QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater
Irrigation Price Review: 2012-17
Volume 2
Eton Water Supply Scheme

November 2011

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SUBMISSIONS

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

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

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

Confidentiality

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

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

Public access to submissions

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

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

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GLOSSARY

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

EXECUTIVE SUMMARY

Ministerial Direction

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

Summary of Price Recommendations

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

Table 1: Recommended Prices for the Eton WSS ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Bulk/Channel (Bundled)											
Fixed (Part A)	38.64	39.76	41.68	43.80	48.44	52.20	na	na	na	na	na
Volumetric (Part B)	14.86	15.29	16.03	16.85	18.64	19.31	na	na	na	na	na
Bulk (Unbundled)											
Fixed (Part A)	na	na	na	na	na	na	24.74	25.36	25.99	26.64	27.30
Volumetric (Part B)	na	na	na	na	na	na	4.22	4.32	4.43	4.54	4.66

Note: All customers source water from the channel system; hence, prior to 2012-13 there was only a bundled price for Eton customers. Source: Actual Prices (SunWater, 2011al) and Recommended Prices (QCA, 2011).

Draft Report

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

Volume 2, which comprises scheme specific reports, should be read in conjunction with Volume 1. Also relevant is the Draft Report on Eton Distribution System.

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, the publication of Issues Papers.

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

1. ETON WATER SUPPLY SCHEME

1.1 Scheme Description

The Eton water supply scheme (WSS) is located near the town of Mackay. The predominant use of irrigation water is for sugar cane. Table 1.1 details the volume of water allocation entitlements (WAE) in the Eton WSS.

There is also 504 ML of Risk WAE; however, this is not identified as a separate tariff group in the scheme's network service plan (NSP) (SunWater, 2011). The Eton WSS has a total of 307 customers.

Table 1.1: Water Access Entitlements (ML)

Customer Group	*Irrigation WAE*	*Total WAE*
High A	-	700
High B	52,675	52,675
Risk	504	504
Distribution Losses High A	-	3,089
Distribution Losses High B	-	6,295
Total	**53,177**	**63,263**

Source: SunWater (2011am).

1.2 Bulk Water Infrastructure

The bulk water service involves the management of storages and WAEs in accordance with regulatory requirements and the delivery of water to customers in accordance with their WAE.

The full supply storage capacity and age of the key infrastructure are detailed in Table 1.2.

Table 1.2: Bulk Water Infrastructure in the Eton WSS

Storage Infrastructure	*Capacity (ML)*	*Age (years)*
Kinchant Dam	62,800	34
Mirani Diversion		
Pump Station 1	Combined maximum capacity of pump stations is 910 ML/day	31
Pump Station 2		18
Pump Station 3		17
Diversion Channel		

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

The characteristics of the bulk water assets are:

(a) Kinchant Dam was constructed to store water pumped from the Pioneer River and to capture flows from Sandy Creek; and

(b) Mirani Diversion consists of three pump stations and a diversion channel. The pump stations are located on the Mirani Weir which is not part of the Eton WSS (it is a Pioneer River WSS asset). Between them, the pump stations use nine submersible pumps with a combined maximum capacity of 910 ML/day. The pumps discharge into the Mirani Diversion Channel which in turn discharges into Kinchant Dam. The Pioneer River Resource Operations Plan (ROP) specifies that the pumps can only be used when flood levels in the Pioneer River exceed a prescribed level.

The location of the Eton WSS and key infrastructure is shown in Figure 1.1.

1.3 Network Service Plans

The Eton WSS NSP presents SunWater's:

(a) existing service standards;

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

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

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

1.4 Consultation

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

(a) invited submissions from interested parties;

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

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

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

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

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

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

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

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

Figure 1.1: Eton WSS Locality Map

Source: SunWater (2011).

2. REGULATORY FRAMEWORK

2.1 Introduction

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

During the negotiations that preceded the 2006-11 price path, the Eton WSS 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 Eton WSS:

(a) the possible removal of 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;

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

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

(e) outbreak of noxious weeds;

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

(g) replacement of Mirani Pump Station 2 (which has not been included in the renewals expenditure forecast).

Other Stakeholders

Mackay Irrigation Stakeholders (MIS, 2010) expressed support for the continuation of the price cap as the form of price control.

Eton Irrigators Advisory Committee (EIAC, 2011a) submitted that:

(a) metering costs for new metering standards will be a risk to irrigators as SunWater will pass on the cost, probably through renewals with an adjustment in the next price path; and

(b) any levy or charge in relation to the Authority regulation of prices should be presented at the start of the next price path, not mid-period.

EIAC considered that, as a large organisation, SunWater should be expected to manage any risks associated with its assets and hold the appropriate level and type of insurance against each asset.

EIAC (2010) noted that SunWater's reporting of full (100%) announced allocations is misleading, a situation which is exacerbated in drier years and by the implementation of the Pioneer Valley Water Resource Plan (WRP) which has reduced allocations of groundwater supply.

MIS (2010) submitted that growers tend to not irrigate in the first quarter of the water year when the crop can better cope with moisture stress, and hold announced allocation in their account for use in the most critical growth period late in the seasons (December and May).

EIAC (2010, 2011a) submitted that infrastructure issues are impacting the reliability of supply. In particular:

(a) foundation issues at Kinchant Dam have necessitated operating the dam at a lower than normal full supply level which results in more frequent flood releases and operational difficulties with water harvesting from Pioneer River;

(b) the deflation of the fabri-dam on Mirani Weir has reduced pumping opportunities from the Pioneer River, particularly during low flow periods when the fabri-dam would normally be inflated. The deflation of the fabri-dam and the impact on reliability of supply was also raised by MIS;

(c) Mirani Pump Station 2 has been out of service for a number of years and, although only of small capacity, this reduces the available pumping capacity at times when river flows dictate pumping at full design capacity for the system. EIAC recommended the reinstatement of the pump station be addressed immediately and in full consultation with irrigators. Further, SunWater should not include this in the NSP as a possible price reset trigger; and

(d) Mirani Pump Station 3 was designed to be utilised in conjunction with the inflated fabri-dam. Hence, further inefficiencies are created as there is not a sufficient reservoir and pumps have to operate on a stop-start basis.

EIAC (2010), Mackay Canegrowers Limited and Mackay Sugar Limited (2010a) submitted that operators and customers are not encouraged to take a strategic view of increasing water usage nor the implementation of water use efficiency measures, thereby improving the viability of growers, millers and scheme operators (that is, SunWater).

2.3 Authority's Analysis

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

Table 2.1: Summary of Risks, Allocation and 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), (c) and (e) above will be dealt with an end-of-period adjustment, price trigger or cost pass-through upon application by SunWater or customers.

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

In response to EIAC, meter upgrades (d) are outside the scope of the investigation. No levies or charges (f) are to be applied by the Authority as a result of this irrigation price review. The Authority's analysis of operating costs allows for SunWater to incorporate efficient insurance costs. The costs to be passed through to irrigators include a share of insurance costs and a share of any relevant excess in the event of a claim.

In response to stakeholder concerns regarding the timing of water availability, the Authority notes that the standard supply contract between SunWater and its customers requires SunWater to only supply water to satisfy customer requirements when there is a sufficient level of water availability. Furthermore, whilst SunWater cannot influence water availability in the short term customers have some, albeit limited, scope to manage supply risks (for example, by holding surplus entitlements, sourcing alternative supplies (e.g. groundwater) or using the water trading market).

NERA (2010a) has, however, noted that there may be limitations to a customer taking up these options and that the availability of options may vary between schemes. Indeed, NERA also noted that entitlement trading is only a relevant option if irrigators face differing weather conditions and the scheme is not over-allocated. As noted in Table 2.1, the Authority proposes that short term volume risk (including supply risk) be addressed through a tariff structure that recovers all fixed costs through fixed charges and variable costs through volumetric charges.

The Authority notes stakeholder concerns regarding key scheme infrastructure assets:

(a) in response to the comments regarding Kinchant Dam, the Authority considers that if SunWater is providing insufficient supply and reliability, against the WAEs in this scheme, then this is a matter for DERM to address with SunWater;

(b) in relation to the deflated Mirani Weir fabri-dam, the Authority acknowledges that its replacement is pending the outcome of an ongoing investigation, which implies an additional risk to the scheme's customers. The current focus of concern is on the impact on reliability of supply. The Authority considers that the risk of asset failure is commercially relevant and that any related prudent and efficient costs should be met by users. To the extent that there are impacts on supply, these costs would also be borne by users, provided that all reasonable steps are taken by SunWater to address the impacts. The Authority notes that fortuitously, the impact on reliability is minimised due to favourable seasonal conditions.

    Issues in regard to the costs associated with the fabri-dam are reviewed in the Authority's report for the Pioneer River WSS. However, the prudency and efficiency of SunWater's response have been subject to scrutiny by the Authority in respect to the impact on renewals charges and operating costs. This analysis is provided in relevant sections of Chapters 4 and 5;

(c) in relation to the Mirani Pump Station No 2, the Authority is advised by SunWater that it has not included it in its forward renewals programme, on the grounds that it is no longer required. However, the Authority's Chapter 4 analysis of renewals provides further analysis on this issue. The Authority cannot specify in advance whether the reinstatement of the pump station will necessitate a price trigger; and

(d) the issue of the efficiency of operations being compromised by the deflation of the fabri-dam is a matter that SunWater should address as soon as practical. The Authority's analysis of relevant issues appears in Chapters 4 and 5.

In response to EIAC, Mackay Canegrowers Limited and Mackay Sugar Limited, the Authority notes that a price cap will provide SunWater with an incentive to reduce costs, at least until prices are reset in the future. A more detailed discussion of the benefits of price caps appears in Volume 1, Regulatory Framework. Furthermore, the proposed tariff structure will specify SunWater's volumetric charge and provide SunWater with an incentive (where further cost savings are feasible) to improve efficiency and reduce variable costs.

In relation to water use efficiency, the Authority notes that the allocation of risk through a cost-reflective two-part tariff will promote efficiency as:

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

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

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

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

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

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

For the 2006-11 price paths, it was generally agreed to adopt a 70:30 ratio of fixed to variable costs. However, due to the prevailing Government policy that there should be no real price decreases, fixed charges were set at 80% and variable charges at 20% of total revenues in this scheme.

Stakeholder Submissions

SunWater

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

Other Stakeholders

MIS (2010) expressed support for a two part tariff structure which reflects the fixed and variable costs of the scheme, and submitted that the postage stamp pricing arrangements (single tariff grouping under which the scheme was established) be retained.

During Round 1 Consultation, stakeholders noted that water availability is an issue for the scheme as full allocations are typically granted at the end of the season when the crop demand is reduced. Hence irrigators are penalised by fixed (Part A) charges when the actual availability does not match the required availability.

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.

In response to MIS, the Authority also notes that existing tariff groupings incorporating a postage stamp tariff will be retained consistent with the Ministerial Direction.

In response to Round 1 consultation comments, the Authority notes that under current legislative and contractual arrangements (and the Ministerial Direction), customers must bear all the costs of water supply incurred by SunWater, irrespective of whether it is made available or not (provided the costs of supply are efficient and prudent).

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 Eton WSS (including the Distribution System) are identified in Table 3.1.

Table 3.1: Volume of Water Trade in the Eton WSS (ML)

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*
Permanent	0	0	0	587	456	80	152	1,063
Temporary	11,433	9,094	4,934	5,095	599	223	349	649

Note: The trading data above reflects total trading in the Eton WSS. Source: SunWater Annual Reports (2003 to 2010g) and Queensland Valuation Services (2010).

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

The Authority recognises that a change in the tariff structure may impact the value of entitlements, and therefore affect the irrigators' incentives to trade. This matter is addressed further below in the context of pricing recommendations.

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

3.2 Water Use Forecasts

Introduction

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

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

For the Eton WSS, SunWater (2006b) assumed an annual water usage forecast of 65% of WAE. Water usage for High A and High B priority irrigation WAE was 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 Pioneer Valley ROP.

