Dimbulah Distribution System



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

Arup did not recommend any adjustments to SunWater's operations expenditure for this scheme.

Conclusion

The Authority notes that Arup did not recommend any adjustments to SunWater's operations expenditure for this scheme.

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

The Authority also notes that the consultants engaged to review operations costs in other SunWater schemes (Halcrow (2011), GHD (2011) and Aurecon (2011)) 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 for the Mareeba-Dimbulah Distribution System are: mechanical and chemical weed control including Acrolein injections; de-silting of channels and drains; electrical and mechanical servicing of regulating gates, valves, meters and water level sensors; mechanical and electrical servicing of pumps motors and filter systems; and servicing batteries and back-up systems.

SunWater's proposed preventive maintenance costs are set out in Table 5.5.

Other Stakeholders

No other stakeholders commented on this item.

Authority's Analysis

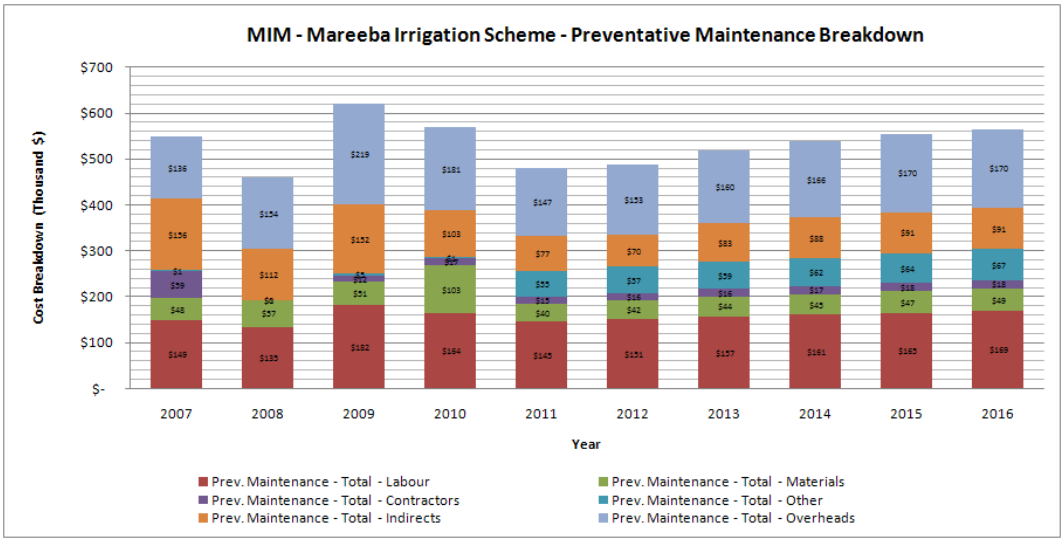
Consultant's Review

Arup noted that PB were engaged by SunWater in 2010 to assess the organisation's preventive maintenance work instructions and associated costs, and establish a confidence level of planned baseline costs for 2010-11 for all services contracts.

Arup requested a formal statement from SunWater as to how the outcomes of this assessment had been incorporated into preventive maintenance forecasts, including details of what initiatives had been or are scheduled to be put in place. However, on the basis of the information provided, Arup were not able to determine how Parsons Brinckerhoff's revised forecasts had been integrated into the NSP forecasts.

In reviewing preventive maintenance for the Mareeba-Dimbulah WSS, Arup noted that labour is relatively steady and shows no marked increase over time (Figure 5.6). However, chemicals and labour may vary along with contractors depending on the conditions on the ground. Specifically, in a tropical climate water quality is an issue and temperatures could generate various algal blooms, along with aquatic weeds.

Figure 5.6: Preventive Maintenance Breakdown – Mareeba-Dimbulah Distribution System



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

Arup did not recommend an adjustment to SunWater's preventive maintenance expenditure for this scheme.

Conclusion

The Authority notes that Arup did not recommend any adjustments to SunWater's preventive maintenance expenditure for this scheme.

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

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

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

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

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

For this scheme, the Authority did not specifically adjust SunWater's preventive maintenance expenditure forecast.

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 examples of corrective maintenance on drains and channels in the Mareeba-Dimbulah Distribution System include: erosion repairs; flow meter repairs and replacements; removing weed blockages; repairing regulating gates, pumps and control systems; and 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.

Other Stakeholders

No other stakeholders commented on this item.

Authority's Analysis

Consultant's Review

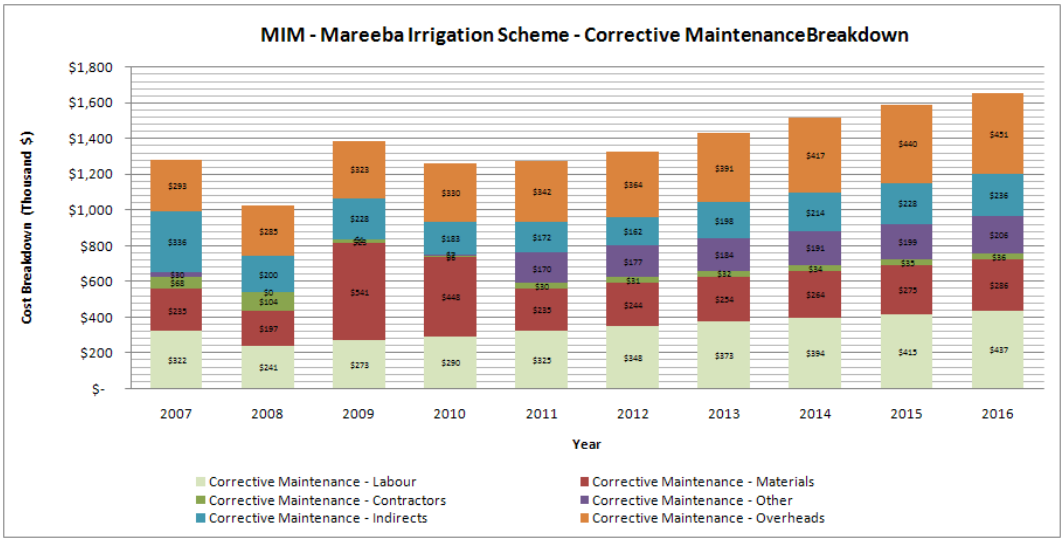
Arup noted that corrective maintenance forecasts are based on actual spends from the last four years.

Although SunWater advised Arup that it has sought to review the balance between corrective and preventive maintenance, Arup reported that they were not provided with any formal documentation indicating the exact methodology used to prepare the correctively maintenance forecasts.

Arup also noted that if adopted, the RCM approach recommended by PB (2010) would seek to optimise the process by which maintenance is undertaken and, in doing so, would also optimise the balance between preventive and corrective maintenance.

Arup did not recommend an adjustment to SunWater's corrective maintenance expenditure for this scheme for the Mareeba-Dimbulah Distribution System (Figure 5.7).

Figure 5.7: Corrective Maintenance Breakdown – Mareeba-Dimbulah Distribution System



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

Conclusion

The Authority notes that Arup did not recommend any adjustments to SunWater's corrective maintenance expenditure for this scheme.

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

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

Item 4: Electricity

Stakeholder Submissions

SunWater

The electricity costs for the Distribution System mostly relate to the five relift pump stations for the areas that are not commanded by gravity. Smaller amounts of electricity are also used for SCADA sites and depots.

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, in which:

(a) electricity costs be forecast based on electricity prices escalated by CPI;

(b) volumes pumped be forecast based on projected water use volumes;

(c) reconciliations of forecast cost versus actual cost be maintained; and

(d) appropriate overs and unders price adjustment be incorporated into the next price path beginning 1 July 2016.

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

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

Other Stakeholders

CANEGROWERS (2011a) submitted that electricity costs for the relift area are $50/ML which is a major concern.

Authority Analysis

Consultant's Review

Arup noted that SunWater has undertaken extensive cost benefit analyses into when and where it should adopt contestable or franchise tariffs. In particular, specialist consultants in this field have been employed to advise SunWater on such strategies and for this scheme the current advice is to run a franchise tariff.

Arup did not recommend an adjustment to SunWater's electricity expenditure for this scheme.

Conclusion

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

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

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

The Authority has adjusted proposed electricity costs as set out in Table 5.7.

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.

Other Costs

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

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Mareeba-Dimbulah Distribution System is set out in Table 5.7.

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 5.7: 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	935	935	935	936	936	905	906	907	909	909
Electricity	310	334	360	392	422	266	275	286	299	314
Preventive Maintenance	263	264	266	268	268	255	256	258	260	260
Corrective Maintenance	805	822	838	855	866	779	795	810	826	835
Total	**2,312**	**2,355**	**2,400**	**2,451**	**2,491**	**2,204**	**2,233**	**2,261**	**2,293**	**2,318**

Note: Totals vary from NSP due to SunWater's revised approach to insurance and electricity, exclusion of revenue offsets (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 water pricing conversion factors (WPCFs) in both bulk and distribution systems.

Stakeholder Submissions

SunWater

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

Other Stakeholders

MDIAC (2011) noted that due to tight timeframes the consultants have not been able to adequately assess whether SunWater has correctly apportioned cost to medium and high priority customers. MDIAC submitted that operating costs should be allocated between high and medium priority WAE using a 3:1 ratio.

Authority's Analysis

In Volume 1, the Authority summarises the views of its consultants and recommends that in relation to distribution systems fixed operating costs in be allocated to medium and high priority customers using current WAEs. The Authority also recommends that for distribution systems insurance premiums are also allocated on the basis of nominal WAEs. Variable costs should be allocated to medium and high priority WAE on the basis of water use.

The effect for the Mareeba-Dimbulah 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 5.8. The Authority's recommended operating costs are set out in Table 5.9.

