QUEENSLAND COMPETITION AUTHORITY

Final Report

SunWater
Irrigation Price Review: 2012-17

Volume 2

Boyne River and Tarong Water Supply Scheme

April 2012

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GLOSSARY

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

EXECUTIVE SUMMARY

Ministerial Direction

The Authority has been directed by the Minister for Finance and The Arts and 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 Boyne River and Tarong 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 Boyne River and Tarong 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											
Fixed (Part A)	16.80	17.52	18.36	18.96	19.52	20.24	24.05	24.65	25.26	25.90	26.54
Volumetric (Part B)	12.00	12.52	13.12	13.53	13.94	14.44	1.49	1.52	1.56	1.60	1.64

Source: Actual Prices (SunWater, 2011al, Final Recommended Prices (QCA, 2012)

Final Report

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

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

Consultation

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

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

1. BOYNE RIVER AND TARONG WATER SUPPLY SCHEME

1.1 Scheme Description

The Boyne River and Tarong water supply scheme (WSS) is located near the towns of Proston and Mundubbera. An overview of the key characteristics of this WSS is provided in Table 1.1.

Table 1.1: Key Scheme Information for the Boyne River and Tarong WSS

Boyne River and Tarong WSS	
Business Centre	Bundaberg
Irrigation Uses of Water	Citrus and other crops
Urban water supplies	na
Industrial Water Supplies	Tarong Power Station, via the Tarong Pipeline

Source: Synergies Economic Consulting (2010).

The Boyne River and Tarong WSS scheme has a total of 155 bulk customers. Medium and high priority water access entitlements (WAE) are shown in Table 1.2.

Table 1.2: Water Access Entitlements (ML)

Customer Group	***Irrigation WAE***	***Total WAE***
Medium Priority	9,461	11,589
High Priority	0	33,210
Total	9,461	44,799

Source: SunWater (2011am).

1.2 Bulk Water Infrastructure

Bulk water services involve 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 is detailed in Table 1.3.

Table 1.3: Bulk Water Infrastructure in the Boyne River and Tarong WSS

Storage Infrastructure	***Capacity (ML)***	***Age (years)***
Boondooma Dam	*204,200*	*27*