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

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

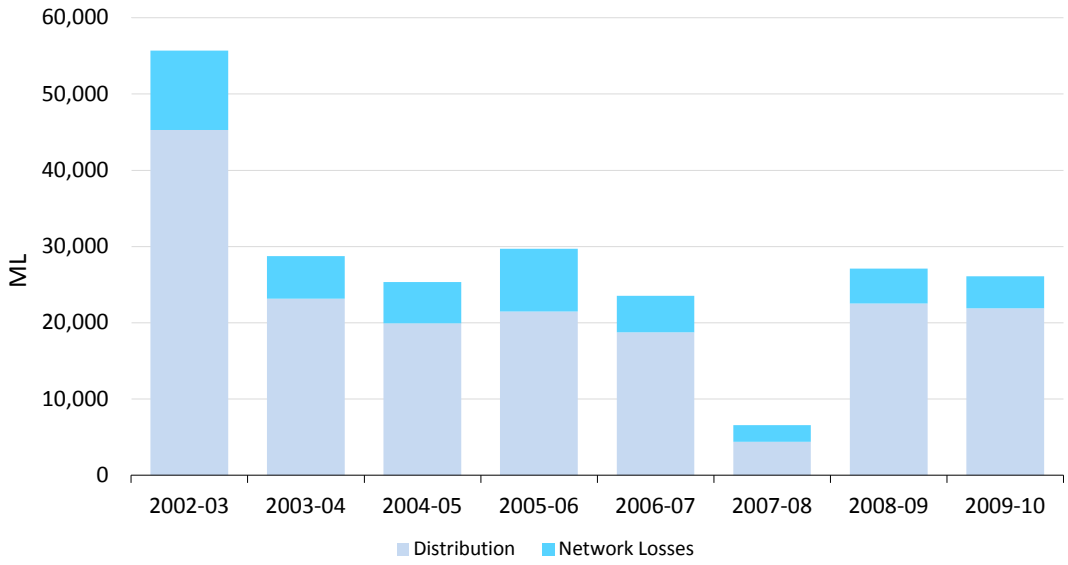
Based on the last eight years observations, SunWater has forecast use as follows:

(a) at a whole scheme level (all sectors) – an average of 44% of WAE (including SunWater's distribution loss WAE and its other WAE); and

(b) for the irrigation sector only – 50% of WAE, incorporating forecast usage of 50% within the distribution system. This is higher than the eight-year average of 41%.

Figure 3.1 shows the historic usage information for the Eton WSS.

Figure 3.1: Water Usage for the Eton WSS



Source: SunWater (2011).

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

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

3.3 Tariff Groups

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

The previous SunWater Irrigation Price Paths Final Report (2006b) nominated a single tariff group (Eton: Channel) for the Eton WSS and Distribution System.

In the Eton WSS, there are no regulated river users; hence for the 2006-11 price path a single tariff group was nominated (Eton: Channel).

The Authority proposes to proceed with separate bulk and distribution reports on the basis that cost allocations will differ between the bulk and distribution parts of the scheme. In addition, SunWater has presented details in two separate NSPs. Separate reports enable greater transparency, and the separation of tariffs into Parts A, B, C and D remain relevant.

The Authority notes that no separate tariff group is identified for the 504 ML of Risk Allocation identified in the scheme. Because these irrigators are only able to source water when the Mirani Diversion Channel is in use to transfer water to Kinchant Dam, they have a less reliable water supply. These irrigators pay the total Eton Channel charge as a single part volumetric only charge. Currently, this is $71.51/ML.

SunWater also advised that the 504 ML of risk WAE is included in the Eton channel system for cost allocation purposes. The Authority considers that this WAE amount should not be grouped within the main Eton distribution tariff group as they have a less reliable supply and only utilise the Mirani Weir and Mirani Diversion Channel bulk assets.

The Authority considers that the 504 ML of Risk WAE should be subject only to the Eton WSS bulk charge, in the form of a two-part tariff. However, as there is currently no separate tariff grouping, the Authority recommends that SunWater negotiate separate arrangements for this group.

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

3.4 Cost Allocation for Coal Terminals

Prime Infrastructure holds a 500 ML allocation in the Pioneer Valley WSS which is delivered through the Eton bulk and distribution system. A pipeline to Dalrymple Bay connects into the eastern end of the Marwood subsystem in the scheme. A further 200 ML allocation is provided for Hay Point.

Stakeholder Submissions

CANEGROWERS (2010) queried whether Prime Infrastructure meets its fair share of costs associated with the Eton WSS and Eton Distribution system.

EIAC (2011a) submitted that High A Priority water allocation from the Pioneer River WSS is delivered through Eton Distribution infrastructure and it is not clear if this has been included as a revenue offset for irrigation.

Authority's Analysis

SunWater has advised the Authority that Eton bulk assets (Mirani main channel and pump station) and channel assets are used to deliver water to Dalrymple Bay and Hay Point. A cost allocation for 700 ML of High A Priority water is made to these customers.

The Authority agrees that a cost allocation should be made for the 700 ML as appropriate.

3.5 Mirani Weir – Cost Allocation

SunWater's NSP indicated that Mirani Weir on the Pioneer River has a dual function, providing instream storage for the Pioneer River WSS and as a pumping pool for Mirani Pump Station for

diversion into Kinchant Dam and the Eton WSS. However, the costs associated with Mirani Weir are fully allocated to the Pioneer River WSS.

Other Stakeholders

PVWater (2011a) submitted that Mirani Weir has a dual function – to provide in-stream storage for the Pioneer River WSS and to operate as a pumping pool for Mirani Pump Station for diversion into Kinchant Dam for the Eton WSS. PVWater further noted that in the NSP for the Eton WSS, SunWater declared that the Mirani Weir is not part of the Eton Scheme, being a Pioneer River WSS asset. Accordingly, all Mirani Weir costs have been included in the Pioneer River NSP.

PVWater advised that the Mirani Weir was constructed in 1987 as an integral part of the Eton WSS, noting that without the ponded pool upstream of the weir, pumping into Kinchant Dam would only be possible in very high flow events. However, pumping at such times would be difficult due to additional sediment and debris. On this basis, PVWater submitted that operating and renewals costs for the weir should be shared between the schemes.

Authority's Analysis

The Authority invited SunWater to respond to the issues raised by PVWater in regard to the function of Mirani Weir.

SunWater (2011ab) submitted that pricing for services from an asset should be forward looking and not constrained by the original basis for its construction.

SunWater indicated that Mirani Weir is a bulk water asset under the ROP and would remain so whether the Eton Distribution System existed or not. While it had not investigated the claim, SunWater acknowledged that impoundments provided by dams and weirs can provide benefits to customers diverting water at those storages by providing a 'pumping pool'. However, SunWater considered these benefits incidental and that the storages are not managed to specifically provide any particular level of 'pumping pool' to those customers. That is, there is no such ROP requirement for a pumping pool to be provided to Eton WSS.

SunWater advised that customers on weir ponds may gain such incidental benefits. PVWater has customers in the Pioneer River WSS with pumps in the weir pond and SunWater does not charge a premium for any such incidental benefits.

The Authority notes that a submission from the EIAC (2011b) expressed concern that the deflated fabridam on Mirani Weir impacts on the pumping opportunity from the Pioneer River particularly during low flow periods when the fabri-dam would normally be inflated. This would seem to suggest that the Weir, or at least the fabri-dam, does indeed serve a function for Eton WSS.

The Authority also notes SunWater's own scheme description, which states that:

> *Mirani Weir ... was constructed to provide additional yield for downstream irrigators as well as to provide a pumping pool from which flood flows are diverted through the Mirani Diversion Channel to Kinchant Dam.*

In addition, the Pioneer ROP stipulates that the Resource Operations Licence (ROL) holder must only take water to supply allocations in the Eton WSS when inflows to Mirani Weir are greater than 250 ML/day and when the water level in Mirani Weir is at or above fixed crest level. This implies that the Mirani Weir is integral to the Eton WSS.

Taken together, the Authority's view is that the Mirani Weir is a joint asset for the Pioneer River WSS and the Eton WSS, even though it is nominally part of the Pioneer River WSS rather than the Eton WSS.

The Authority notes however, that no such cost allocation to the Eton WSS has been made in existing pricing for Eton WSS, and that it may be difficult to identify a cost apportionment. The costs for Mirani Weir would need to be separated from other headworks costs and a cost allocation between the two schemes determined.

4. RENEWALS ANNUITY

4.1 Background

Ministerial Direction

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

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

Previous Review

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

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

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

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

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

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

Issues

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

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

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

  (i) 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;

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

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

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

(c) the methodology for apportioning bulk 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 Eton Bulk WSS (including the Eton Distribution System) was negative $188,000.

The Authority has accepted SunWater's unbundled opening ARR balance for Eton Bulk WSS (excluding the Distribution System) of negative $85,000.

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 Eton Bulk WSS for 2006-11 (Table 4.1). This expenditure included indirect and overhead costs which are subject to a separate review by the Authority (see Chapter 5 – 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	343	270	263	522	326

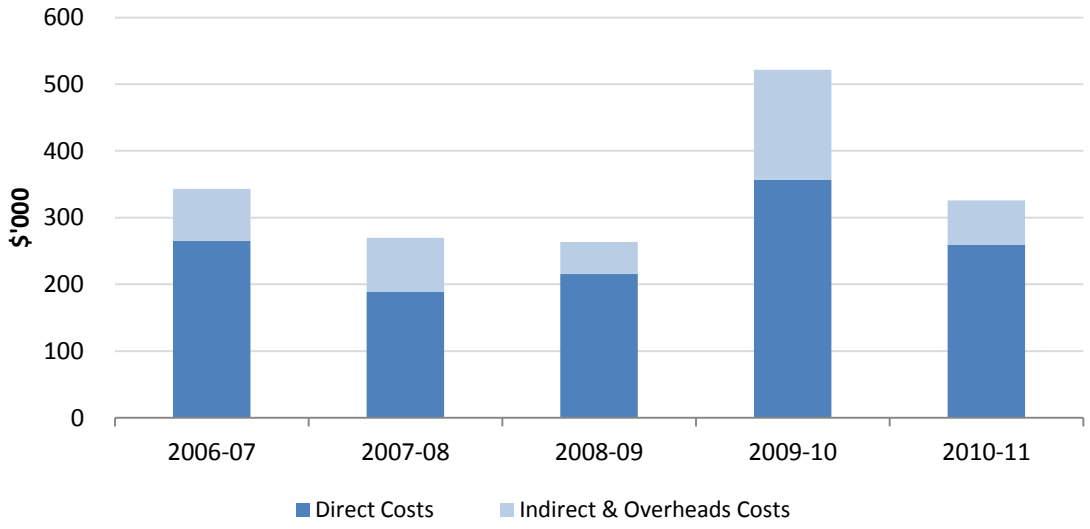
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011.
Source: SunWater (2011an).

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 $)



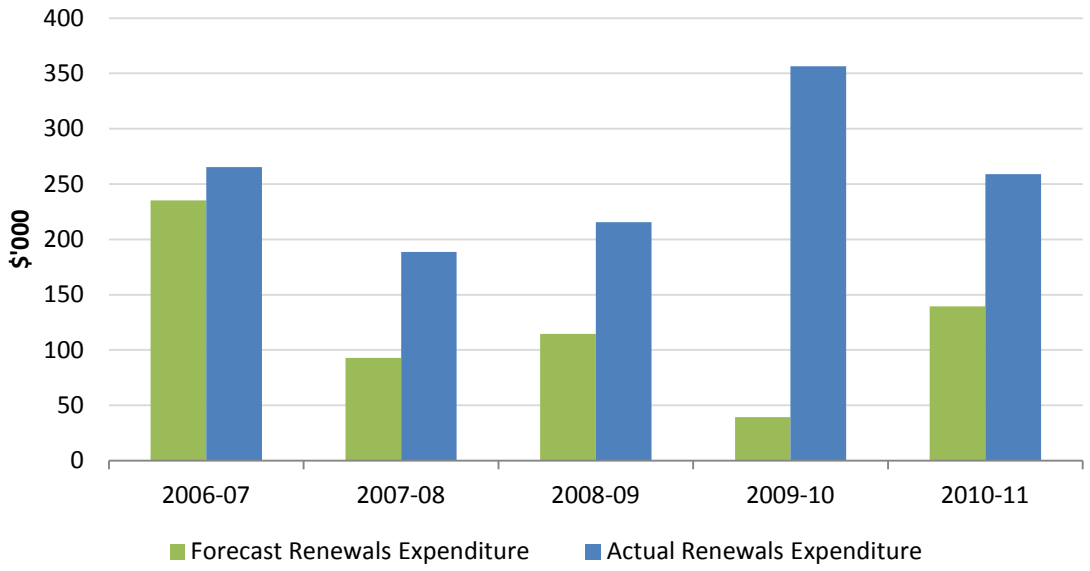
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011.
Source: Indec (2011d).

Comparison of Forecast and Actual Costs

The Authority was able to source details of forecast direct renewals expenditure from Indec, who undertook the analysis for the 2005-06 review.

A comparison of forecast and actual direct renewals expenditure in the Eton Bulk WSS for 2006-11 is shown in Figure 4.2.

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



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

Actual renewals expenditure was $663,320 (direct costs) higher than forecast for the period, which was partly attributable to unplanned expenditure on Intersafe of $146,409 (nominal, total costs, including indirect costs).

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.

Arup stated that a review of the historical data indicated that the actual renewals expenditure exceeded the forecast expenditure due to the undertaking of projects not originally budgeted for rather than overspends on projects.