Table 5.8: SunWater's Proposed Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operation					
Labour	560	560	560	560	560
Materials	12	12	12	13	13
Contractors	6	6	6	6	6
Other	357	357	357	357	357
Non-Direct	865	879	883	863	823
Preventive Maintenance					
Labour	149	149	149	149	149
Materials	98	100	101	102	102
Contractors	15	16	16	16	16
Other	0	0	0	0	0
Non-Direct	231	235	236	231	220
Corrective Maintenance					
Labour	355	365	376	386	396
Materials	412	418	424	430	430
Contractors	31	31	32	32	32
Other	7	7	7	7	7
Non-Direct	559	584	604	606	593
Electricity	310	334	360	392	422
Total	**3,967**	**4,054**	**4,123**	**4,151**	**4,128**

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operation					
Labour	542	546	550	553	557
Materials	12	12	12	12	12
Contractors	5	6	6	6	6
Other	346	343	341	338	335
Non-Direct	842	843	834	802	752
Preventive Maintenance					
Labour	145	146	147	148	148
Materials	95	96	96	97	96
Contractors	15	15	15	15	15
Other	0	0	0	0	0
Non-Direct	225	226	223	215	202
Corrective Maintenance					
Labour	344	356	369	382	394
Materials	399	402	404	407	404
Contractors	30	30	30	31	30
Other	7	7	7	7	7
Non-Direct	545	561	570	564	543
Electricity	266	275	286	299	314
Total	**3,816**	**3,862**	**3,889**	**3,873**	**3,814**

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 the Mareeba-Dimbulah Distribution System, the price increases for the 2006-11 price path were as follows:

(a) CPI only for Channel (Outside re-lift up to 100ML) customers;

(b) in addition to CPI, prices were increased in real terms to achieve lower bound costs in 2008-09 for Channel (Outside re-lift 100-500ML) and Channel (Outside re-lift more than 500ML) customers; and

(c) price increases were capped at $10/ML in total across the period for Channel (Re-lift) customers.

In 2011-12, prices for all tariff groups were increased by $2/ML and 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 Mareeba-Dimbulah Distribution System for the 2012-17 regulatory period is outlined in Table 6.1. Total costs since 2006-07 are also provided.

For this scheme, the Authority's estimate of the appropriate revenue offset is higher than SunWater's estimate. The Authority's estimate reflects the expected revenue from irrigation customers' access charges, calculated by multiplying the number of customers by the customer access charge.

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 Mareeba-Dimbulah 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	4,919	3,959	5,062	4,961	4,914	4,973	5,182	5,330	5,385	5,412	5,390
Renewals Annuity	1,920	1,477	1,480	1,601	1,371	1,765	1,777	1,838	1,822	1,818	1,818
Operating Costs	3,533	3,041	4,152	3,922	4,110	3,770	3,967	4,054	4,123	4,151	4,128
Revenue Offsets	-535	-559	-570	-562	-567	-562	-562	-562	-560	-557	-556
Authority's Total Costs	-	-	-	-	-	-	5,074	5,203	5,201	5,175	5,287
Renewals	-	-	-	-	-	-	1,845	1,928	1,898	1,884	2,055
Operating Costs	-	-	-	-	-	-	3,816	3,862	3,889	3,873	3,814
Revenue Offsets	-	-	-	-	-	-	-591	-591	-589	-587	-586
Return on Working Capital	-	-	-	-	-	-	3	3	3	3	4

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

6.4 Fixed and Variable Costs

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

SunWater submitted that in the Mareeba-Dimbulah Distribution System 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 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;

(c) costs that *should* vary with water use under Indec's proposed optimal (prudent and efficient) management approach (this approach is 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 this system, Indec recommended 83% of costs should be fixed and 17% 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 for each of the tariff groups. For channel customers outside a re-lift up to 100 ML the current tariff structure is set to recover 65% of costs in the fixed charge and 35% of costs in the volumetric charge.

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

6.5 Allocation of Costs According to WAE Priority

Fixed Costs

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

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Net Fixed Costs	**3,941**	**4,059**	**4,067**	**4,055**	**4,156**
High Priority	8	8	8	8	8
Medium Priority	3,933	4,051	4,059	4,047	4,148

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

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

Variable Costs

Variable costs are allocated to all users on the basis of water use. Volumetric tariffs are calculated based on SunWater's eight-year historical water usage data for all sectors. However, consistent with SunWater's assumed typical year for operating cost forecasts, the Authority has removed 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 as 67.1% of WAE.

6.6 Cost Reflective Prices

Cost-reflective prices reflect the Authority's estimates of prudent and efficient costs, recommended tariff structures, and the allocation of costs to different priority groups.

Table 6.3: Medium Priority Prices for the Mareeba-Dimbulah 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***
	Access Charge^	475.40	489.20	512.76	528.88	545.00	564.48	578.59	593.06	607.88	623.08	638.66
Bulk	**River (Tinaroo Falls/Barron)**											
	Fixed (Part A)	2.80	2.88	3.00	3.12	3.20	3.32	2.86	2.93	3.00	3.08	3.15
	Volumetric (Part B)	14.06	14.47	15.16	15.64	16.11	16.69	0.74	0.76	0.78	0.80	0.82
Distribution System – unbundled	**River (Supplemented Streams & Walsh River)**											
	Fixed (Part C)	11.84	12.16	12.76	13.16	13.56	14.04	20.33	20.84	21.36	21.89	22.44
	Volumetric (Part D)	-3.60*	-3.70*	-3.87*	-4.00*	-4.11*	-4.26*	6.89	7.07	7.24	7.42	7.61
	Outside a re-lift up to 100 ML											
	Fixed (Part C)	22.96	23.64	24.80	25.56	26.32	29.28	33.88	34.73	35.59	36.48	37.40
	Volumetric (Part D)	6.19	6.37	6.68	6.89	7.11	7.36	11.49	11.78	12.07	12.37	12.68
	Outside a re-lift 100 to 500 ML											
	Fixed (Part C)	19.28	21.48	23.44	24.12	24.88	27.76	33.88	34.73	35.59	36.48	37.40
	Volumetric (Part D)	-0.03*	0.99	1.62	1.67	1.73	1.78	11.49	11.78	12.07	12.37	12.68
	Outside a re-lift more than 500 ML											
	Fixed (Part C)	15.88	17.24	18.08	18.60	19.20	21.88	33.88	34.73	35.59	36.48	37.40
	Volumetric (Part D)	-2.21*	-1.70*	-1.77*	-1.83*	-1.88*	-1.95*	11.49	11.78	12.07	12.37	12.68
	Re-lift											
	Fixed (Part C)	29.56	32.04	35.28	38.12	40.92	44.36	33.88	34.73	35.59	36.48	37.40
	Volumetric (Part D)	6.48	7.69	9.15	10.54	11.89	12.32	43.37	44.45	45.56	46.70	47.87

		2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Distribution System – bundled	**River Supplemented Streams & Walsh River**											
	Fixed (Part A)	14.64	15.04	15.76	16.28	16.76	17.36	22.04	22.59	23.16	23.74	24.33
	Volumetric (Part B)	10.46	10.77	11.29	11.64	12.00	12.43	7.34	7.52	7.71	7.90	8.10
	Outside a re-lift up to 100 ML											
	Fixed (Part A)	25.76	26.52	27.80	28.68	29.52	32.60	36.74	37.65	38.60	39.56	40.55
	Volumetric (Part B)	20.25	20.84	21.84	22.53	23.22	24.05	12.23	12.54	12.85	13.17	13.50
	Outside a re-lift 100 to 500 ML											
	Fixed (Part A)	22.08	24.36	26.44	27.24	28.08	31.08	36.74	37.65	38.60	39.56	40.55
	Volumetric (Part B)	14.03	15.46	16.78	17.31	17.84	18.47	12.23	12.54	12.85	13.17	13.50
	Outside a re-lift more than 500 ML											
	Fixed (Part A)	18.68	20.12	21.08	21.72	22.40	25.20	36.74	37.65	38.60	39.56	40.55
	Volumetric (Part B)	11.85	12.77	13.39	13.81	14.23	14.74	12.23	12.54	12.85	13.17	13.50
	Re-lift											
	Fixed (Part A)	32.36	34.92	38.28	41.24	44.12	47.68	36.74	37.65	38.60	39.56	40.55
	Volumetric (Part B)	20.54	22.16	24.31	26.18	28.00	29.01	44.11	45.21	46.34	47.50	48.69

Note: ^ Annual fixed charge per customer. Channel (Bundled) prices are provided for reference only. Source: Actual Prices (SunWater, 2011al) and Cost Reflective Prices (QCA, 2011).