Arup noted that the largest renewals items[1] in Eton Bulk WSS in 2006-11 were:

(a) Mirani Pump stations 1, 2, 3 – Install New Metering ROP Compliance (2006-07) at a cost of $153,058;

(b) Intersafe Gated – Mirani – (2009-10) at a cost of $146,409;

(c) Comprehensive Risk Assessment including Geotech – Kinchant Dam (Compressed Program) (2009-10) at a cost of $127,141;

[1] The costs quoted by Arup reflect the total cost (direct and indirect costs) of each renewals item.

(d) Replace Kinchant Dam Outlet Works Switchboards (SB-1 & SB-3) (2009-10) at a cost of $66,750;

(e) Overhaul/Replace/Certification – Inlet Tower Hoist – Kinchant Dam (2008-09) at a cost of $59,339;

(f) Eton WSS – Policy Compliance Investigations (Signs, Fencing) (2007-08) at a cost of $54,013; and

(g) Kinchant Dam – Five Yearly Dam Safety Inspection (2007-08) at a cost of $46,227.

Arup stated that it was not provided with the list of works which constituted the renewals program proposed in 2005-06 and therefore could not identify the projects that contributed to the increase in renewals expenditure.

However, Arup stated that a review of the above projects would suggest risk assessments of Kinchant Dam most likely would have emerged out of the 2007-08 dam safety inspection.

Further, Arup noted that there was some smaller expenditure around $10,000 which relates to flood damage repairs in 2007-08 that would also not have been accounted for previously.

Due to information deficiencies, Arup was unable to conclude on the prudency and efficiency of past renewals expenditure, except in relation to the Intersafe program. However, Halcrow and SKM made some general comments about the Intersafe program, which are provided below.

Item 1: Intersafe

SunWater

SunWater indicated that this project was not included in the 2006-11 price paths. However, the SunWater Board decided to undertake the work following a report from Intersafe Group Pty Ltd recommending that SunWater take action to reduce the safety risk to staff.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Arup

Arup noted that the program which is being extended across Queensland is considered necessary to ensure that all workers are able to undertake their duties in a safe environment. SunWater has applied due process in evaluating sites where there is a medium to high risk and prioritising works at these sites. This work follows on from an initial pilot study and is now being rolled out across the state. Arup considered that the financial risk to the SunWater business is greater in the long term than the short term cost of assessing and rectifying high risk assets. SunWater has demonstrated a great deal of rigour in undertaking this work including:

(a) development of standardised solutions and risk assessment templates;

(b) training regional staff in risk assessments; and

(c) establishment of procurement contracts for standardised solutions

Given the procedures adopted Arup considered this to be a prudent and efficient expenditure.

Halcrow

Halcrow (2011) supported SunWater's submission (above) that the SunWater Board approved the work to reduce the safety risk to staff.

As noted in Volume 1, the Authority has accepted Halcrow's (2011) findings on the overall Intersafe Program (actual expenditure of $13.6 million) which found that:

(a) the expenditure was prudent on the basis that SunWater has a legal obligation to ensure the workplace health and safety (WHS) of its employees in accordance with the provisions of the *Workplace Health and Safety Act 1995* (the WHS Act);

(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 (2011) concluded that:

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

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

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

Authority's Analysis

The Authority accepts the recommendation of its consultants that expenditure on Intersafe was prudent and efficient.

Item 2: Public Safety Strategy (Fencing Policy)

SunWater

SunWater indicated that this item was also not included in the 2006-11 price paths.

Other Stakeholders

No other stakeholders have commented on this item.

Arup's Review

Arup noted that costs associated with the installation of signs/fencing in 2007-08 were approximately $54,013.

However, Arup were unable to determine whether this expenditure was prudent or efficient due to the lack of information provided by SunWater.

Authority's Analysis

As outlined in Volume 1, SunWater has advised that compliance with the WHS Act is the driver of the Public Safety Strategy.

The Authority notes SunWater's submission that Public Safety Strategy is an organisational commitment aimed at reducing the risk of injury or damages to people (or property) that access or use land controlled by SunWater and its water supply infrastructure and assets.

The Public Safety Strategy has a framework that is comprised of policies and standards that includes: the Hazard Warning Signing Manual, the Storage Marker Buoy Policy, the Flooding and Inundation of Public Roads Standard and the Fencing Policy.

SunWater indicated that the Fencing Policy will be fully implemented by 30 June 2012 with higher risk sites prioritised (e.g. channel systems adjoining residential properties).

The Authority notes that it is the Public Safety Strategy, as opposed to the Intersafe Project, that requires fencing to limit access to channels.

The Authority notes that SunWater's Fencing Policy document specifies that the *Dividing Fences Act 1953* requires both parties to contribute an equal share towards fencing costs. It is unclear from the information that SunWater has provided whether the renewals expenditure included a 50% land holder contribution. Therefore, the Authority recommends that 50% of fencing costs be removed from the calculation of the renewals annuity, pending SunWater confirming the basis of its fencing costings.

In summary, the Authority recommends that 50% of fencing costs incurred in 2010-11 be removed, pending SunWater confirming that 50% of total costs incurred have been off-set and not passed on to irrigators.

Conclusion

In summary, two items were reviewed by the Authority for prudency and efficiency. The Intersafe expenditure was considered to be prudent and efficient, while the proposed expenditure on the Fencing Policy expenditure was reduced by 50% to reflect a landholder contribution (pending response from SunWater confirming this has already been applied).

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

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

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

Past Renewals Expenditure		*Date*	*SunWater ($'000)*	*Authority's Findings*	*Recommended ($'000)*
Sampled Items					
1.	Intersafe Program	2009-10	$147	Prudent and efficient	$147
2.	Fencing Policy	2007-08	$54	Not efficient	$27
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)

SunWater indicated that the renewals opening ARR balance for 1 July 2011 was negative $1,465,000 for the Eton WSS. This estimate reflects the most recent information provided by SunWater to the Authority in September 2011 and may differ from the NSP.

Based on the Authority's assessment of the prudency and efficiency of past renewals expenditure, and the proposed methodology for unbundling ARR balances, the recommended opening ARR balance for 1 July 2011 for the Eton WSS is negative $1,260,000.

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

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

(b) adding 2006-11 renewals annuity revenue;

(c) subtracting 2006-11 renewals expenditure; and

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

To establish the closing ARR balance as at 30 June 2012 of negative $1,342,000, the Authority:

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

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

(c) adjusted for interest over the year.

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

4.5 Forecast Renewals Expenditure

Planning Methodology

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

(a) high-level options analysis for all material renewals expenditures expected to occur over the Authority's recommended planning period (20 years), with a material renewals

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

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

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

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

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

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Kinchant Dam	79	123	42	52	37
Kinchant Dam Wtp	8	-	-	-	6
Mirani Distribution	-	-	-	-	60
Mirani Pump Station 1 (to Mdc)	227	-	-	-	60
Mirani Pump Station3 (to Md1)	209	74	42	381	443
Total	**825**	**464**	**253**	**262**	**284**

Source: SunWater (2011).

The major items incorporated in the estimates are:

(a) Kinchant Dam – five year comprehensive dam safety inspection at an estimated cost of $121,000 in 2012-13. This is a compliance requirement;

(b) Mirani Pump Station No 1 – replace switchboard at an estimated cost of $230,000 in 2011-12. An audit confirmed that this 30 year old switchboard requires replacement due to its age, condition and unavailability of spares;

(c) Mirani Pump Station No 3 – overhaul of pump units no. 5 and 2 and the replacement of cable connection bells at an estimated cost of $212,000 in 2011-12;

(d) Mirani Pump Station No 3 – replace pump starters at an estimated cost of $484,000 in 2014-15 and 2015-16. The starters for the five pumps at this pump station require replacement due to their age and risk to service; and

(e) Mirani Pump Station No 3 – replace control system at an estimated cost of $84,700 in 2014-15 and 2015-16. The control system at Mirani Pump Station No 3 will be replaced due to the age of the components and the unavailability of spares and vendor support.

The major expenditure items from 2016-17 are:

(a) replace control equipment at Mirani Pump Stations No 2 at an estimated cost of $262,000 and No 3 at an estimated cost of $416,000 in 2017-18;

(b) combined five year dam safety inspection and dam break analysis review at Kinchant Dam at an estimated cost of $243,000 in 2017-18;

(c) replace control system at Mirani Diversion Channel at an estimated cost of $135,000 in 2017-18;

(d) replace outlet guard valves at Kinchant Dam at an estimated cost of $386,000 in 2025-26;

(e) replace Supervisory Control and Data Acquisition (SCADA) switchboard at Mirani Pump Station No 3 at an estimated cost of $298,000 in 2025-26;

(f) replace cable at Mirani Pump Station No 3 at an estimated cost of $592,000 in 2029-30;

(g) refurbish pump No1 and replace control equipment, high voltage (HV) transformer and logic controller at Mirani Pump Station No 3 at an estimated cost of $921,000 in 2030-31;

(h) replace pump at Mirani Pump Station No 3 at an estimated cost of $504,000 in 2035-36;

(i) replace pump starters at Mirani Pump Station No 3 at an estimated cost of $241,000 in 2035-36;

(j) overhaul Pump No.1 and pump station transformer at an estimated cost of $132,000 in 2035-36; and

(k) replace toilet block at Kinchant Dam at an estimated cost of $193,000 in 2035-36.

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

Other Stakeholders

EIAC (2011) submitted that Mirani Pump Station 2 has been inoperable for a number of years and the pump was second hand when installed in the early 1990's. The NSP's only reference to Pump Station 2 is to replace control equipment in 2017-18. This matter requires clarification.

EIAC further commented that:

(a) overhaul of two Mirani P/S 3 pumps (2011-12) costs seems excessive with actual pump overhaul thought to be only some $30,000 to $40,000 per pump;

(b) replacement of starters for five pumps at Mirani P/S 3 (2015-16) at a cost of $484,000 seems excessive;

(c) 2017-18 shows a cost of $416,000 to replace control equipment at Mirani P/S 3 while it appears that the same replacement is to occur previously in 2015-16;

(d) replacement in 2017-18 of control equipment at Mirani P/S 2 is questionable when pump is not operable at present;

(e) 2017-18 cost for Kinchant Dam safety review ($243,000) requires detailed explanation particularly the dam break analysis component;

(f) Mirani Diversion Channel is a major asset in the scheme and has leakage issues. The NSP's only mention of this asset is replacement of the control system in 2017-18. This requires clarification as the level of control is thought to be relatively minor;

(g) 2025-26 SCADA switchboard replacement at Mirani P/S for $298,000 seems excessive;

(h) 2035-36 cost to replace pump at Mirani P/S 3 at $504,000 again seems very high; and

(i) 2035-36 cost to replace starters at Mirani P/S 3 is shown as $241,000. The same replacement in 2014-15 and 2015-16 is to cost $484,000.

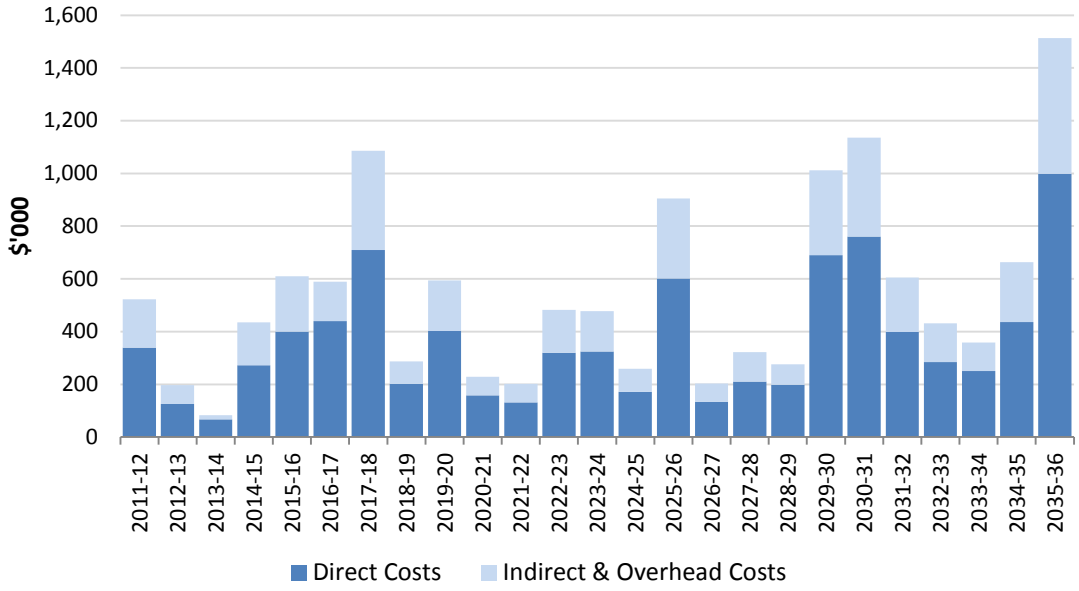
EIAC also noted that expenditure in a number of years exceeds $400,000.

Authority's Analysis

Total Costs

SunWater's proposed renewals expenditure for 2011-36 for the Eton WSS is shown in Figure 4.3. This reflects the most recent renewals information provided by SunWater to the Authority in September 2011 and differs from the NSP. The Authority has identified the direct cost component of this expenditure, which is review 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 $)



Source: SunWater (2011am).

Item Review

Arup reviewed the prudency and efficiency of a sample of future renewals expenditure items. Arup stated that, in general, the annuities program appears prudent and efficient in its operations. SKM also reviewed a future renewals annuity item for the Eton Bulk WSS.

Each of the sampled items is discussed below.

Item 1: Replacement of Switchboard – Mirani Pump Station 1

SunWater

This renewals item involves the replacement of a switchboard at the Mirani Pump Station 1 in 2011-12, at a cost of $226,000 (total cost, including indirect costs). The switchboard has been in operation from 1980 and has a nominated asset life of 35 years. In addition, it has a replacement frequency of 30 years.

Other Stakeholders

EIAC (2011a) noted that costs incurred to overhaul pumps in 2011-12 appeared excessive.

Consultant's Review

Arup stated that various condition assessments have shown the switchboard to have an overall condition rating of 3, though a score of 5 is assigned for age and availability of parts.

Arup stated that it requested from SunWater the reason behind the earlier replacement of this switchboard, as it has an asset life of 35 years but a replacement frequency of 30 years (as stated above).

Arup also noted a further replacement of control equipment in 2018-19 at a cost of $97,000 and question why these renewals items have been scheduled separately. Arup anticipates that both pieces of work are interrelated and should be undertaken at the same time.

Arup did not comment on the prudency of this item and stated that there was insufficient information to determine an efficient cost.

Authority's Analysis

The Authority notes that Arup was unable to comment on the prudency and efficiency of this item.

Item 2: Refurbishment Pump Unit 1 – Mirani Pump Station 3

SunWater

This item involves the refurbishment of pump unit 1 at Mirani Pump Station in 2012-13 at a cost of $75,000 (total cost, including indirect costs). This pump unit has been in operation from 1994 and was last overhauled in 2002-03.

Other Stakeholders

No other stakeholders have commented on this item.

Consultant's Review

Arup noted that SunWater has scheduled this next overhaul for 2012-13 which is 10 years since the last overhaul. From a condition perspective the latest assessment assigned an overall condition score of 3 and showed there were signs of insulation resistance.

Arup stated that the cost had been derived from previous projects but as Arup was not able to source these projects required further explanation regarding the costing of this renewals item.

Arup did not comment on the prudency of this item and stated that there was insufficient information to determine an efficient cost.

Authority's Analysis

The Authority notes that Arup was unable to comment on the prudency and efficiency of this item.

Item 3: Kinchant Dam – Five-yearly Dam Inspection

SunWater

This item involves a comprehensive five-yearly dam safety inspection of Kinchant Dam in 2012-13 at a cost of $121,000 (NSP).

SunWater advised that the Kinchant Dam was constructed in 1977 and has a 5km long embankment wall.

Other Stakeholders

EIAC (2011a) submitted that dam safety expenditure requires explanation.

Consultant's Review

SKM reviewed SunWater's Systems, Applications and Products (SAP) Works Management System (WMS) and identified a cost of $100,000 for the dam inspection. The Authority notes that the SAP estimate includes only a notional indirect and overheads costs uplift factor, as compared to the submitted estimate.

SunWater has allocated a standard run to failure asset life of 200 years for the dam. SKM considered the run to failure asset life to be appropriate for this asset type.

(a) Available Information

In particular, SKM drew on the following renewals item specific replacement/refurbishment report produced by SunWater for this review:

Table 4.4: Documents Reviewed Specific to the Kinchant Dam – 5 Yearly Dam Inspection

Document No.	*Document Name*	*Document Title*	*Date*
1105743	1105743-v1-26__Kinchant_Dam_5yearly_Inspection	Eton Water Supply – Kinchant Dam – Study: 5yr Comprehensive Inspection (ETO-KD)	24th August 2011

Source: SKM (2011).

(b) Prudency Review

SKM considered that SunWater has largely followed the policies and procedures that it has in place to determine renewals item replacement/refurbishment dates and costs.

SKM noted that for dams there are legal requirements for inspections. The maintenance table indicates the one year, five year and 20 year inspections are required.

The Kinchant Dam has been assessed as having a failure impact assessment category of 2, with a population at risk (PAR) of 2244. Category 2 dams are referable under the *Water Act 2000*.

Section 3 of the Queensland Dam Safety Management Guidelines state that dams are regulated through safety conditions imposed on referable dams under the *Water (Reliability & Safety) Act*

2008 (which are partly based on the failure impact rating of the dam). SunWater, as the dam owner, is legally required to comply with the condition schedules for the Kinchant Dam.

SKM indicated that condition DS 11 of the March 2010 Dam Safety Condition Schedule for Kinchant Dam states that:

> *The dam owner must carry out a Comprehensive Inspection of the dam in accordance with the Queensland Dam Safety Management Guidelines on or before the first day of November 2012 and or before every fifth anniversary of that date thereafter.*

As the inspection is a legal requirement for the dam's owner, SunWater, the need for and timing of the works were considered to be prudent.

SunWater will also be required to undertake comprehensive surveillance and comprehensive dam safety as per the regulations, as the PAR rating is greater than two.

SKM noted that there is a 20-year Dam Safety Review proposed prior to 1 December 2017. This may be another condition set by the March 2010 Dam Safety Condition Schedule for Kinchant Dam. However, SKM was not able to verify the need for this review.

(c) Efficiency Evaluation

SKM noted that for relatively minor works such as dam inspections, SunWater's planning team draws on actual costs for similar activities undertaken recently. Given the volume of renewals items that SunWater's planning team is engaged with at any point in time, SKM stated that this approach is considered reasonable and in accordance with good industry practice, where the management of a large portfolio of assets is concerned.

SKM indicated that the estimated cost of $100,000 has been based on the 2007-08 five-yearly inspection for Kinchant Dam of $72,000. The 2007-08 cost has been escalated to $84,000 in 2010-11 dollars, using a rate of 5.25%. SKM advised that the reason behind the further increase in costs is due to a full EAP training exercise and the need to review additional assets added to the program during 2012-13 and not inspected during the 2007-08 inspection.

SKM reviewed SunWater's SAP records and confirmed that there was a record of $72,015 spent in 2007-08 for a five-yearly inspection of the Kinchant Dam.

SunWater advised SKM that it includes the following items when undertaking a dam inspection:

(a) hire of divers if required;

(b) hire of plant such as pumps and transport to site;

(c) time of operators to pump out spill way stilling basin;

(d) removal of trash racks;

(e) full functional test of all equipment on site;

(f) civil, mechanical and electrical engineers present on site to cover all areas;

(g) cost of operators before and during inspection; and

(h) minimum of five days on site and minimum of five days prep work by operators.

Whilst SKM considered that the above activities are greater than would be typically expected for a five-yearly dam inspection, SKM recognised that there will be a custom and practice

expectation in respect of the dam safety inspectorate. Also, SKM considered that it is appropriate for SunWater to include activities that enable it to undertake a detailed condition assessment of the dam at the same time as the dam inspection for reasons of efficiency. Therefore, SKM concluded that the costs are efficient.

(d) Summary and Conclusions

The completion of a five-yearly dam safety inspection is a legal requirement for the dam's owner, SunWater. The timing of this inspection is set by the March 2010 Dam Safety Condition Schedule for Kinchant Dam. As such, the inclusion of this item is prudent.

Given the scope of works included in the dam safety inspection by SunWater and the historical costs available, SKM consider that the value submitted for this renewals item is efficient.

Authority's Analysis

The Authority accepts SKM's recommendation that this item is both prudent and efficient.

Conclusion

In summary, three items for the Eton WSS were sampled, of which one item is considered to be prudent and efficient and has been retained as forecast expenditure. For two items there was insufficient information to determine the prudency and efficiency of the 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 (Real $'000)

Forecast Renewals Expenditure	*Year*	*SunWater ($'000)*	*Authority's Findings*	*Recommended ($'000)*
Sampled Items				
1. Replacement of switchboard – Mirani Pump Station 1	2011-12	226	Insufficient information available to determine prudency and efficiency	10% saving applied
2. Refurbishment pump unit 1 – Mirani Pump Station 3	2012-13	75	Insufficient information available to determine prudency and efficiency	10% saving applied
3. Kinchant Dam – 5-yearly Dam Inspection	2012-13, 2017-18, 2022-23, 2027-28, 2032-33	100, 100, 100, 100, 100	Prudent and efficient	100, 100, 100, 100, 100
Non-Sampled Items				10% saving applied

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

In relation to specific concerns raised by EIAC that are not addressed in the review of sampled items, the Authority notes that there are substantial costs being incurred in the scheme to refurbish the Mirani Pump Stations.

SunWater has advised the Authority that the Mirani Pump Station is not required to service the scheme. The Authority therefore recommends that the replacement of control equipment scheduled for 2017-18 at a cost of $262,000 be removed from the forecast renewals expenditure.

4.6 SunWater's Consultation with Customers

Submissions

SunWater

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

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

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

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

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

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

4.7 Allocation of Headworks Renewals Costs According to WAE Priority

Previous Review

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

Stakeholder Submissions

SunWater

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

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

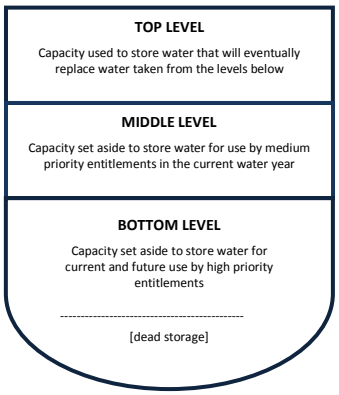
SunWater (2010d) submitted a detailed guide on the HUFs methodology, outlining its derivation and application for each scheme. This methodology, discussed in detail Volume 1, can be summarised as follows.

Step 1: Identify the water entitlement groupings for each scheme, as listed in DERM's Water Entitlement Register, and establish which groups are to be considered as high priority (HP) and medium priority (MP) for the purposes of the HUFs calculation[2].

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

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

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



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

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

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

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

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

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

The parameters used for determining the HUFs for the Eton WSS are summarised in Table 4.6. The HUFs for this scheme (SunWater, 2010d) are 80% for medium priority and 20% for high priority. Risk priority was not included in the analysis.

Table 4.6: Application of HUFs Methodology

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

Nominal Group	(ML)	HUF Group	(ML)
High B Priority	58,970	MP_A	58,970
High A Priority	3,089	HP_A	3,089
Risk Priority	504	Not included	

STEP 2: ROP Conversion Factor Adjustment

Conversion Factor: ROP_{CF}	N/A
Maximum volume that can be converted to HP: $HP_A max$	3,089
Corresponding volume of MP: $MP_A min = MP_A-(HP_A max-HP_A)*ROP_{CF}$	58,970

STEP 3: Water Sharing Rules & Operational Requirements

Water Sharing Rules	
Volume below which MP not available: $MP_0 AA$	8,423
Volume above which max.MP available: $MP_{100} AA$	N/A
CWSAs and other operational requirements	
Likely increase in volume effectively reserved for HP: MP_0	8,423
Likely increase in min. storage before maximum MP available: MP_{100}	62,800
Key Dam Level Measures	
Full Supply Level: FSV_{hwks}	62,800
Dead Storage Level: DSL_{hwks}	600

STEP 4: Hydrologic performance of headworks storage

Storage Layer	Storage Capacity (ML)	Prob. of Utilisation	Utilised Capacity (ML)
Top: $\max\{(FSV_{hwks}-MP_{100}),0\}$*	$MP_2 = 0$; $HP_2 = 0$	0%	$MP_{2u} = 0$; $HP_{2u} = 0$
Middle: $\min\{(MP_{100}-MP_0),(FSV_{hwks}-MP_0)\}$	$MP_1 = 54,377$	49%	$MP_{1u} = 26,577$
Bottom: $MP_0 - DSV_{hwks}$	$HP_1 = 7,823$	87%	$HP_{1u} = 6,769$

STEP 5: Calculation of HUFs for each Water Entitlement Group

Formula	HUF Group	Nominal Group
MP_A: $(MP_{1u}+MP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ $= (26,577+0) / (26,577+6,769+0+0)$	$HUF_{mp} = 80\%$	Medium Priority = 80%
HP_A: $(HP_{1u}+HP_{2u}) / (MP_{1u}+HP_{1u}+MP_{2u}+HP_{2u})$ $= (6,769+0) / (26,577+6,769+0+0)$	$HUF_{hp} = 20\%$	High Priority = 20%

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

Other Stakeholders

MIS (Nov 2010) supported the use of the HUF methodology as the mechanism to enable users share of capital costs to be distributed on the basis of different benefits enjoyed by different priority entitlements. Detailed explanation of the HUF is required.