Table 6.4: Termination Fees ($/ML)

	Actual Prices				*Cost Reflective Prices*				
	2008-09	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Outside Relift <100 ML to:									
Outside Relift 100-500 ML	12.18	12.35	13.59	15.68	0.00	0.00	0.00	0.00	0.00
Outside Relift >500 ML	60.16	59.71	67.19	76.33	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	107.80	106.38	120.41	157.19	186.33	190.99	195.77	200.66	205.68
Tinaroo Falls/ Barron River	222.04	219.29	248.36	302.01	465.84	477.48	489.42	501.66	514.20
Outside Relift 100-500 ML to:									
Outside Relift >500 ML	47.99	47.36	53.60	60.65	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	95.62	94.03	106.82	141.52	186 33	190.99	195.77	200.66	205.68
Tinaroo Falls/ Barron River	209.86	206.93	234.77	286.33	465.84	477.48	489.42	501.66	514.20
Outside Relift >500 ML to:									
Supp. Streams & Walsh River	47.63	46.67	53.22	80.87	186 33	190.99	195.77	200.66	205.68
Tinaroo Falls/ Barron River	161.87	159.57	181.18	225.68	465.84	477.48	489.42	501.66	514.20
Relift to:									
Outside Relift <100 ML	93.83	107.76	137.77	155.54	0.00	0.00	0.00	0.00	0.00
Outside Relift 100-500 ML	106.00	120.11	151.36	171.22	0.00	0.00	0.00	0.00	0.00
Outside Relift >500 ML	153.99	167.47	204.95	231.87	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	201.62	214.14	258.17	312.74	186.33	190.99	195.77	200.66	205.68
Tinaroo Falls/ Barron River	315.86	327.04	386.13	457.56	465.84	477.48	489.42	501.66	514.20
Supplemented Streams & Walsh River to:									
Tinaroo Falls/ Barron River	114.24	112.90	127.96	144.82	279.50	286.49	293.65	300.99	308.52

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

6.7 Queensland Government Pricing Policies

As noted above, the Queensland Government has directed that:

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

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

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

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

Authority's Analysis

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

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

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 for the system as a whole are below the level required to recover prudent and efficient costs (Table 6.5). However, the cost-recovery position varies among the tariff groups.

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 pace of increase in 2006-11 prices. Volumetric charges are to reflect variable costs from 2012-13.

In Chapter 3 – Pricing Framework, the Authority recommended to remove the declining block tariff, with the first two blocks (channel outside a relift up to 100ML and channel outside a relift 100 to 500ML) to be aligned in 2012-13. To do so, the revenues from these two tariff groups are combined for purpose of determining their current revenues. After tariff restructuring, the bundled charges can then reflect cost-reflective charges in the first year.

The Authority also recommended that Part C tariff for users over 500 ML be adjusted over the price path. The current revenues for this tariff group are well below cost-reflective revenues and a price path must be considered. Therefore, after tariff rebalancing, the Authority recommends the (bundled) fixed charge should increase by $2/ML in real terms over the 2012-17 regulatory period. At this rate of increase, cost reflective charges for this tariff group 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.

For the supplemented streams and Walsh River tariff group, current revenues are below cost-reflective revenues. After tariff rebalancing, the bundled fixed charge should increase by $2/ML in real terms until cost-reflectivity is achieved. Again, at this rate of increase, cost-reflective charges are achieved in the first year of the 2012-17 regulatory period for this tariff group. The recommended (unbundled) charge is then calculated by deducting the recommended river charge from the bundled charge.

The Authority notes that the Channel Re-Lift scheme segment is designated as a hardship scheme. However, current revenues for this tariff group are above cost reflective revenues. Therefore, no increase in revenues is required. For this tariff group, after tariff rebalancing, cost-reflective bundled charges apply in the first year of the 2012-17 regulatory period. The recommended (unbundled) charge is then calculated by deducting the recommended river charge from the bundled charge.

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

Tariff Group	*2010-11 Prices (indexed to 2012-13)*		*Irrigation WAE (ML)*	*Water Use (ML)*	*Current Revenue*	*Revenue from Cost-Reflective Tariffs*	*Difference*
	Fixed	*Variable*					
Channel outside a relift up to 100 ML – Bundled	31.01	24.40	16,721	10,203	767,490	739,068	28,423
Channel outside a relift 100 to 500 ML – Bundled	29.50	18.74	36,869	22,496	1,509,328	1,629,593	-120,624
Channel outside a relift above 500 – Bundled	23.53	14.95	54,290	33,126	1,772,913	2,399,624	-626,711
Supplemented streams and Walsh River – Bundled	17.61	12.61	28,069	17,127	710,177	744,388	-34,211
Channel Re-lift – Bundled	46.35	29.42	8,355	5,098	537,252	531,799	5,453

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

6.8 The Authority's Recommended Prices

The Authority's recommended prices to apply to the Mareeba-Dimbulah 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).

The Authority's recommended termination fees to apply to the Mareeba-Dimbulah Distribution System for 2012-17 are outlined below, 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 6.6: Recommended Medium Priority Prices for the Mareeba-Dimbulah 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***
	Access Charge^	475.40	489.20	512.76	528.88	545.00	564.48	578.59	593.06	607.88	623.08	638.66
Bulk	**River (Tinaroo Falls/Barron)**											
	Fixed (Part A)	2.80	2.88	3.00	3.12	3.20	3.32	14.36	14.72	15.09	15.47	15.86
	Volumetric (Part B)	14.06	14.47	15.16	15.64	16.11	16.69	0.74	0.76	0.78	0.80	0.82
Distribution System – unbundled	**River (Supplemented Streams & Walsh River)**											
	Fixed (Part C)	11.84	12.16	12.76	13.16	13.56	14.04	7.68	7.87	8.07	8.27	8.47
	Volumetric (Part D)	-3.60*	-3.70*	-3.87*	-4.00*	-4.11*	-4.26*	6.60	6.76	6.93	7.10	7.28
	Outside a re-lift up to 100 ML											
	Fixed (Part C)	22.96	23.64	24.80	25.56	26.32	29.28	21.82	22.93	23.50	24.09	24.69
	Volumetric (Part D)	6.19	6.37	6.68	6.89	7.11	7.36	11.49	11.78	12.07	12.37	12.68
	Outside a re-lift 100 to 500 ML											
	Fixed (Part C)	19.28	21.48	23.44	24.12	24.88	27.76	21.82	22.93	23.50	24.09	24.69
	Volumetric (Part D)	-0.03*	0.99	1.62	1.67	1.73	1.78	11.49	11.78	12.07	12.37	12.68
	Outside a re-lift more than 500 ML											
	Fixed (Part C)	15.88	17.24	18.08	18.60	19.20	21.88	11.99	14.34	16.80	19.37	22.06
	Volumetric (Part D)	-2.21*	-1.70*	-1.77*	-1.83*	-1.88*	-1.95*	11.49	11.78	12.07	12.37	12.68
	Re-lift											
	Fixed (Part C)	29.56	32.04	35.28	38.12	40.92	44.36	33.74	34.58	35.45	36.33	37.24
	Volumetric (Part D)	6.48	7.69	9.15	10.54	11.89	12.32	43.37	44.45	45.56	46.70	47.87

		2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Distribution System – bundled	**River Supplemented Streams & Walsh River**											
	Fixed (Part A)	14.64	15.04	15.76	16.28	16.76	17.36	nr	nr	nr	nr	nr
	Volumetric (Part B)	10.46	10.77	11.29	11.64	12.00	12.43	nr	nr	nr	nr	nr
	Outside a re-lift up to 100 ML											
	Fixed (Part A)	25.76	26.52	27.80	28.68	29.52	32.60	nr	nr	nr	nr	nr
	Volumetric (Part B)	20.25	20.84	21.84	22.53	23.22	24.05	nr	nr	nr	nr	nr
	Outside a re-lift 100 to 500 ML											
	Fixed (Part A)	22.08	24.36	26.44	27.24	28.08	31.08	nr	nr	nr	nr	nr
	Volumetric (Part B)	14.03	15.46	16.78	17.31	17.84	18.47	nr	nr	nr	nr	nr
	Outside a re-lift more than 500 ML											
	Fixed (Part A)	18.68	20.12	21.08	21.72	22.40	25.20	nr	nr	nr	nr	nr
	Volumetric (Part B)	11.85	12.77	13.39	13.81	14.23	14.74	nr	nr	nr	nr	nr
	Re-lift											
	Fixed (Part A)	32.36	34.92	38.28	41.24	44.12	47.68	nr	nr	nr	nr	nr
	Volumetric (Part B)	20.54	22.16	24.31	26.18	28.00	29.01	nr	nr	nr	nr	nr

Note: nr - not relevant. 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).

Table 6.7: Recommended Termination Fees ($/ML)

	Actual Prices				*Recommended Prices*				
	2008-09	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Outside Relift <100 ML to:									
Outside Relift 100-500 ML	12.18	12.35	13.59	15.68	0.00	0.00	0.00	0.00	0.00
Outside Relift >500 ML	60.16	59.71	67.19	76.33	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	107.80	106.38	120.41	157.19	182.79	187.36	192.05	196.85	201.77
Tinaroo Falls /Barron	222.04	219.29	248.36	302.01	456.98	468.40	480.11	492.12	504.42
Outside Relift 100-500 ML to:									
Outside Relift >500 ML	47.99	47.36	53.60	60.65	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	95.62	94.03	106.82	141.52	182.79	187.36	192.05	196.85	201.77
Tinaroo Falls /Barron	209.86	206.93	234.77	286.33	456.98	468.40	480.11	492.12	504.42
Outside Relift >500 ML to:									
Supp. Streams & Walsh River	47.63	46.67	53.22	80.87	182.79	187.36	192.05	196.85	201.77
Tinaroo Falls /Barron	161.87	159.57	181.18	225.68	456.98	468.40	480.11	492.12	504.42
Relift to:									
Outside Relift <100 ML	93.83	107.76	137.77	155.54	0.00	0.00	0.00	0.00	0.00
Outside Relift 100-500 ML	106.00	120.11	151.36	171.22	0.00	0.00	0.00	0.00	0.00
Outside Relift >500 ML	153.99	167.47	204.95	231.87	0.00	0.00	0.00	0.00	0.00
Supp. Streams & Walsh River	201.62	214.14	258.17	312.74	182.79	187.36	192.05	196.85	201.77
Tinaroo Falls /Barron	315.86	327.04	386.13	457.56	456.98	468.40	480.11	492.12	504.42
Supplemented Streams & Walsh River to:									
Tinaroo Falls /Barron	114.24	112.90	127.96	144.82	274.19	281.04	288.07	295.27	302.65

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

6.9 Impact of Recommended Prices

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

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APPENDIX A: FUTURE RENEWALS LIST

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

Asset	*Year*	*Description*	*Value ($'000)*
Arriga Distribution	2015-16	Replace Gate Actuation	37
	2021-22	Replace Gate Actuation	13
	2025-26	Replace Control Equipment	39
	2029-30	Design replacement for WB06A_01	33
	2030-31	Replace Gate Actuation	36
		Replace Regulating Gate	11
		Replace Control Equipment	10
	2031-32	Replace Pipe	54
Arriga Drainage	2012-13	Refurbish: Drains within the Arriga System; Individual identifiers on notifications	22
	2014-15	Replace Drainage Inlet 490.00M L	11
		Replace Drainage Inlet 940.00M L	11
	2016-17	Replace Drainage Inlet 2000.00M L	23
		Replace Drainage Inlet 3080.00M R	18
		Replace Drainage Inlet 2000.00M R	13
		Replace Drainage Inlet 2590.00M R	13
		Replace Drainage Inlet 2370.00M R	12
	2017-18	Refurbish: Drains within the Arriga System; Individual identifiers on notifications	23
	2020-21	Replace Fencing	241
	2021-22	Replace Rock Drop 2002M	69
		Replace Earth Drain 0-846.00M	68
		Replace Drainage Inlet 3420.00M L	42
		Replace Drainage Inlet 1750.00M L	35
		Replace Drainage Inlet 2370.00M L	35
		Replace Drainage Inlet 2910.00M L	31
		Replace Drainage Inlet 1420.00M L	23
		Replace Drainage Inlet 3700.00M R	15
		Replace Drainage Inlet 3700.00M L	14
		Replace Drainage Inlet 1750.00M R	13
		Replace Drainage Inlet 426.72M L	13
		Replace Drainage Inlet 3420.00M R	12
		Replace Drainage Inlet 1420.00M R	11
	2022-23	Refurbish: Drains within the Arriga System; Individual identifiers on notifications	22
	2027-28	Replace Earth Drain 0-1247.1M	115
		Replace Rock Drop 2495.60M	75
		Replace Fencing	35
		Refurbish: Drains within the Arriga System; Individual identifiers on notifications	22
	2029-30	10MDA36-REPAIR-DRAIN ARRIGA RW5_7_2-DI03	11
	2030-31	Replace Drainage Inlet 3614.93M L	11
	2032-33	Refurbish: Drains within the Arriga System; Individual identifiers on notifications	22
Atherton	2011-12	Repair Concrete Lining and Replace Joint Material	19

Asset	*Year*	*Description*	*Value ($'000)*
Distribution	2013-14	MDA S4.3 Refurbish Concrete Lining - replace/repair worst bays Locations to be based on condition and operational demands.	74
		Refurbish: Paint & Blast amil Gate	71
		Replace Gate Actuation	36
	2014-15	Refurbish: Paint & Blast amil Gate	43
		Replace Scour Valve 6572.59M	26
		Replace Scour Valve 6801.07M	26
		Replace Scour Valve 7352.08M	25
		Replace Scour Valve 7456.11M	25
		Replace Scour Valve 7526.67M	25
		Replace Scour Valve 8635.29M	25
		Replace Scour Valve 7870.67M	23
		Replace Scour Valve 8303M	23
		Refurbish Gate - repaint, guides, metwork refurb, seals as required	14
	2017-18	Replace Syn/Lin Chnl 7654.97-7751.25M	86
	2021-22	Replace Syn/Lin Chnl 7931.6-8267.1M	84
	2022-23	Refurbish: Repairs to Escape Mats in Plastic Lined Channel	11
	2023-24	Refurbish: Paint & Blast amil Gate	14
	2024-25	Refurbish: Paint & Blast amil Gate	42
		Refurbish Gate - repaint, guides, metwork refurb, seals as required	14
		Refurbish Outlet - (refer strategy) replace wheel, plate valve, slide gate, general refurbishment	13
	2025-26	Study: Preliminary and final design for replacement of P001 and P005 in 2006 as per C.M report in ma	33
	2026-27	Replace Pipeline 1.52-142.64M	49
		Replace Pipeline 793.09-882.70M	17
		Refurbish RRJ Siphons - repair leaks and joints - 2 leaks @ 4 k each on Atherton Creek - pushed out	17
		Replace Control Equipment	10
	2028-29	Refurbish: Paint & Blast amil Gate	56
		Replace Gate Actuation	36
	2033-34	MDA S4.3 Refurbish Concrete Lining - replace/repair worst bays Locations to based on condition and operational demands.	72
		Refurbish: Paint & Blast amil Gate	14
	2034-35	Refurbish: Paint & Blast amil Gate	42
		Refurbish Gate - repaint, guides, metwork refurb, seals as required	14
	2035-36	Replace Structure, 50Mm Meter Outlet	11
Biboohra Distribution	2011-12	Replace Controller	16
	2012-13	Replace Controller	35
	2015-16	Refurbish: Baffles not carrying out function; new refurbish strategy - confined space issue	17
		Replace Gate Actuation	13
		Refurbish Gate:	10
	2016-17	Replace Gate Actuation	60
		Replace Regulating Gate	11

Asset	*Year*	*Description*	*Value ($'000)*
	2017-18	Replace Scour Valve 1557.53M	22
	2024-25	10MDA18-REFURBISH-CHANNEL REPROFILING	23
	2025-26	Replace Control Equipment	29
		Refurbish Gate:	10
	2026-27	Replace Channel Lining 11698-11814M	61
		Replace Control Equipment	54
		Replace Controller	16
	2027-28	Replace Controller	34
	2028-29	Replace Control Equipment	76
		Replace Meter, Ults Vega	11
	2030-31	Replace Gate Actuation	13
		Replace Regulating Gate Outlet	11
	2031-31	Replace Gate Actuation	92
		Replace Inlet Structure 7591.20M	25
	2032-33	Replace Control Equipment	25
	2035-36	Replace Pipeline 678.18-967.74M	140
		Refurbish Gate:	10
Biboohra Drainage	2012-13	MDA S7.1-Re-establish drainage in Biboohra location to be confirmed 2008	17
Biboohra Pump Station	2013-14	Replace Switchboard	15
		MDA S2.7.1 Planning for replacement of PSTN design etc for 2015	11
		Replace Outlet Works	11
	2014-15	Replace Cable	40
Bruce Weir	2016-17	Replace Gate Actuation	34
		Replace Regulating Gate	12
	2027-28	Replace Scada Telemetry And Controls	35
	2031-32	Replace Gate Actuation	33
Collins Weir	2016-17	Replace Gate Actuation	34
	2019-20	Replace Flow Meter	11
	2027-28	Replace Control Equipment	30
	2031-32	Replace Gate Actuation	34
	2032-33	Replace Gate Valve	19
East Barron Distribution	2011-12	11MDAXX ADDITION OF AIR VENTS ABOVE EB03	23
		Study: Preliminary design and justification/options report	22
		09MDA06 REPLACE-PIPELINES EB3 AND EB4	11
	2012-13	Enhance: Installation of sub soil drainage system from storage down (6/7 KM)	56
		Replace Slide Gate	11
	2015-16	Replace Gate Actuation Eb04 O/T	34
		Refurbish gate - metwork, seals, guides - install annodes	17
	2016-17	Replace Actuator, Elec Rotork	13
		Replace Gate Actuation	13
		Replace Air Valve 885.51M	12
	2017-18	Replace Control Equipment	39
	2018-19	Replace Structure, 50Mm Meter Outlet	54
	2021-22	Replace Cable And Conduit	41
		Replace Gate Actuation	26
		Replace Structure, 150Mm Meter Outlet	15
		Replace Regulating Gate-Ebmc Offtake	11

Asset	*Year*	*Description*	*Value ($'000)*
	2022-23	Replace Air Valve, 100Mm Ari	22
	2024-25	Replace Rotating Weed Screen - Eb4	52
		Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration. Part of inspection and refurbish program of 2004 (R/208)	23
		Study: Preliminary Design costs for EB03 - P003including cost analysis	17
	2025-26	Replace Pipeline 807.72-1354.41M	127
		Refurbish gate - metwork, seals, guides - install anodes	17
	2026-27	Replace Air Valve 558.8M	12
	2030-31	Replace Gate Actuation Eb04 O/T	33
		Study: Preliminary Design costs for EB03 - P005including cost analysis	17
	2031-32	Replace Pipeline 1700.78M-2249.42M	128
		Replace Control Equipment	32
		Replace Scour Valve 10119.88M	21
		Replace Scour Valve 3352.8M	21
		Replace Scour Valve 6479.44M	21
		Replace Scour Valve 6667.5M	21
		Replace Scour Valve 9596.93M	21
		Replace Scour Valve 9852.05M	21
		Replace Pipeline 0-97.54M	20
		Change Out Electronics - replace PLC, radio, sensors etc-pushed out Oct 04 as replacement around 2011	17
		Replace Actuator, Elec Rotork	13
		Replace Gate Actuation	13
		Replace Scada Telemetry And Controls	12
	2032-33	Replace Control Equipment	39
	2033-34	Replace Structure, 150Mm Meter Outlet	15
	2034-35	Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration. Part of inspection and refurbish program of 2004 (R/208)	23
		Change Out – Mech & Elec meter component which is generally run to failure yet a capital job - corrective	18
	2035-36	Refurbish gate - metwork, seals, guides - install annodes	17
Leafgold Weir	2016-17	Replace Weir Gate Actuation	34
		Replace Weir Regulating Gate	14
	2027-28	Replace Control Equipment	29
	2031-32	Replace Weir Gate Actuation	33
Mareeba Distribution	2011-12	10MDAXX-REPLACE-GATE ACTUATORS MMA MC	37
		MDA S2.5 Refurbish: Removal of weed from balancing storage. In conjunction with West Barron & East Barron; im	27
		Replace Control/Telemetry Equipment	16
		Replace Gate Actuation	13
	2013-14	Replace Isolating Valve 2M	19
		Replace Isolating Valve 1M	19
	2014-15	Replace Scour Valve 365.76M	25
		Refurbish/Replace Amil Gate - As per Mareeba Strategies Rev C3.doc -carried out in 04	14
	2015-16	Replace Isolating Valve	19