Authority's Analysis

The Authority commissioned Gilbert & Sutherland (G&S) to conduct an independent review of SunWater's proposed HUFs methodology. G&S (2011) concluded that the input data and model sources were appropriate, calculations were accurate to the method and input data utilised, the methodology exhibits rigour and is generally robust in providing consistent outcomes. G&S also recommended some amendments to SunWater's approach.

As discussed in Volume 1, the Authority endorsed SunWater's proposed approach for the allocation of capital costs, subject to the following amendment proposed by G&S that the method for apportioning the top layer of storage between medium and high priority be modified to reflect the ratio of nominal volumes rather than ratio of MP_1:HP_1.

However, accepting the G&S recommendation has no impact on the HUFs in the Eton WSS as there is no top layer of storage to apportion.

The Authority estimates that based on the HUF methodology, the conversion for medium priority to high priority would be 5.1:1. This compares with the water pricing conversion factor of 2:1 used for 2006-11 price paths. Further, the Authority notes that under the HUF approach, medium priority irrigators will now pay 79% of the cost of renewals whereas previously medium priority irrigators paid 90.5%.

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 Eton WSS, the recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.7. The table shows the total renewals annuity recommended by the Authority and the component amounts for high and medium priority customers. Also presented for comparison is SunWater's total renewals annuity for 2006-11 and SunWater's proposed total annuity for 2012-16. SunWater did not submit a disaggregation between high and medium priority customers.

Table 4.7: Eton WSS Renewals Annuity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Total SunWater	139	268	245	126	214	595	594	590	585	585	585
Total Authority	-	-	-	-	-	-	527	522	515	516	537
High Priority	-	-	-	-	-	-	88	87	86	86	90
Medium Priority	-	-	-	-	-	-	361	358	353	353	368
Distribution Losses	-	-	-	-	-	-	78	77	76	77	80

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 scheme to include service provision, compliance, insurance, recreation and other supporting activities (these were not classified by direct and indirect costs). SunWater noted that:

(a) a Service Manager and 10 staff are located at the Eton depot and are responsible for day-to-day water supply management and delivery of the programmed works for all users in the region. Specialist operations, in areas such as communication systems, electrical,

[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.

mechanical and civil engineering, are provided centrally with resources shared across all schemes. These personnel are located in Brisbane, Ayr and Bundaberg;

(b) service provision relates to:

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

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

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

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

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

Storage	***Monthly Monitoring Requirements***			
	Inflow	***Head Water***	***Tail Water***	***BGA***
Kinchant Dam	No	No	No	Yes

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

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

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

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

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

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

(e) SunWater has sought to transfer the management and cost of recreation activities to private operators or Government. However, recreation facilities at Kinchant Dam

continue to be operated and maintained by SunWater (the cost of which is outlined further below); and

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

Previous Review

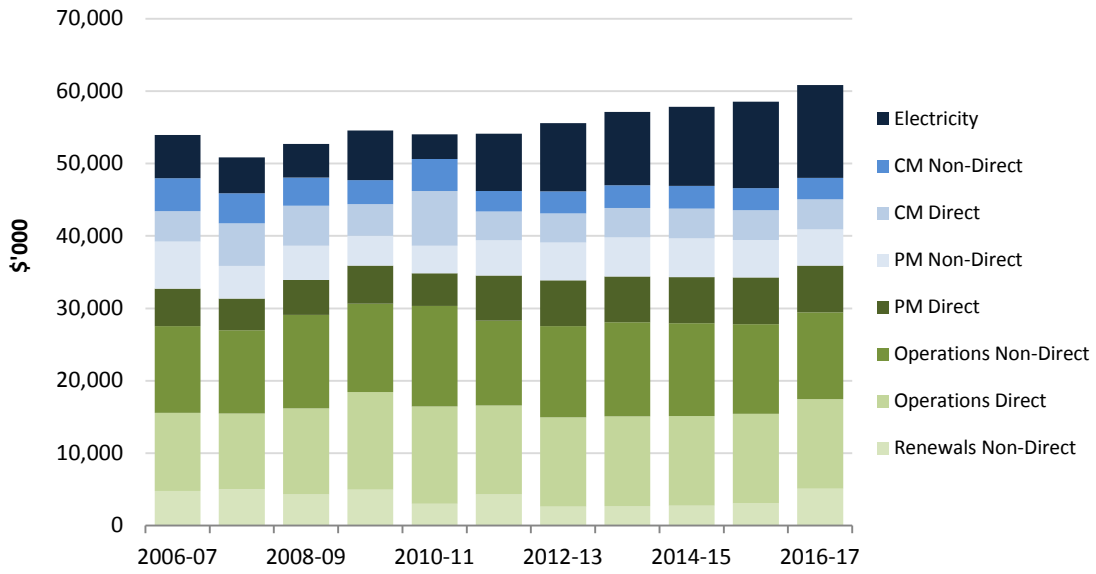
For the 2006-11 price paths, Indec identified annual cost savings of between $3.8 million and $5.5 million (2010-11 dollars) or 7.5% to 9.9% of total annual costs, which SunWater was to achieve during the 2006-11 price paths (SunWater, 2006a). See Volume 1.

Stakeholder Submissions

SunWater

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

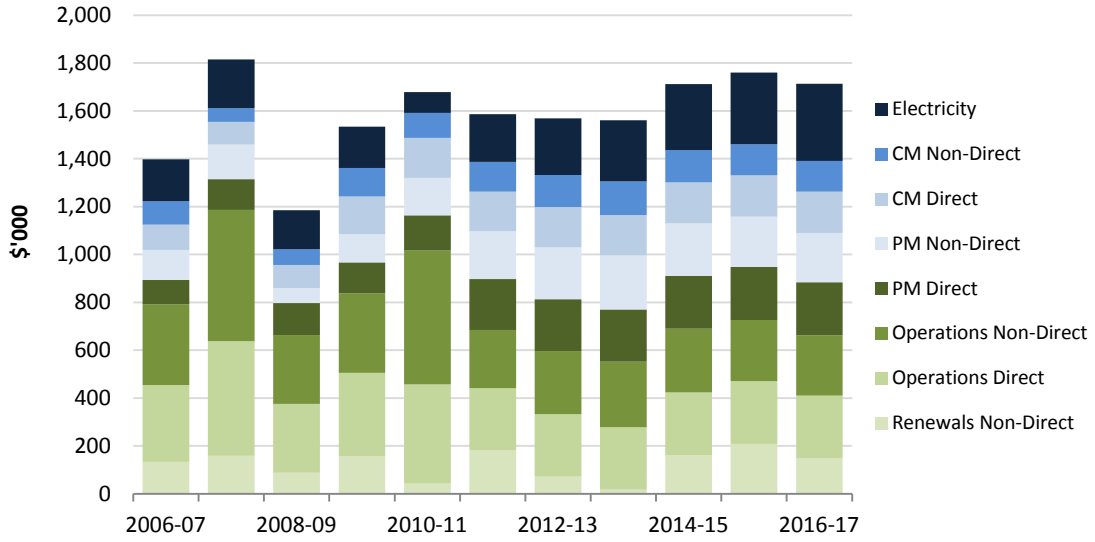
Figure 5.1: SunWater's Total Operating Costs (Real $) – All Service Contracts



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 the Eton WSS (all sectors) is shown in Figure 5.2 and Tables 5.1 and 5.2.

Figure 5.2: Total Operating Costs – Eton WSS (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 5.2: Expenditure by Activity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	657	1,028	575	679	974	501	524	535	528	518	514
Electricity	175	202	163	172	87	200	237	255	275	299	323
Preventive Maintenance	227	273	197	248	303	414	434	444	440	432	429
Corrective Maintenance	204	153	162	277	272	289	302	309	307	302	300
Renewals Non-Direct	134	159	88	158	42	183	72	17	162	208	148
Total	**1,397**	**1,814**	**1,185**	**1,534**	**1,678**	**1,587**	**1,569**	**1,560**	**1,712**	**1,760**	**1,714**

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	245	311	172	283	354	287	291	291	291	291	291
Electricity	175	202	163	172	87	200	237	255	275	299	323
Contractors	121	167	131	106	99	158	161	163	165	168	168
Materials	55	108	76	95	136	90	91	92	94	95	95
Other	107	116	139	150	141	102	103	102	102	103	103
Non-Direct	695	910	505	728	862	750	687	657	785	804	734
Total	**1,397**	**1,814**	**1,185**	**1,534**	**1,678**	**1,587**	**1,569**	**1,560**	**1,712**	**1,760**	**1,714**

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 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 (2011).

In its NSP, SunWater submitted that bulk water operating costs for this scheme averaged $1,357,000 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 in the NSP, for the new five-year period, is $1,462,000 million per annum. SunWater attributed the increase to a rise in maintenance costs associated with the mechanical and electrical assets in the scheme.

Other Stakeholders

No other stakeholders have commented on this item.

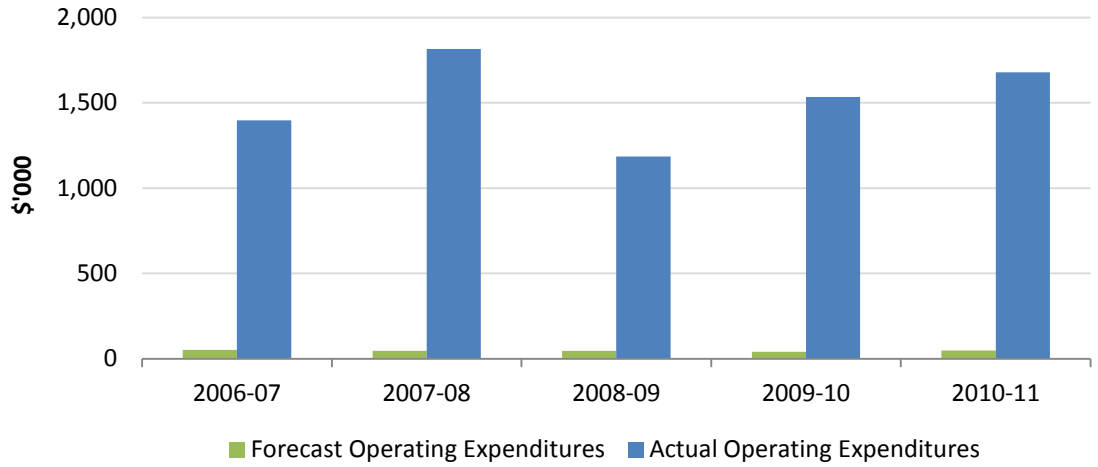
Authority's Analysis

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

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

In 2011, the Authority engaged Indec to assess whether SunWater achieved the cost savings forecast for 2005-06. A comparison of forecast and actual operating expenditure for the Eton WSS 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 2010-11. It observed that further analysis would be required to justify and support such an inference (see Volume 1). The Authority engaged other consultants to address potential scheme specific cost savings.

5.3 Non-Direct Costs

Introduction

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

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

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

The nature of these non-direct activities, 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.

Stakeholder Submissions

SunWater

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

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

SunWater proposed that 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 Eton WSS are set out in Table 5.4.

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	27,831	25,097	25,872	24,579	25,152	23,770	23,512	24,244	24,055	23,708	25,089
Eton WSS	695	910	505	728	862	750	687	657	785	804	734

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 around 30% of all operating costs for Eton, which is approximately double that of PVWater's costs, and questioned whether the presence of a local business centre is increasing overhead costs unfairly.

EIAC (2011a) noted that operations expenditure in 2008 increased significantly, with a large in increase in indirects and overheads.

Authority's Analysis

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

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

information technology, and health, safety, environmental and quality areas (for the whole of SunWater).

Deloitte was unable to draw any definitive conclusions from an attempt to benchmark against 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 (FTE) 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, 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 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 Eton WSS (from all customers) is set out in Table 5.5. The allocation of these costs between high and medium priority customers is discussed below.

[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.

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	695	910	505	728	862	750	687	657	785	804	734
Authority	-	-	-	-	-	-	670	629	740	749	673

Source: SunWater (2011).

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

In response to EIAC, the Authority notes that the spike in 2007-08 was due to dam safety obligations being undertaken in Kinchant Dam (Arup, 2011).