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Gate Actuation	13
		Refurbish Gate - mwk, seals, actuator, anode etc - cost increased from $5K in Oct03 review	10
	2016-17	MDA S4.1 Study: Detailed design for replacement all as per 2008 Strategy review.	101
		Replace Isolating Valve	25
		MDA S4.1 Study: Detailed and Preliminary planning for replacement of pipeline Reviewed 2008 SJ	25
		Replace Standpipe 10705M	16
		Replace Gate, 920Mm U/S Awma	13
		Replace Air Valve 436M	12
		Replace Standpipe & Air Vent 13915.64M	12
		Replace Standpipe & Air Vent 15651.94M	12
		Replace Flow Meter	11
		Replace Flow Meter U/S	11
		Replace Pao/T 230 Bonaccorsi 212M R	11
		Study: Design for replacement of sections of M15_02	11
	2017-18	Replace Org Pipeline 2599.90-3512.73M	479
		Replace Pipeline 0-246.89M	163
		Replace Flow Meter U/S	34
		Change Out Electronics - replace PLC, radio, sensors etc	23
		Replace Flow Meter	23
		Replace Ultrasonic Probe	23
		Refurbish/Replace Amil Gate - As per Mareeba Strategies Rev C3.doc	14
		Refurbish Gate	10
	2018-19	Refurbish Baffle - seal baffle, refurb bypass valve if required, confined space, plastic liner with seal strip	17
	2019-20	Replace Scour Valve 2907.75M	24
		Replace Scour Valve 2726.45M	24
		Replace Isolating Valve 1M	22
		Replace Fire Hydrants	13
		Study: Design for replacement pipeline	11
	2020-21	Replace Pipeline 488-596M	24
		Replace Fire Hydrants	13
	2021-22	Study: Design for replacement of pipeline	28
		Replace Air Valve 11552M	14
		Replace Standpipe 16353.43M	12
	2022-23	Replace Pipeline 0-212M	76
		Replace Scour Valve 318.67M	24
		Refurbish Gate - paint, guides, difficult to remove, rollers, actuator refurb - remove dissimilar metal issue, fit anodes	17
	2023-24	Replace Meter, 200Mm Emag Abb	15
	2024-25	Replace Control Equipment	64
		Replace Cable And Conduit	16
		Replace Vertical Lift Gate 6403M	10
	2025-26	Study: Design costs associated with replacement of P003	39
		Replace Control Equipment	10
		Refurbish Gate - mwk, seals, actuator, anode etc - cost increased from $5K in Oct03 review	10

Asset	*Year*	*Description*	*Value ($'000)*
	2026-27	Replace Org Pipeline 768.10-1616.01M	301
		Replace Control Equipment	47
		10MDAXX-REPLACE-GATE ACTUATORS MMA MC	39
		Replace Control/Telemetry Equipment	17
		Replace Gate Actuation	13
	2027-28	Replace Control Equipment	69
		Replace Fire Hydrants	15
		Refurbish/Replace Amil Gate - As per Mareeba Strategies Rev C3.doc	14
		Refurbish Gate	10
	2028-29	Replace Pipeline 0-468	125
		Study: Design for replacement of sections of M9_1-P001	45
	2029-30	Replace Pipeline 0M-1097.28M	333
		Study: Design costs associated with various segment replacements in 2030	45
		Replace Cross Drain Culvert 2676M	33
		Replace Cross Drain Culvert 4285M	21
		Replace Cross Drain Culvert 895M	16
		Replace Cross Drain Culvert 579M	14
	2030-31	Replace Org Pipeline 1616.01-2599.90M	282
		Replace Org Pipeline 3770.29-4919.34M	238
		Replace Pipeline 0-137.16M	74
		Replace Org Pipeline 0-152.40M	67
		Replace Org Pipeline 3512.73-3770.29M	46
		Study: pipeline design to include: M01, M01A, M01B, M02, M14 & M14_01	44
		Replace Scour Valve 2372.67M	24
		Replace Scour Valve 3604.96M	24
		Replace Scour Valve 4341.27M	24
		Replace Scour Valve 4620.07M	24
		Replace Scour Valve 4834.30M	24
		Replace Bk Press Struct 3928.94M	23
		Replace Gate Actuation	13
		Replace Cross Drain Culvert 45.72M	12
	2031-32	Replace Pipeline 0-1348.68M	315
		Replace Pipeline 73.15-262M	39
		Replace Scour Valve 8466M	22
		Replace Scour Valve 8543M	22
		Replace Scour Valve 8755M	22
		Replace Scour Valve 8935M	22
		Replace Scour Valve 9047M	22
		Replace Air Valve 15684M	11
	2032-33	Replace Pipeline 2408.18-3353M	546
		Replace Pipeline 0-822.96M	435
		Replace Pipeline 11458.04-12170.66M	376
		Replace Pipeline 12231.87-12867.74M	335
		Replace Pipeline 10714-11314.18M	316
		Replace Pipeline 0-736.00M	301
		Replace Pipeline 10323-10714M	259
		Replace Pipeline 15931.90-16353.43M	128

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Pipeline 0-488M	105
		Replace Pipeline 9616-9835M	103
		Replace Pipeline 736.00-1094.00M	102
		Replace Pipeline 1094.00-1230.00M	73
		Replace Pipeline 0-149.2M	55
		Replace Pipeline 11314.18-11438.53M	54
		Replace Pipeline 149.2-390.14M	45
		09MDA09-REPLACE-PIPELINE M11-P001	31
		Replace Ultrasonic Probe	22
		09MDA10-REPLACE-PIPELINE M13-P002	22
		Refurbish Gate - paint, guides, difficult to remove, rollers, actuator refurb - remove dissimilar metal issue, fit anodes	17
	2033-34	Replace Surround Structure	23
		Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	10
	2035-36	Replace Concrete Structure 0M	110
		Replace Drop & Check Structure 280M	51
		Replace Drop & Check Structure 1274M	50
		Replace Drop & Check Structure 1425M	50
		Replace Drop & Check Structure 1555M	50
		Replace Drop & Check Structure 1971M	50
		Replace Drop & Check Structure 200M	50
		Replace Drop & Check Structure 2181M	50
		Replace Drop & Check Structure 2265M	50
		Replace Drop & Check Structure 2354M	50
		Replace Drop & Check Structure 3491M	50
		Replace Drop & Check Structure 372M	50
		Replace Drop & Check Structure 3768M	50
		Replace Drop & Check Structure 4065M	50
		Replace Drop & Check Structure 4505M	50
		Replace Drop & Check Structure 456M	50
		Replace Drop & Check Structure 513M	50
		Replace Drop & Check Structure 622M	50
		Replace Drop & Check Structure 733M	50
		Replace Drop & Check Structure 827M	50
		Replace Drop & Check Structure 1750M	47
		Replace Drop & Check Structure 2455M	47
		Replace Drop & Check Structure 4743M	47
		Replace Concrete Structure	38
		Replace Access Bridge 3569M	25
		Study: Design of pipeline replacement	20
		Replace Access Bridge 1943M	19
		Replace Access Bridge 2804M	19
		Replace Access Bridge 665M	19
		Replace Access Crossing 1005.84M	18
		Replace Outlet 5560M	18
		Replace Trapezoidal Check 2776M	15
		Refurbish Gate - mwk, seals, actuator, anode etc - cost increased from $5K in Oct03 review	10
Mda Scada	2011-12	10MDA21 UPGRADE SCADA (RADIOS & PLC) SCA	65

Asset	*Year*	*Description*	*Value ($'000)*
	2012-13	MDA S2.3 Upgrade/replace-Scada radios & PLC 8sight per @ approx $6K per site 5 year program	73
	2013-14	MDA S2.3 Upgrade/Replace - Hann Tableland Repeater TRIO Unit	34
		Change Out Electronics - replace PLC, radio, sensors etc	11
		Options Analysis - SCADA System Software Upgrade/Replacement	11
	2015-16	Replace Wms Operating System Software	384
	2016-17	Replace Cpu, 420	18
	2017-18	Change Out Electronics - replace PLC, radio, sensors etc	11
	2020-21	Replace Wms Operating System Software	378
	2022-23	Replace Scada Host Hp712/60	69
	2024-25	Replace Control Equipment	55
	2025-26	Replace Wms Operating System Software	372
	2026-27	Replace Control Equipment	22
		Replace Scada Moscad-L Controls	13
	2028-29	Replace Scada Telemetry And Controls	31
	2030-31	Replace Wms Operating System Software	371
		Replace Gateway Telemetry And Controls	36
	2031-32	Replace Cpu, 420	17
	2035-36	Replace Wms Operating System Software	371
North Walsh Distribution	2013-14	Replace Gate Actuation	12
		Replace Slide Gate 2113M	11
	2015-16	Replace Scour Valve 954.63.M	25
	2016-17	Replace Bk Press Struct 1459.69M	24
	2017-18	Replace Synth/Lin Chnl 852.70-2113.70M	309
		Replace Synth/Lin Chnl 8.38-702.75M	167
		Replace Synth/Lin Chnl 762.76-825.70M	15
		Replace Flow Meter	11
		Replace Meter, 250Mm Pa Tempress Incl Ss Pipe	11
		Replace Ultrasonic Probe At Outlet	11
	2018-19	Refurbish: Scour Valves-Upgrade to newstd,pipewrk & Wrapping; 5 valves at $2K each. Pushed out from 04	11
	2024-25	10MDA18-REFURBISH-CHANNEL REPROFILING	23
	2026-27	Replace Control Equipment	14
	2028-29	Replace Scada Telemetry And Controls	23
		Replace Gate Actuation	12
	2031-32	Replace Bk Press Struct 1031.75M	23
		Replace Mo 337 & 801 At 1491.39M	16
		Refurbish: Scour Valves-Upgrade to newstd,pipewrk & Wrapping; 5 valves at $2K each. Pushed out from 04	11
	2033-34	Replace Scour Valve 360M	29
		Replace Scour Valve 300M	15
	2034-35	Replace Pipeline 0-1190.70M	238
North Walsh Relift	2014-15	Replace Isolating Valve 15.24M	21
	2015-16	Replace Isolating Valve 2975.27M	44
		Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	38
		Replace Scour Valve 647.7M	25
	2016-17	Replace Scour Valve 198.12M	24

Asset	*Year*	*Description*	*Value ($'000)*
	2019-20	Replace Isolating Valve 1.52M	36
		Replace Structure, 200Mm Meter Outlet	12
	2020-21	Replace Structure, 50Mm Meter Outlet	26
		Replace Scour Valve 618.74M	24
	2021-22	Replace Scour Valve 1126.54M	24
	2022-23	Replace Scour Valve 1510.28M	24
	2023-24	Replace Structure, 50Mm Meter Outlet	52
		Replace Scour Valve 1812.95M	24
	2024-25	Study: Design for replacement of Asset - brett pushed this out from	56
		Replace Scour Valve 2446.32M	24
		Replace Scour Valve 349M	23
		Replace Scour Valve 63.09	23
		Replace Scour Valve 652.27M	23
	2025-26	Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	33
		Replace Scour Valve 2357.78M	24
		Replace Scour Valve 2840.74M	24
		Replace Scour Valve 3694.21M	24
		Replace Structure, 50Mm Meter Outlet	21
	2026-27	Replace Scour Valve 3476.24M	24
	2027-28	Replace Scour Valve 3605.78M	24
	2028-29	Replace Scour Valve 3774.95M	24
	2031-32	Study: $50k Design for replacement	56
	2032-33	Replace Pipeline 755.9-2670.05M	566
		Replace Structure, 200Mm Meter Outlet	27
	2033-34	Replace Structure, 50Mm Meter Outlet	18
	2035-36	Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	33
		Replace Scour Valve 542.54M	24
Paddys Green 'A' Pump Station	2011-12	10MDAXX REFURBISH PSTN VALVES MDA S2.7.3	33
	2013-14	Replace Pressure Relief Valve	26
		Replace Monorail Crane	11
	2015-16	Replace Reflux Valve .75M	17
	2016-17	Replace Isolating Valve	24
		Replace Isolating Valve .5M	12
	2017-18	Replace Reflux Valve	17
	2018-19	Replace Electric Motor	35
		Replace Reflux Valve	17
	2020-21	Replace Pump	747
		Replace Electric Motor	70
		Replace Flow Meter, 800Mm Ults Siemens	25
	2025-26	Refurbish Pump - wear rings, bushes, impeller repear	28
	2026-27	Replace Pump Station Building	67
		10MDAXX REFURBISH PSTN VALVES MDA S2.7.3	27
	2031-32	Replace Switchboard	205
		Replace Cable	114
Paddys Green 'B' Pump Station	2014-15	Replace Control Equipment	121
	2015-16	Replace Pump	87
		Replace Electric Motor	34

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Discharge Valve	11
		Replace Inlet Valve	11
	2017-18	Replace Electric Motor	17
	2020-21	Replace Flow Meter, 575Mm Ults Siemens	23
		Refurbish: As per strategy, condition assessment	19
	2021-22	Replace Cable	57
	2026-27	Replace Security Fence	13
	2027-28	Replace Pump Station Building	55
	2029-30	Replace Control Equipment	117
	2032-33	Replace Switch Board	193
	2035-36	Refurbish: As per strategy, condition assessment	19
		Refurbish Motor - full bearing & insulation, consider replacement if time permits	11
		Refurbish Pump - wear rings, bushes, impeller repear etc as required	11
Pipe Replacement	2012-13	Pipe replacement	540
	2013-14	Pipe replacement	548
	2014-15	Pipe replacement	556
	2015-16	Pipe replacement	565
Price Ck 'A' Relift Pump Stn	2011-12	Replace Control/Telemetry Equipment	21
	2012-13	Replace Reflux Valve	14
		Refurbish Pump - wear rings, bushes, impeller repear / replace etc as required	13
	2013-14	Replace Control Equipment	47
	2014-15	Replace Pump	182
	2017-18	Replace Electric Motor	22
		Replace Pressure Relief Valve	14
		Replace Pressre Relief Valve	13
	2021-22	Replace Switchboard	180
		Replace Cable	94
	2024-25	Replace Control/Telemetry Equipment	21
	2025-26	Refurbish Pump - wear rings, bushes, impeller repear / replace etc as required	13
	2026-27	Replace Control Equipment	46
		Refurbish Cntl - replace electronic equipment, PLC etc Obsolescence as required	22
	2029-30	Replace Electric Motor	16
	2032-33	Replace Inlet Struct Pump Stn 29156M	115
		Refurbish Cntl - replace electronic equipment, PLC etc Obsolescence as required	22
Price Ck 'B' Relift Pump Stn	2013-14	Replace Pump	89
		Replace Control Equipment	50
	2016-17	Replace Isolating (Inlet) Valve	17
	2021-22	Replace Switchboard	133
		Replace Cable	41
		Replace Monorail Crane (Pump)	19
		Replace Delivery Pipe	14
	2026-27	Refurbish Cntl - replace electronic equipment, PLC etc Obsolescence as required	11
	2027-28	Replace Pump Station Building	39

Asset	*Year*	*Description*	*Value ($'000)*
	2028-29	Replace Control Equipment	49
	2033-34	Refurbish Cntl - replace electronic equipment, PLC etc Obsolescence as required	11
		Install: Construction of Security Fence on upper storage	10
Price Creek A Rising Main	2012-13	Replace Isolating Valve 856.49M	10
	2032-33	Replace Security Fencing - Lower Storage Tank	16
Price Creek B Rising Main		Replace Security Fence And Gates-Top Storage	17
Price Creek Relift Cathodic Pr	2026-27	Replace Cathodic Protection System	39
	2031-32	Replace Groundbed (Impressed Current)	41
Price Creek Relift Distrib	2011-12	Bridge handover TRC-McLeod Road;	55
		Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	13
	2012-13	Bridge handover TRC- Mutchilba Road; 2nd Channel: SW11Beside SW11 Pipeline.(B Statin Price Creek);	56
	2021-22	Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	12
	2031-32	Replace Scour Valve 2820.62M	22
		Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	12
Solanum Weir	2016-17	Replace Gate Actuation	24
	2019-20	Replace Flow Meter	11
	2021-22	Replace Control/Telemetry Equipment	17
	2027-28	Replace Control Equipment	29
	2031-32	Replace Gate Actuation	23
South Walsh Distribution	2011-12	Replace Fencing D/Opass	28
		Refurbish: MDA S2.5 Strategy to remove weeds from Balancing Storage	11
	2012-13	Refurbish: Amil Gate	28
		Replace Isolating Valve 1.42M	11
	2013-14	Refurbish: Amil Gate	28
	2014-15	Refurbish: Amil Gate	64
		Refurbish Pwks - install/repair/replace protections works as required - Removed from 04 budget proposal and increased period fron 5 Oct 03 Review	57
		Refurbish: amil Gates	14
	2015-16	Refurbish: Amil Gate	92
		Replace Gate Actuation	34
		Refurbish:Amil Gates	14
	2016-17	Replace Smo/T 556 Cattarossi 83.82Mr	45
		Replace Smo/T 567 Klaricich 431.29Ml	45
		Refurbish: amil Gates	14
		Replace Cpu, 420	12
	2017-18	Study: Design of replacement pipeline including 2019 components	40
		Replace Isolating Valve 0.6M	19
		Replace Flow Meter	11

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Flow Meter D/S	11
		Replace Flow Meter U/S	11
		Study: Design of replacement pipeline	11
	2018-19	Replace Pipeline 0-645.87M	141
		Replace Pipeline 1454.89-1803.50M	70
		Replace Structure, 150Mm Scour Outlet	60
		Replace Pressure Reducer 0M	32
		Replace Flow Meter	23
		Refurbish : Amil Gate	14
		Refurbish Amil gate	14
		Replace Structure, 50Mm Meter Outlet	13
		Replace Umo/T C423 Hales 475.20M L	11
		Study: Design for replacement in of sections of SW17_02	11
		Study: Design for replacement in of sections of SW24	11
	2019-20	Replace Pipeline 1976.50-3951.12M	452
		Refurbish: Plastic relining of bench flime	224
		Replace Scour Valve 18297.75M	40
		Replace Valve, 150Mm Gate At 21851.72M	18
		Replace Valve, 150Mm Gate At 31799.17M	15
		Replace Valve, 150Mm Gate At 22291.55M	14
		Replace Flow Meter D/S	11
		Replace Flow Meter U/S	11
		Replace Pao/T 620 Infanti 2M E	11
		Replace Regulator (Amil) 1539.10M	11
		Replace Regulator (Amil) 2139M	11
		Replace Regulator (Amil) 3294.89M	11
		Replace Regulator (Amil) 935.60M	11
		Replace Ultrasonic Probe Outlet	11
	2020-21	Replace Scour Valve 934M	11
	2021-22	Replace Overflow Pipe	229
		Study: Design for replacement of asset in 2023	224
		Replace Pipe D/Opass	175
		Replace Pipe 76.20-102.70M Culvert	46
		Replace Gate 1 Actuation (Left Bank)	33
		Replace Gate 2 Actuation (Right Bank)	33
		Replace Gate Actuation	33
		Replace Structure, 50Mm Meter Outlet	11
		Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	10
	2022-23	Refurbish: Amil Gate	28
	2023-24	Replace Pipe Siphon	1,489
		Replace Concrete	925
		Replace Pipe	542
		Replace Cross Drain Culvert 31324.3M	42
		Replace Cross Drain Culvert 36130.1M	40
		Replace Cross Drain Culvert 52536.97M	33
		Replace Cross Drain Culvert 51774.06M	29
		Refurbish: Amil Gate	28
		Replace Cross Drain Culvert 17552.5M	27
		Replace Cross Drain Culvert 54389.34M	16