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

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	320	479	288	347	415	258	261	261	261	262	262
Electricity	175	202	163	172	87	200	237	255	275	299	323
Preventive Maintenance	101	129	134	129	147	214	217	218	220	222	222
Corrective Maintenance	107	94	96	158	168	165	168	169	171	172	172
Total	**703**	**904**	**681**	**806**	**816**	**837**	**882**	**904**	**927**	**956**	**979**

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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Labour	245	311	172	283	354	287	291	291	291	291	291
Electricity	175	202	163	172	87	200	237	255	275	299	323
Contractors	121	167	131	106	99	158	161	163	165	168	168
Materials	55	108	76	95	136	90	91	92	94	95	95
Other	107	116	139	150	141	102	103	102	102	103	103
Total	**703**	**904**	**681**	**806**	**816**	**837**	**882**	**904**	**927**	**956**	**979**

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

Other Stakeholders

EIAC (2011a) submitted that neither of the NSPs for Eton (Bulk and Distribution System) provided sufficient detail of proposed costs, by activity or type, to allow an informed opinion to be drawn on efficiency. EIAC noted that although SunWater states that a bottom up approach has been adopted in developing their costs, the details of this needs to be provided to allow a full assessment of proposed costs.

EIAC also submitted that there is substantial duplication in the two NSPs in the sections on Customer Service Standards, Service Costs and Compliance and it must be transparent that there is no double counting of costs for these activities.

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.

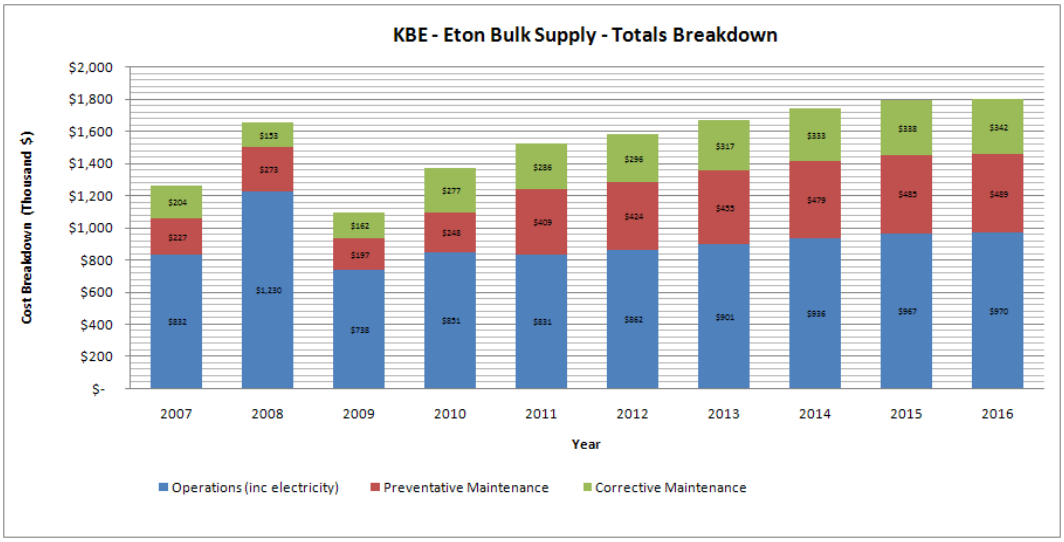
Arup noted that total operating expenditure for the Eton WSS is forecast to increase annually at about 1.47% in real terms when using an average of the 2006-11 costs (Figure 5.4). Arup noted that SunWater had indicated that the expense fluctuations are due to:

(a) service delivery strategies that have achieved efficiencies in better utilising labour, which in turn has changed the distribution of costs and duties between maintenance (both corrective and preventive) and general scheme operations;

(b) a rise in the electrical and mechanical maintenance to keep the Mirani Pump Station operational; and

(c) a possible reduction in costs at the regional level due to the SLFI review.

Figure 5.4: Total Operating Expenditure Breakdown – Eton WSS



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 5.6. SunWater advised that it continues to operate and maintain the recreation facilities at Kinchant Dam (Table 5.8).

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

	2011-12	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Kinchant Dam	172	168	173	169	175

Source: SunWater (2011).

Other Stakeholders

CANEGROWERS (2011a) noted that operation costs in the river [bulk] system are estimated to increase by 8% over the next five years in real terms, which is a 30% increase in nominal terms by 2016.

CANEGROWERS (2011c) and EIAC (2011a) both expressed concern for proposed recreation facility costs associated with Kinchant Dam. CANEGROWERS submitted that these costs should be funded separated as they have nothing to do with irrigation customers. EIAC submitted that the proposed annual expenditure represents a cost to irrigators of $3.30/ML per annum. Although the Ministerial Direction is clear on the treatment of these costs for the price path, full details are required to allow assessment of the proposed costs and consideration of more cost efficient maintenance options.

CANEGROWERS also submitted that water treatment costs should be considered as service delivery costs, not recreation costs, and hence should be taken out of bulk costs.

EIAC submitted that irrigators should be provided with specific examples of the services provided for the Eton Bulk Scheme under other supporting activities to gain a better understanding of the impact of these on overall costs and if other arrangements for these services might be more appropriate.

In regards to specific cost information provided in the NSP (Table 4-3 Expenditure by Activity), EIAC submitted that the forecast operations expenditure of some $550,000 per annum requires detailed explanation as the day to day description provided does not justify that level of costs.

Authority Analysis

Consultant's Review

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

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.

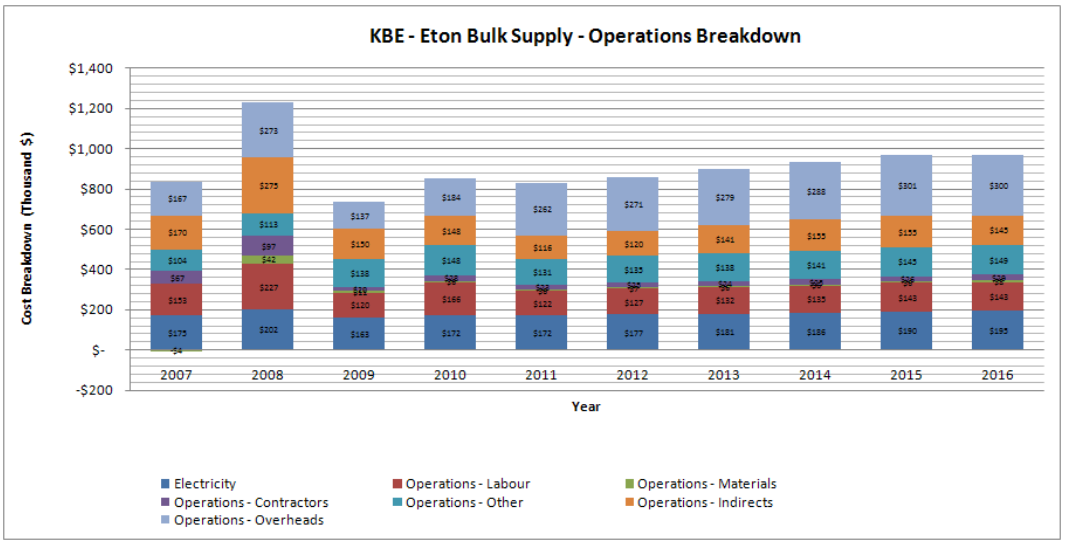
In reviewing operating expenditure for the Eton WSS, Arup noted that:

(a) up to 50% of costs are indirect and overheads, with the remaining components (electricity and labour) not forecast to change significantly (Figure 5.5);

(b) ROP requirements were put in place in 2006-07 requiring SunWater to measure water quality, monitor blue green algae, inspect the integrity of river banks on the Pioneer River and report any fish strandings; and

(c) the spike in 2007-08 was due to dam safety obligations being undertaken at Kinchant Dam, which may occur again in years of high rainfall.

Figure 5.5: Operating Expenditure Breakdown – Eton WSS



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

Based on field observations, discussions with SunWater regional staff and further interrogation of NSP data, Arup considered that the incurrence and assignment of operating expenditure and service standards are appropriate and are being carried out to a high service level.

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

Conclusion

The Authority notes that Arup did not recommend any adjustment to operating expenditure for this scheme.

In Volume 1, the Authority recommended that SunWater staff continue to conduct all quarterly meter reads. In relation to recreation costs, the Authority notes that the Ministerial Direction requires that the Authority set prices to recover prudent and efficient recreation management costs. The Authority notes that Arup did not recommend any adjustments to SunWater's operations costs, including recreation costs.

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

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

Item 2: Preventive Maintenance

Stakeholder Submissions

SunWater

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

Preventive maintenance includes:

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

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

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

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

Other Stakeholders

EIAC (2011a) noted that proposed expenditure on preventive and corrective maintenance is approximately $750,000 per annum and submitted that SunWater must provide justification for these costs (including examples of corrective maintenance undertaken in the past for the scheme).

Authority Analysis

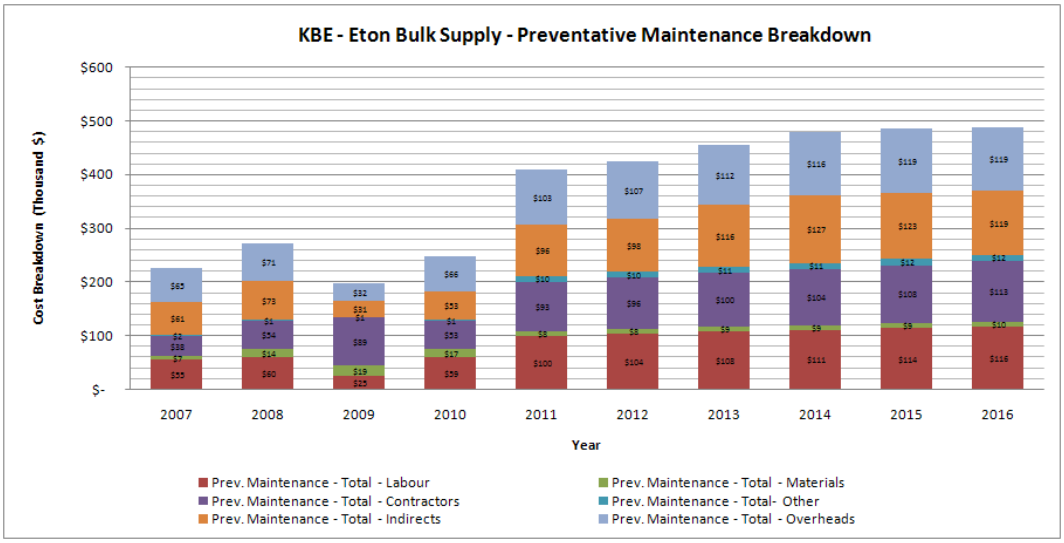
Consultant's Review

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 PB's revised forecasts had been integrated into the NSP forecasts.

In reviewing preventive maintenance for the Eton WSS, Arup noted that expenditure is forecast to increase over the regulatory period (Figure 5.6). The scheme has significant areas requiring slashing of grass and as such incur a large contractor component to maintain grounds particularly around Kinchant Dam. Given the working area and the monitoring required around the dam the use of contractors to maintain vegetation growth was considered appropriate.

Figure 5.6: Preventive Maintenance Breakdown – Eton WSS



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 adjustment to 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 has not specifically adjusted 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.

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

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

Other Stakeholders

EIAC (2011a) noted that proposed expenditure on preventive and corrective maintenance is approximately $750,000 per annum and justification for this amount must be provided.

Authority Analysis

Consultant's Review

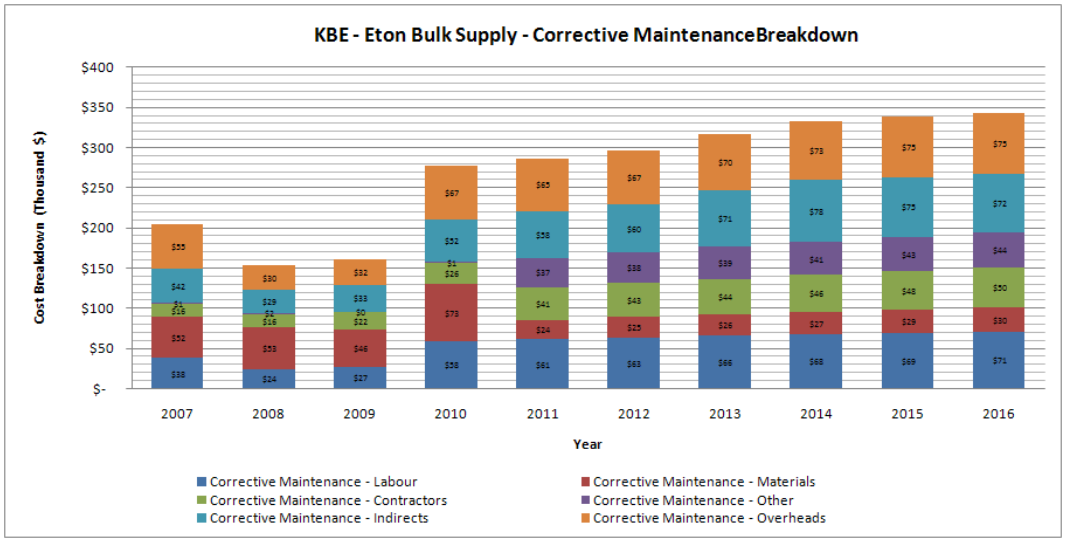
Arup noted that corrective maintenance forecasts are based on actual spends from the last four years.

Although SunWater advised Arup that they have 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.

In reviewing corrective maintenance for the Eton WSS, ARUP noted that expenditure is forecast to increase over the regulatory period (Figure 5.7).

Figure 5.7: Corrective Maintenance Breakdown – Eton WSS



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 corrective maintenance expenditure for this scheme.

Conclusion

The Authority notes that Arup did not recommend any adjustment to 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 Eton bulk WSS relate mostly to the three Mirani Pump Stations used to pump water from the Pioneer River at Mirani Weir into Kinchant Dam.

SunWater submitted that electricity costs are difficult for forecast accurately because the volumes pumped, electricity consumption and prices cannot be reliably projected. In its NSP, 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.

Table 5.9 sets out the average electricity cost per ML submitted by SunWater for projected deliveries in the first year of the price path in its NSP and as per its subsequent proposal.

Table 5.9: Projected Pump Station Electricity Cost for 2011-12

	Estimated Cost ($/ML)	***Projected Water Usage (ML pa)***	***Projected Cost ($000 pa)***
SunWater – NSP	8.13	21,190	172
Revised SunWater data	9.43	21,190	200

Source: SunWater (2011).

Other Stakeholders

CANEGROWERS (2011a) noted that electricity is a major component of costs at $13/ML for the channel and $8/ML for bulk to give a total of $21/ML used. CANEGROWERS submitted that a number of options exist to reduce electricity costs including new pumps, off peak pumping, new balancing storages and new electricity tariffs, and these should be investigated especially for the bulk system.

EIAC (2011a) submitted that for the present price path the bundled forecast electricity cost was to be some $450,000 per annum, while the forecast cost for the new path is only $402,000 ($172,000 Bulk and $230,000 Distribution). With overall increase to electricity tariffs for the present price path of around 40%, a proposed decrease is very questionable and cannot be fully explained by a reduction in forecast water use. This also raises a concern with SunWater's proposed unders and overs approach as it could be interpreted that Eton will be "under" for the full period and hence subject to a substantial catch up.

EIAC further noted that with regard to historical expenditure electricity is highest in 2007-08, yet this is the lowest water use year for the same period. Accordingly, the volumes pumped into Kinchant Dam need to be shown as it is unclear how natural flows have been considered (i.e. are all inflows assumed to be pumped from the river).

EIAC submitted that they do not support SunWater's proposal for forecasting electricity and consider that surely the most appropriate method to determine the unit cost is to take actual electricity consumption figures from accounts and divide by actual water volumes for water meters for similar periods. This unit rate can then be applied to forecast annual volumes.

Authority Analysis

Consultant's Review

Arup noted that SunWater have undertaken extensive cost benefit analyses into when and where they 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 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 5.10.

Item 5: Cost Escalation

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

Direct Labour

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

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

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

Direct Materials and Contractors

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

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

Other Costs

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

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Eton WSS is set out in Table 5.10.

The Authority's proposed costs include all specific adjustments and the Authority's proposed cost escalations as noted above. As noted in Volume 1, the Authority has applied a minimum 2.43% saving to direct operating costs (excluding electricity) in 2012-13. A further 0.75% saving arising from labour productivity is also applied, compounding annually.

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

	SunWater					***Authority***				
	2012-13	***2013-14***	***2014-15***	***2015-16***	***2016-17***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Operations	261	261	261	262	262	252	253	253	253	253
Electricity	237	255	275	299	323	203	211	218	229	240
Preventive Maintenance	217	218	220	222	222	210	211	213	214	214
Corrective Maintenance	168	169	171	172	172	162	163	165	166	165
Total	**882**	**904**	**927**	**956**	**979**	**828**	**838**	**849**	**862**	**872**

Note: Totals vary from NSP due to the 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 WPCFs in both bulk and distribution systems.

Stakeholder Submissions

SunWater

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

For the purpose of allocating operating cost in the Eton WSS, SunWater submitted that total WAE is 63,263 ML of which 59,474 ML (94%) is High B and Risk WAE.

Other Stakeholders

EIAC (2011a) submitted that the same methodology should be adopted for allocating operating and capital costs. This is particularly important in a scheme such as Eton Bulk where SunWater

state that all costs are fixed and, as such, must be asset based. EIAC noted that the Pioneer River ROP does not provide an allocation conversion factor for Eton.

Authority's Analysis

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

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

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

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

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

The effect for the Eton WSS is detailed in the following chapter (as it takes into account other factors relevant to establishing total costs).

5.6 Summary of Operating Costs

SunWater's proposed operating costs by activity and type are set out in Table 5.11. The Authority's recommended operating costs are set out in Table 5.12.

Table 5.11: SunWater's Proposed Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	125	125	125	125	125
Materials	11	11	11	11	11
Contractors	23	24	24	24	24
Other	102	101	101	102	102
Non-Direct	263	275	267	255	251
Preventive Maintenance					
Labour	103	103	103	103	103
Materials	19	19	19	19	19
Contractors	95	97	98	99	99
Other	0	0	0	0	0
Non-Direct	217	226	220	210	207
Corrective Maintenance					
Labour	63	63	63	63	63
Materials	62	63	63	64	64
Contractors	42	43	43	44	44
Other	1	1	1	1	1
Non-Direct	134	140	136	130	128
Electricity	237	255	275	299	323
Total	**1,497**	**1,544**	**1,549**	**1,552**	**1,565**

Note: Totals vary from NSP due to the 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 5.12: The Authority's Recommended Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	121	122	123	124	125
Materials	10	11	11	11	11
Contractors	22	23	23	23	23
Other	98	98	97	96	95
Non-Direct	257	263	252	237	230
Preventive Maintenance					
Labour	100	100	101	102	102
Materials	18	18	18	18	18
Contractors	92	93	93	94	93
Other	0	0	0	0	0
Non-Direct	211	217	207	195	189
Corrective Maintenance					
Labour	61	61	62	62	62
Materials	60	60	61	61	60
Contractors	41	41	41	42	41
Other	1	1	1	1	1
Non-Direct	131	134	128	121	117
Electricity	203	211	218	229	240
Total	**1,426**	**1,452**	**1,436**	**1,416**	**1,408**

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 we increased by CPI, with additional increases in some schemes.

For the Eton WSS (including the Distribution System), in addition to CPI increases over 2006-11, the prices for channel customers were increased in real terms to achieve lower bound costs in 2010-11. In 2011-12, prices 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 Eton WSS for the 2012-17 regulatory period is outlined in Table 6.1. Total costs since 2006-07 are also provided. Total costs reflect the costs for the service contract (all sectors) and do not include any adjustments for the Queensland Government's pricing policies.

Table 6.1: Total Costs for the Eton WSS (Real $'000)

	Actual Costs						*Future Costs*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater's Submitted Costs	1,399	1,920	1,342	1,501	1,850	1,997	2,089	2,132	2,132	2,135	2,148
Renewals Annuity	139	268	245	126	214	595	594	590	585	585	585
Operating Costs	1,263	1,656	1,097	1,375	1,636	1,404	1,497	1,544	1,549	1,552	1,565
Revenue Offsets	-3	-3	0	-1	0	-2	-2	-2	-2	-2	-2
Authority's Total Costs	-	-	-	-	-	-	1,952	1,974	1,951	1,931	1,944
Renewals	-	-	-	-	-	-	527	522	515	516	537
Operating Costs	-	-	-	-	-	-	1,426	1,452	1,436	1,416	1,408
Revenue Offsets	-	-	-	-	-	-	-2	-2	-2	-2	-2
Return on Working Capital	-	-	-	-	-	-	1	1	1	1	1

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

6.4 Fixed and Variable Costs

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

SunWater submitted that all of its operating costs in the Eton WSS (exclusive of the Distribution System) are fixed.

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

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

For the Eton WSS, Indec recommended 93% of costs should be fixed and 7% variable under optimal management. The Authority notes that a comparable ratio is not available under the current tariff structure for the Eton Bulk WSS, but that in the Eton Distribution System 70% of costs are recovered in the fixed charge and 30% in the volumetric charge.

In general, the Authority accepts Indec's recommended tariff structure for the reasons stated by Indec as 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	1,816	1,836	1,815	1,796	1,808
High Priority	285	288	285	283	286
Medium Priority	1,261	1,275	1,260	1,247	1,254
Distribution Losses	269	272	269	266	268

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 is 53.5% 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 Eton WSS ($/ML)

	Actual Prices						***Cost Reflective Prices***				
	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***	***2011-12***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
River/Channel (Bundled)											
Fixed (Part A)	38.64	39.76	41.68	43.80	48.44	52.20	na	na	na	na	na
Volumetric (Part B)	14.86	15.29	16.03	16.85	18.64	19.31	na	na	na	na	na
River (Unbundled)											
Fixed (Part A)	na	na	na	na	na	na	24.74	25.36	25.99	26.64	27.30
Volumetric (Part B)	na	na	na	na	na	na	4.22	4.32	4.43	4.54	4.66

Note: Prior to 2012-13, channel customers paid a bundled price for bulk and distribution services. This bundled price is provided for reference only. 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 is unable to identify the current revenues arising from an unbundled Eton bulk charge, as there was no such charge in 2010-11. This analysis can be done for the (bundled) bulk and distribution charge and this is presented in the Eton Distribution System Draft Report Chapter 6 – Draft Prices.

The Authority therefore recommends cost-reflective charges for the Eton WSS.

6.8 The Authority's Recommended Prices

The Authority's recommended prices to apply to the Eton WSS for 2012-17 are outlined in Table 6.4 together with actual prices since 2006-07.

Table 6.4: Recommended Medium Priority Prices for the Eton WSS ($/ML)

	Actual Prices						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
River/Channel (Bundled)											
Fixed (Part A)	38.64	39.76	41.68	43.80	48.44	52.20	na	na	na	na	na
Volumetric (Part B)	14.86	15.29	16.03	16.85	18.64	19.31	na	na	na	na	na
River (Unbundled)											
Fixed (Part A)	na	na	na	na	na	na	24.74	25.36	25.99	26.64	27.30
Volumetric (Part B)	na	na	na	na	na	na	4.22	4.32	4.43	4.54	4.66

Note: All customers source water from the channel system; hence, prior to 2012-13 there was only a bundled price for Eton customers. 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)*
Kinchant Dam	2011-12	Kinchant Dam O/W - Clean and patch paint outlet conduits 1 & 2 (externally) at coating failure locations upstream of guard valves (ref. item 2008/6 DS report)	18
		Kinchant Dam outlet works - Prepare & repaint the external surface of the right side penstock between the guard valve and the cone valve (ref. item 2.5.2a 2009 DS report)	18
		Kinchant Dam outlet works - Prepare & repaint the internal surface of the left side steel penstock between the guard valve and the cone valve (ref. item 2.5.1a 2009 DS report)	18
		Kinchant Dam Inlet Tower - Replace lower level handrails and platforms with non-corrosive metal items when access becomes available	12
	2012-13	Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2012) See Notes	123
	2013-14	14ETO-INSTL CNTRL STCTR ABDGN DVSRN CHNL	35
	2014-15	Kinchant Dam - Closed Dissipater Bulkhead Gate Major Refurbishment (Blast, Paint and Seals) (ref. item 2.8.1a 2009 DS report)	19
		INVESTIGATION CONTAMINATED LAND SITES	15
		Kinchant Dam - Inlet tower hoist: Five yearly third party inspection	13
	2015-16	Kinchant Dam - Bulkhead Gate Major Refurbishment (Blast Paint and Seals)	37
	2016-17	Refurbish Structure - Protection of aggregate in dissipation area at midlife	25
		Replace Actuator, Elec Gec	25
		Replace Comb. Water Quality Sensor	20
		Replace Flap Gate No 1	16
		Replace Flap Gate No 2	16
		Replace Flap Gate No 3	16
		Replace Electrical Services	12
		Replace Instrumentation	12
		Replace Rtu	12
	2017-18	Study: 20yr Dam Safety Review (by 1 Dec 2017)	124
		Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2012) See Notes	124
	2018-19	09ETO-RPLC MARKER BUOYS KD STRG(plan)	45
		Kinchant Dam - Refurbish Rec Area Pumping Plant	12
	2019-20	10ETO-INSTALL EMBANKMENT FENCING KD	48
		Kinchant Dam - Refurbish guard valve: Maintenance Strategy + motor overhaul	37
		Refurbish: Blog. Maintenance Strategy + motor overhaul	37
		Kinchant Dam - Inlet tower hoist: Ten yearly third party inspection	12
	2020-21	Refurbish: Maintenance Strategy	19
	2021-22	Kinchant Dam - Repair of corrosion on Inlet tower crane	19