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Cross Drain Culvert 6138.67M	14
		Replace Cross Drain Culvert 4785.36M	13
		Replace Cross Drain Culvert 11105.39M	12
		Replace Cross Drain Culvert 6723.89M	12
		Replace Meter, 50Mm Pw Elster	12
		Replace Cross Drain Culvert 8214.36M	11
		Replace Cross Drain Culvert 7549.9M	10
	2024-25	Refurbish: Amil Gate	62
		Replace Scour Outlet 1941.00M	39
		10MDA18-REFURBISH-CHANNEL REPROFILING	23
		Refurbish: amil Gates	14
		Replace Structure, 200Mm Meter Outlet	13
	2025-26	Replace Concrete	3,154
		Replace Pipe	1,662
		Refurbish: Amil Gate	76
	2026-27	Replace Control Equipment	104
		Replace Structure, 150Mm Scour Outlet	59
		Replace Scour Valve 10305.29M	33
		Replace Scour Valve 4962.75M	28
		Replace Scour Valve 5116.98M	26
		Refurbish: amil Gates	14
	2027-28	Replace Control Equipment	32
	2028-29	Refurbish : Amil Gate	14
		Replace Isolating Valve 1.6M	10
	2029-30	Replace Pipeline 2726.10 - 4728.97M	432
		Replace Pipeline 20 - 589M	133
		Replace Pipeline 2947.70-3371.09M	93
		Replace Pipeline 0-57.52M	37
		Replace Pipeline 770 - 971.70 M	35
		Replace Scour Valve 3571.34M	27
		Replace Scour Valve 3831.03M	27
		Replace Scour Valve 3707.28M	24
		Replace Scour Valve 54180.97M	21
		Replace Structure, 200Mm Meter Outlet	19
		Replace Air Valve 2726.10 M	12
	2030-31	Replace Gate Actuation	33
		Replace Scour Valve 609.60M	24
		Replace Scour Valve 775.87M	24
		Replace Scour Valve D/Opass	24
		Replace Scour Valve 49768.41M	21
		Replace Scour Valve 53421.66M	21
		Replace Scour Valve 53852.92M	21
		Replace Scour Valve 53955.39M	21
		Refurbish: Amil Gate	14
		Refurbish:Amil Gates	14
	2031-32	Replace Scour Valve 3036.72M	32
		Replace Scour Valve 272.8M	24
		Replace Scour Valve 609.6M	24
		Replace Scour Valve 883.92M	24

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Air Valve 2936.27M	12
		Replace Cpu, 420	12
		Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	10
	2032-33	Study:Design for replacement in 2033	33
		Refurbish: Amil Gate	28
		Replace Scour Valve 1572M	24
		Replace Scour Valve 2110.60M	24
		Study:Design for replacement in of sections of SW17_01	11
		Replace Regulating Gate	11
	2033-34	Replace Amil Gate	39
		Refurbish: Amil Gate	28
		Replace Scour Valve 3908.45M	27
		Replace Scour Valve 4168.44M	27
		Replace Inlet Siphon	26
		Replace Scour Valve 1219M	24
		Refurbish Catch Drains - grade, remove silt & vegetation, stabilise	17
		Replace Outlet Siphon	16
		Refurbish Amil gate	14
	2034-35	Refurbish: Amil Gate	62
		Study: Design of replacement pipeline in 2035	33
		Replace Channel Overflow 4322.06M	20
		Replace Drop & Check Struct 6352.03M	19
		Replace Drop & Check Struct 6467.86M	19
		Refurbish: amil Gates	14
	2035-36	Replace Pipe	2,034
		Replace Concrete Work	465
		Replace Pipeline 57.52-1268.1M	398
		Replace Pipeline 2637.2M-2947.7M	97
		Refurbish: Amil Gate	76
		Replace Outlet Siphon	35
		Replace Inlet Siphon	29
South Walsh Drainage	2012-13	Refurbish drains RGG 9/2/05	22
	2014-15	Replace Drainage Inlet 1341.12M L	11
		Replace Drainage Inlet 1624.58M L	11
	2016-17	Replace Drainage Drop 572.72M	23
	2021-22	Replace Rock Drop 112.50M	41
		Replace Scour Protection (Concrete)	24
Southedge Distribution	2011-12	Repair Concrete Lining and Replace Joint Materials	62
		Replace Isolating Valve 2125.98M	11
	2012-13	Replace Scour Valve 49717.10M	22
	2013-14	Replace Isolating Valve 1535.58M	11
	2016-17	Refurbish/Replace Amil Gate - As per Mareeba Strategies Rev C3.doc	111
		MDA S4.1 Study: Preliminary design and Detailed Design ALL. 2008 SJ	101
	2017-18	Replace Pipeline 0-304.80M	192
		Replace Flow Meter	23
		Replace Flow Meter (Inlet)	11

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Pump Well O/T849 46080M Unused	11
		Replace Ultrasonic Probe (Storage)	11
	2018-19	Replace Scour Valve 1001.57M	23
		Replace Scour Valve 393.57M	23
		Replace Scour Valve 683.15M	23
		Replace Scour Valve 200.71M	23
		Replace Scour Valve 518.24M	23
		Replace Scour Valve 779.31M	23
		Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	22
	2019-20	Replace Control Equipment	24
	2021-22	Change Out Electronics - replace PLC, radio, sensors etc	11
	2022-23	Replace Synthetic Lining 51681-52018M	114
		Replace Synthetic Lining 51440-51650M	71
	2023-24	Replace Scour Valve 50881.90M	24
		Replace Scour Valve 52331.72M	24
		Replace Scour Valve 49837.20M	22
	2025-26	Replace Control Equipment	34
	2026-27	Refurbish/Replace Amil Gate - As per Mareeba Strategies Rev C3.doc	108
		Replace Control Equipment	26
	2028-29	Refurbish assembly - refer strategy, tapping band, riser, valves to std configuration	20
	2029-30	Study: Design of WB12 Replacement. Was 2006 with replacement 2005 so changed date to 2005-replacement scheduled 2008/9; chgd again by RGG 8Feb2005 to 2010 - CM to 2030 in March 05	56
		Replace Pipeline 0-91.44M	25
	2030-31	Replace Pipeline 365.76-1356.36M	320
		Replace Pipeline 2125.98-3440.27M	316
		Replace Pipeline 1590.45-2125.98M	132
		Replace Pipeline 4.27-365.76M	124
		Replace Scour Valve 2479.85M	24
		Replace Scour Valve 2917.24M	24
		Replace Scour Valve 3219.30M	24
		Replace Scour Valve 750.72M	24
		Replace Bk Press Struct 1535.58M	23
		Replace Bk Press Struct 2125.98M	23
		Replace Pipeline 1535.58-1590.45M	16
		Change Out Electronics - replace PLC, radio, sensors etc	11
	2032-33	Replace Pipeline 0-731.52M	231
		Study: Study: Design of WB11 Replacement chgd by RGG- then byb CM in March 05	33
	2033-34	Replace Pipeline 4.27-573.02M	186
		Replace Pipeline 0-470.61M	126
	2034-35	Replace Control Equipment	24
		Replace Pipe	11
	2035-36	Replace Scour Valve 1005.30M	24
		Replace Scour Valve 1327M	24
		Replace Scour Valve 2087.50M	24

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Scour Valve 468M	24
System	2015-16	Refurbish: Minor Channel Offtake Gates-slide gates at front of wheels	34
	2025-26	Refurbish: Minor Channel Offtake Gates-slide gates at front of wheels	33
	2035-36	Refurbish: Minor Channel Offtake Gates-slide gates at front of wheels	33
Walsh Bluff Distribution	2011-12	Replace Control/Telemetry Equipment	18
	2013-14	Replace Gate Actuation	34
	2014-15	Replace Gate Actuation	22
	2015-16	Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	14
	2016-17	Replace Valve, 150Mm Gate	15
	2017-18	Change Out Electronics - replace PLC, radio, sensors etc	23
	2019-20	Replace Ultrasonic Probe	22
		Replace Flow Meter	11
	2024-25	Replace Control Equipment	31
		Refurbish: Major desilting of channel above requirements of corrective maintenance. Moved out from 04 and changed from period 5 - Oct 03 review	22
	2025-26	Replace Scada Telemetry And Controls	36
		Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	14
	2026-27	Replace Control/Telemetry Equipment	18
	2028-29	Replace Gate Actuation	33
	2029-30	Replace Gate Actuation	22
	2030-31	11MDA10 Replace Failed Meters 8 off	11
	2031-32	Replace Vertical Lift Gate	48
		Replace Control Gate	47
		Replace Amil Gate	39
		Replace Scour Valve 9165.95M	37
		Replace Scour Valve 8523.51M	32
		Replace Antenna Structure	13
		Replace Scada Tower Structure	12
	2035-36	Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	14
West Barron Distribution	2011-12	Replace Gate, Verticle Lift	93
		08MDA04-2012-INSTALL BARRIER FENCE TO CO	90
		10MDA24 REPLACE NUTS/WASHERS-GREAT WALL	32
		MDA S2.2 Review and install regulatry sign to comply with policy and standards.	22
		Review Asset Condition and Managment Options - Cherry Creek Access Bridge AC01	11
		Review Condition and Options/Management - Springs Creek Access Bridge AC02	11
	2012-13	MDA S4.4-Refurbish: Bracing beams based on condition and risk.	213
		Replace Access Bridge - Cherry Ck	54
		Replace V/Lift Gate (Armco)	23
		Replace Scour Valve 24213.1M	15
		MDA S2.2 Review and install regulatry sign to comply	11

Asset	*Year*	*Description*	*Value ($'000)*
		with policy and standards.	
		Refurbish: Desilt and re-stabilise Drainage Channels	11
	2013-14	Bridge handover TRC - Randazzo Road.	57
		Refurbish: Desilt and re-stabilise Drainage Channels	11
	2014-15	Refurbish: Amil Gates paint, bearings, fittings, anodes including removal & blasting	29
		Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	25
		Replace Gate 2 Actuation	22
		Refurbish : Amil Gates	14
		Refurbish: Amil Gate paint, bearings, fittings, anodes including removal & blasting -	14
		Refurbish: Amil Gates paint, bearings, fittings, anodes including removal & blasting	14
		Refurbish Gate - paint, frame, anodes etc	10
		Refurbish: Vertical Lift Gate - paint, bearings, fittings, anodes including removal & blasting	10
		Refurbish: Vertical lift gate in conjunction with Amil	10
		Refurbish: Vertical lift gate in conjuntion with Amil	10
	2015-16	Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	53
		Replace Gate 1 Actuation	25
		Refurbish: Rotating screens	18
		11MDAXX SAFETY/CHANNEL ACCESS PROJECT. 2	16
		Change Out: Actual valve; Refurbish structuree, WH&S issues, confined space; Replace lid with aluminium	16
		Refurbish: Amil Gates, paint, bearings, fittings, anodes including removal & blasting	14
		Refurbish: Vertical Lift Gate	10
	2016-17	MDA S2.1-Refurbish Roads and berm accross the scheme. locations to be confirmed	153
		Replace Access Bridge 19921.73M	52
		Replace Scour Valve 24248.9M	27
		Replace Scour Valve 42909.70M	22
	2017-18	Replace Syn/Lin Chnl 38142.67-40917.1M	712
		Replace Control Equipment	34
		Refurbish/Replace Amil Gate - As per Mareeba Strategies Rev C3.doc	31
		Replace Gates 1 And 2 Actuation	28
		Replace Gates 3 And 4 Actuation	28
		Replace Regulating Gate 1	18
		Replace Regulating Gate 2	18
		Replace Regulating Gate 3	18
		Replace Regulating Gate 4	18
		Change Out Electronics - replace PLC, radio, sensors etc	17
		Refurbish Assembly - install std configuration to prevent failure, strategy	12
	2018-19	09MDA16-INSTALL MAINS ELEC, AUTO GATES	64
		Replace Actuator, Elec Rotork 3 Phase	47
		Refurbish: amil Gates	34
		Refurbish: Vertical lift gates	20

Asset	*Year*	*Description*	*Value ($'000)*
		Refurbish: Amil Gate reurbishment	14
		Refurbish: Gate	14
		10MDAXX DECOMMISSION UNUSED METER OT	13
		Refurbish: Desilt and re-stabilise Drainage Channels	11
	2019-20	Replace Control Equipment	37
	2020-21	Replace Ultrasonic Probe	57
		Replace Flow Meter D/S	23
		Replace Flow Meter U/S	23
		11MDAXX SAFETY/CHANNEL ACCESS PROJECT. 2	16
		Replace Flow Meter	11
		Replace Meter Sensors, Ults Accusonic (X8)	11
	2021-22	Replace Access Bridge 16702.40M	52
		Replace Access Bridge 17419.32M	52
		Replace Access Bridge 18434.30M	52
		Replace Access Bridge 18838.16M	52
		Replace Access Bridge 21012.91M	52
		Replace Access Bridge 21704.81M	52
		Replace Access Bridge 23052.02M	52
		Replace Weed Deflector	24
		Replace Scour Valve 41979M	21
		Refurbish: Rotating screens	18
	2023-24	Replace Fish Screens (24)	303
		Replace Display Unit, Accusonic	51
		Replace Control Gates (24)	45
		09MDA16-INSTALL MAINS ELEC, AUTO GATES	21
		Replace Sensor, Pressure Esterline	20
		Replace Safety Fence	15
		Replace Scour Valve	14
		Change Out Electronics - replace PLC, radio, sensors etc	11
	2024-25	Refurbish: Amil Gates paint, bearings, fittings, anodes including removal & blasting	28
		Replace Drain Valve	28
		Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	24
		10MDA18-REFURBISH-CHANNEL REPROFILING	23
		Replace Cable And Conduit	20
		Refurbish : Amil Gates	14
		Refurbish: Amil Gate paint, bearings, fittings, anodes including removal & blasting -	14
		Refurbish: Amil Gates paint, bearings, fittings, anodes including removal & blasting	14
		Refurbish: Desilt and re-stabilise Drainage Channels	11
		Refurbish Gate - paint, frame, anodes etc	10
		Refurbish: Vertical Lift Gate - paint, bearings, fittings, anodes including removal & blasting	10
		Refurbish: Vertical lift gate in conjunction with Amil	10
		Refurbish: Vertical lift gate in conjuntion with Amil	10
	2025-26	MDA S4.4-Refurbish: Bracing beams based on condition and risk.	211
		Replace Rotating Weed Screen - Wb7	111

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Vertical Lift Gate	54
		Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	52
		Refurbish: Repairs to concrete lining	33
		11MDAXX SAFETY/CHANNEL ACCESS PROJECT. 2	16
		Refurbish: Amil Gates, paint, bearings, fittings, anodes including removal & blasting	14
		Refurbish: Vertical Lift Gate	10
	2027-28	Replace Vertical Lift Gate	132
		Refurbish/Replace Amil Gate - As per Mareeba Strategies Rev C3.doc	31
		Refurbish: Channel Profiling	22
		Refurbish: Rotating screens	18
		Replace Cable And Conduit	12
		Replace Recorder Hut	11
		Refurbish Assembly - install std configuration to prevent failure, strategy	10
	2028-29	09MDA16-INSTALL MAINS ELEC, AUTO GATES	64
		Replace Display Unit, Accusonic	52
		Replace Control Equipment	36
		Refurbish: amil Gates	34
		Refurbish: Vertical lift gates	20
		Change Out: Actual valve; Refurbish structuree, WH&S issues, confined space; Replace lid with aluminium	15
		Refurbish: Amil Gate reurbishment	14
		Refurbish: Gate	14
		Replace Cable And Conduit	12
	2029-30	Replace Air Valve 5455.23M	47
		Replace Gate 2 Actuation	21
	2030-31	MDA S2.1-Refurbish Roads and berm across the scheme. locations to be confirmed	150
		10MDA12 REFURBISH CONC CHANNEL LINING -	65
		Replace Gate 1 Actuation	24
		11MDAXX SAFETY/CHANNEL ACCESS PROJECT. 2	16
		Refurbish: Desilt and re-stabilise Drainage Channels	11
	2031-32	Replace Scour Valve 6812.86M	95
		Replace Control Gate (4)	24
		Replace Scour Valve 41063.00M	21
		Replace Scour Valve 41503.90M	21
		Replace Scour Valve 42234.10M	21
		Replace Scour Valve 42673.60M	21
		Refurbish: Desilt and re-stabilise Drainage Channels	11
	2032-33	Replace Control Equipment	33
		Replace Gates 1 And 2 Actuation	27
		Replace Gates 3 And 4 Actuation	27
	2033-34	Replace Display Unit, Accusonic	51
		Replace Actuator, Elec Rotork 3 Phase	46
		Refurbish: Rotating screens	18
		Change Out Electronics - replace PLC, radio, sensors etc	11
	2034-35	Replace Pipe	761

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Control Equipment	37
		Refurbish: Amil Gates paint, bearings, fittings, anodes including removal & blasting	28
		Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	24
		Refurbish: Vertical lift gate in conjunction with Amil	18
		Refurbish : Amil Gates	14
		Refurbish: Amil Gate paint, bearings, fittings, anodes including removal & blasting -	14
		Refurbish: Amil Gates paint, bearings, fittings, anodes including removal & blasting	14
		Refurbish Gate - paint, frame, anodes etc	10
		Refurbish: Vertical Lift Gate - paint, bearings, fittings, anodes including removal & blasting	10
		Refurbish: Vertical lift gate in conjunction with Amil	10
	2035-36	Replace Pipe Siphon (2036)	2,554
		Replace Access Bridge - Springs Ck	54
		Refurbish: Amil/Vertical lift Gates -10 off, paint, bearings, fittings, anodes including removal & blasting	52
		Replace Cross Drain Culvert 8536.23M	24
		11MDAXX SAFETY/CHANNEL ACCESS PROJECT. 2	16
		Replace Cross Drain Culvert 6474.87M	15
		Replace Cross Drain Culvert 8638.03M	15
		Replace Cross Drain Culvert 8915.40M	14
		Refurbish: Amil Gates, paint, bearings, fittings, anodes including removal & blasting	14
		Replace Cross Drain Culvert 6333.13M	13
		Replace Cross Drain Culvert 6294.12M	11
		Refurbish: Vertical Lift Gate	10