Asset	*Year*	*Description*	*Value ($'000)*
		framework	
		Kinchant Dam Inlet Tower - Replace lower level handrails and platforms with non-corrosive metal items when access becomes available	12
	2022-23	Replace Switchboard	130
		Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2012) See Notes	123
		Replace Cables & Cableways	73
		Replace Control	20
	2023-24	Replace Control Equipment	14
		Study: Options analysis on replacement profile of butterfly valve	12
	2024-25	Replace Electric Vibrating Piezometers (18)	141
		Kinchant Dam - Inlet tower hoist: Five yearly third party inspection	12
	2025-26	Replace Valve 1, 1350Mm Butf Gec	197
		Replace Valve 2, 1350Mm Butf Gec	197
		Replace Gate, Slide Batescrew	18
		Replace Ladders & Handrails (Valve House)	12
		Kinchant Dam - Regulating Valve No. 1 (Refurbish Actuator, Seals etc)	12
	2026-27	Replace Ladders, Handrails & Fall Arrest Systems	48
		Replace Gates & Security Fences	28
		Kinchant Dam O/W - Clean and patch paint outlet conduits 1 & 2 (externally) at coating failure locations upstream of guard valves (ref. item 2008/6 DS report)	18
	2027-28	Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2012) See Notes	123
		10ETO-RFRBSH KD REG VALVE 2(plan)	19
	2028-29	09ETO-RPLC MARKER BUOYS KD STRG(plan)	45
		09ETO-INSTAL SAFTY FENC KD QUARRY (PLAN)	12
	2029-30	10ETO-INSTALL EMBANKMENT FENCING KD	48
		Kinchant Dam - Inlet tower hoist: Ten yearly third party inspection	12
		Replace Instrumentation	12
	2030-31	Refurbish: Maintenance Strategy	18
	2031-32	Replace Control Equipment	69
		Replace Actuator, Elec Gec	25
		Replace Comb. Water Quality Sensor	20
		Kinchant Dam Inlet Tower - Replace lower level handrails and platforms with non-corrosive metal items when access becomes available	12
		Replace Rtu	12
	2032-33	Study: 5yr Dam Comprehensive Inspection (by 1 Dec 2012) See Notes	123
		Replace Sump Pump - Valve House	17
	2033-34	14ETO-INSTL CNTRL STCTR ABDGN DVSRN CHNL	35
		Kinchant Dam - Refurbish Rec Area Pumping Plant	12
	2034-35	Kinchant Dam - Refurbish guard valve: Maintenance Strategy + motor overhaul	37
		Refurbish: Blog Maintenance Strategy + motor overhaul	37
		Kinchant Dam - Closed Dissipater Bulkhead Gate Major	18

Asset	*Year*	*Description*	*Value ($'000)*
		Refurbishment (Blast, Paint and Seals) (ref. item 2.8.1a 2009 DS report)	
		Kinchant Dam - Inlet tower hoist: Five yearly third party inspection	12
	2035-36	Replace Structure Of Toilet Block	196
		Kinchant Dam - Bulkhead Gate Major Refurbishment (Blast Paint and Seals)	37
		Replace V Notch Weir 1	27
		Replace V Notch Weir 2	27
		Replace Control	20
Kinchant Dam Wtp	2020-21	Replace Treatment Plant Unit	132
Mirani Distribution	2015-16	Replace Protective Works	19
		Refurbish grid abutments and rails (per 2004 Cond Ass) - MDC FN03	12
		09ETO-RFBSH ROCK PRTC MDC SI04 SI01(PLAN	11
		11ETO-REFURBISH MDC BNDRY FENCE SECTIONS	11
	2016-17	Replace Gates	26
		Replace Level Sensor Transducer	12
		Replace Rtu, Moscad-L	12
	2017-18	Replace Control System	87
		Replace Level Switch	16
		Replace Level Transducer	12
		Replace Rtu, Moscad-L	12
	2019-20	Replace Boundary Fence	380
	2020-21	11ETO-REFURBISH MDC BNDRY FENCE SECTIONS	11
	2022-23	09ETO-RFBSH ROCK PRTC MDC SI04 SI01(PLAN	11
	2025-26	Refurbish grid abutments and rails (per 2004 Cond Ass) - MDC FN03	12
		11ETO-REFURBISH MDC BNDRY FENCE SECTIONS	11
	2026-27	Replace handrails @ half life (40 yr)	32
		Regalv. Screens @ 10 yrs, replace screens @20yrs.	12
	2029-30	10ETO-REFR ROCK PRT MDC DOP @ 4547 (PLAN	20
		09ETO-RFBSH ROCK PRTC MDC SI04 SI01(PLAN	11
	2030-31	11ETO-REFURBISH MDC BNDRY FENCE SECTIONS	11
	2031-32	Replace Level Sensor Transducer	12
		Replace Rtu, Moscad-L	12
	2032-33	Replace Control System	87
		Mirani Diversion Channel - Desilt siphon pipes: Desilting every 10 yrs	25
		Replace Level Transducer	12
		Replace Rtu, Moscad-L	12
	2033-34	Replace Seepage Drain 7030-7420M	70
	2035-36	Refurbish grid abutments and rails (per 2004 Cond Ass) - MDC FN03	12
		11ETO-REFURBISH MDC BNDRY FENCE SECTIONS	11
Mirani Pump Station 1 (To Mdc)	2011-12	Replace Switchboard	226
	2015-16	Refurbish Pump 1: Overhaul every 10 yrs. - Mirani PSTN1	60
	2018-19	Replace Control Equipment	98
		Replace Outlet Structure	10

Asset	*Year*	*Description*	*Value ($'000)*
	2020-21	11ETO-RFRBSH PMP/CABLE PSTN1 PUMP 2	48
	2021-22	Refurbish Pump 1: Overhaul every 10 yrs. - Mirani PSTN1	60
	2023-24	Replace Cable	74
		Mirani PSTN 1 - Bulkhead Gates Blast and Paint Closed Bulks	19
	2027-28	Refurbish Pump 1: Overhaul every 10 yrs. - Mirani PSTN1	59
	2030-31	11ETO-RFRBSH PMP/CABLE PSTN1 PUMP 2	47
	2031-32	Replace Pump	185
		Replace Control Equipment	97
	2033-34	Refurbish Pump 1: Overhaul every 10 yrs. - Mirani PSTN1	59
	2034-35	Replace Pump	185
Mirani Pump Station 2 (To Mdc)	2016-17	08ETO09-MIRANI PSTN 2 DESIGN & PROCURE	306
	2017-18	Replace Pump Unit No. 1 Starter	93
		Replace Pump Unit No. 2 Starter	93
		Replace Main Circuit Breaker	56
		Replace Incoming Supply Panel	25
	2019-20	Mirani PSTN 2 - Refurbish Pump 2 (bearings, seals, etc)	49
		Replace Control Equipment	19
	2022-23	Replace Switchboard	108
	2023-24	Refurbish Pump 1 - Mirani PSTN 2	86
		Replace Structure Of Building	12
	2025-26	Mirani PSTN 2 - Refurbish Pump 2 (bearings, seals, etc)	49
	2028-29	Replace Cable	74
	2029-30	Refurbish Pump 1 - Mirani PSTN 2	86
	2031-32	Mirani PSTN 2 - Refurbish Pump 2 (bearings, seals, etc)	49
	2032-33	Replace Pump, 300Mm Subm Kelly&Lewis	95
	2033-34	Replace Inlet Structure	22
	2034-35	Replace Control Equipment	19
	2035-36	Refurbish Pump 1 - Mirani PSTN 2	86
Mirani Pump Station 3 (To Md1)	2011-12	Replace Cable Connection Bells	89
		Mirani PSTN3 - Overhaul Pump Unit 5	71
		Mirani PSTN3 - Refurbish Pump Unit #2	30
		Mirani PSTN 3 - PLC/SCADA System replacement options analysis	12
	2012-13	Mirani PSTN3 - Refurbish Pump Unit #1	74
	2013-14	09ETO-MIRANI PSTN 3 PUMP #4 O/HAUL(PLAN)	42
	2014-15	Replace programme logic controller - Scope, design and drawings	69
		Replace Pump Unit No 3 Starter - Scope, design and drafting	50
		Replace Pump Unit No 4 Starter - Scope design and drafting	50
		Replace Pump Unit No 5 Starter - Scope, design and drafting	50
		Replace pump unit No1 starter - Scope, design and drafting	50
		Replace pump unit No2 starter - Scope design and drafting	50
		Replace Fire Alarm System	19
		Repaint pump well bulkhead gate - Mirani PSTN3	16
		Refurbish / repaint PSTN3 Trash Screens - Mirani Diversion Channel	13
		Replace incoming supply panel - Scope, design and drafting	13
	2015-16	Mirani PSTN3 - Overhaul Pump Unit 3	75

Asset	*Year*	*Description*	*Value ($'000)*
		Replace Programme Logic Controller - Procure, install and commission	69
		Replace Pump Unit No 1 Starter - Procure, install and commission	50
		Replace Pump Unit No 2 Starter - Procure, install and commission	50
		Replace Pump Unit No 3 Starter - Procure install and commission	50
		Replace Pump Unit No 4 Starter - Procure, install and commission	50
		Replace Pump Unit No 5 Starter - Procure, install and commission	50
		Mirani PSTN3 - Dewater and inspect / replace bolts etc. @ 10yrs	31
		Replace Incoming Supply Panel - Procure, install and commission	12
	2016-17	Mirani PSTN3 - Refurbish Pump Unit #2	31
	2017-18	Replace Control Equipment	349
		Mirani PSTN3 - Overhaul Pump Unit 5	74
	2018-19	Mirani PSTN3 - Refurbish Pump Unit #1	74
		09ETO-MIRANI PSTN 3 PUMP #4 O/HAUL(PLAN)	42
	2021-22	Mirani PSTN3 - Overhaul Pump Unit 3	74
		Mirani PSTN3 - Refurbish Pump Unit #2	31
	2023-24	Mirani PSTN3 - Overhaul Pump Unit 5	74
		Replace Main Circuit Breaker	49
		Replace Main Circuit Breaker No 2	49
		09ETO-MIRANI PSTN 3 PUMP #4 O/HAUL(PLAN)	42
	2024-25	Mirani PSTN3 - Refurbish Pump Unit #1	73
		Refurbish / repaint PSTN3 Trash Screens - Mirani Diversion Channel	12
	2025-26	Replace Scada Switchboard	303
		Mirani PSTN3 - Dewater and inspect / replace bolts etc. @ 10yrs	31
	2026-27	Mirani PSTN3 - Refurbish Pump Unit #2	31
	2027-28	Mirani PSTN3 - Overhaul Pump Unit 3	74
		Replace Fire Alarm System	18
	2028-29	Replace H.V. Transformer No 2	76
		09ETO-MIRANI PSTN 3 PUMP #4 O/HAUL(PLAN)	42
	2029-30	Replace Cable	602
		Mirani PSTN3 - Overhaul Pump Unit 5	73
		Replace programme logic controller - Scope, design and drawings	67
	2030-31	Replace Control Equipment	347
		Replace Switchboard H.V.	298
		Replace H.V. Transformer No 1	157
		Mirani PSTN3 - Refurbish Pump Unit #1	74
		Replace Programme Logic Controller - Procure, install and commission	68
	2031-32	Mirani PSTN3 - Refurbish Pump Unit #2	31
		Mirani PSTN 3 - PLC/SCADA System replacement options analysis	12
	2033-34	Mirani PSTN3 - Overhaul Pump Unit 3	74
		09ETO-MIRANI PSTN 3 PUMP #4 O/HAUL(PLAN)	42

Asset	*Year*	*Description*	*Value ($'000)*
	2034-35	Replace Pump Unit No 3 Starter - Scope, design and drafting	49
		Replace Pump Unit No 4 Starter - Scope design and drafting	49
		Replace Pump Unit No 5 Starter - Scope, design and drafting	49
		Replace pump unit No1 starter - Scope, design and drafting	49
		Replace pump unit No2 starter - Scope design and drafting	49
		Repaint pump well bulkhead gate - Mirani PSTN3	16
		Refurbish / repaint PSTN3 Trash Screens - Mirani Diversion Channel	12
	2035-36	Replace Pump	513
		Mirani PSTN3 - Overhaul Pump Unit 5	74
		Replace Pump Unit No 1 Starter - Procure, install and commission	49
		Replace Pump Unit No 2 Starter - Procure, install and commission	49
		Replace Pump Unit No 3 Starter - Procure install and commission	49
		Replace Pump Unit No 4 Starter - Procure, install and commission	49
		Replace Pump Unit No 5 Starter - Procure, install and commission	49
		Mirani PSTN3 - Dewater and inspect / replace bolts etc. @ 10yrs	31
		Refurbish Transformer - 10 yr overhaul - Mirani PSTN3	31