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

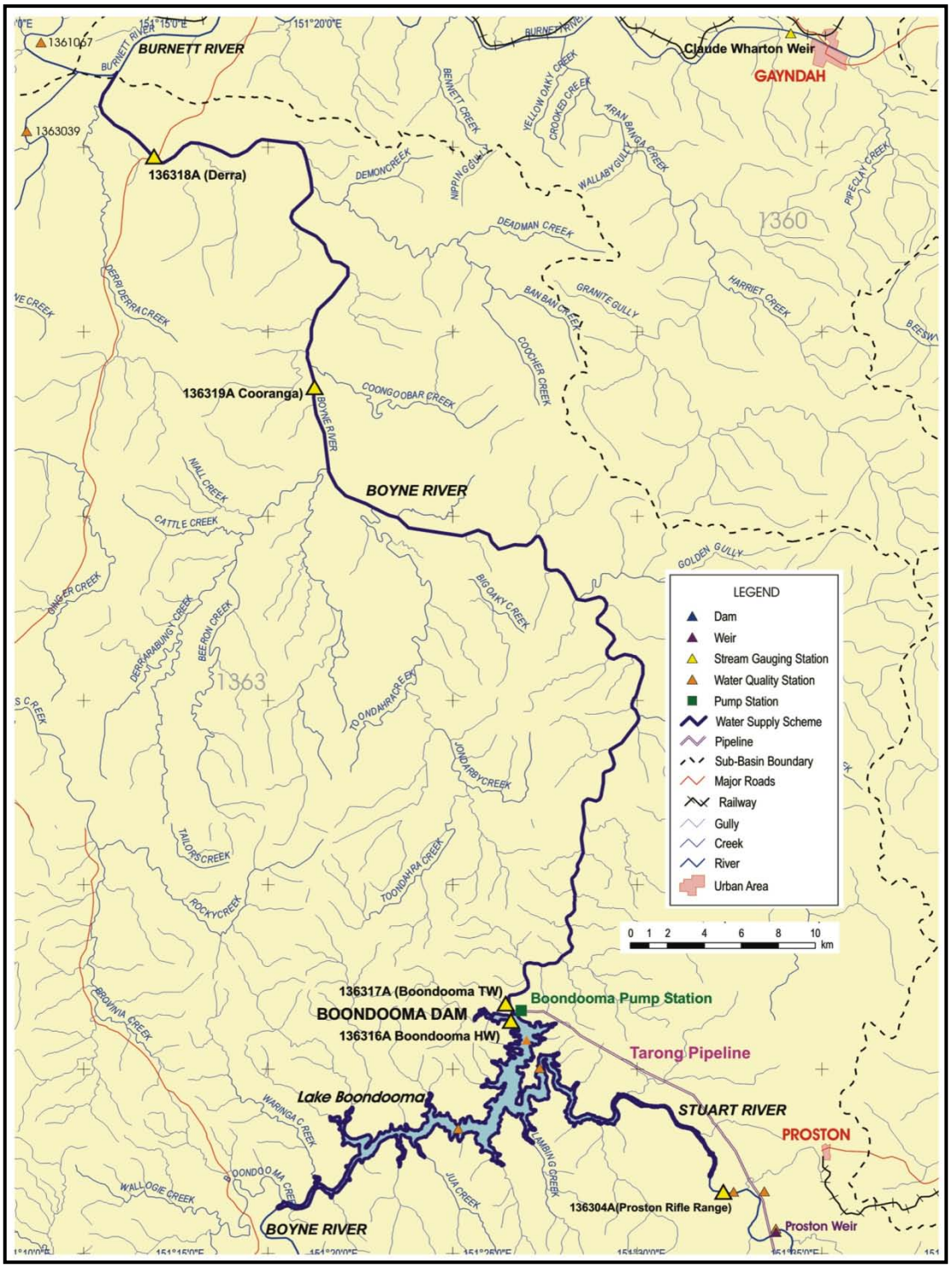
The main infrastructure in the scheme is the Boondooma Dam completed in 1982. It releases water down the Boyne River supplying water to customers along the river banks and the Tarong Power Station. The Tarong Power Station is supplied through a 95 km long pipeline.

Boondooma Dam has two rock fill concrete-faced main wall sections. The largest section straddles Boyne River; the smaller one straddles Sandy Creek. The dam's outlet discharges into

a diversion tunnel that supplies both the Tarong Pipeline's Boondooma Pump Station and the Boyne River outlet.

The location of the Boyne River and Tarong WSS and key infrastructure is shown in Figure 1.1.

Figure 1.1: Boyne River and Tarong WSS Locality Map



Source: SunWater (2011).

1.3 Network Service Plans

The Boyne River and Tarong WSS bulk water network service plan (NSP) presents SunWater's:

(a) existing service standards;

(b) projected operating costs and proposed renewals annuity for the scheme; and

(c) risks to the plan and possible reset triggers.

SunWater has also prepared detailed background papers on key aspects of the NSPs, 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 prior to the Draft Report);

(c) published notes on Issues Arising from each round of consultation;

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

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

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

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

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

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

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

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

Following the amendment to the Ministerial Direction of 19 March 2010 and further advices 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 specifically addressed.

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

2. REGULATORY FRAMEWORK

2.1 Introduction

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

During the negotiations that preceded the 2006-11 price path, the Boyne River and Tarong Tier 2 group were in favour of retaining the existing price cap regulatory arrangement. In the 2011-12 interim price period the price cap arrangement was continued.

2.2 Draft Report

Stakeholder Submissions

SunWater

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

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

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

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

(d) unplanned frequency of installing and operating pumps to access low storage levels;

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

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

(g) outbreak of noxious weeds.

Other Stakeholders

No other stakeholders have commented on this matter.

Authority's Analysis

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

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

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

Source: QCA (2011)

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

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

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

2.3 Submissions Received from Stakeholders on the Draft Report

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

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

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

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

3. PRICING FRAMEWORK

3.1 Tariff Structure

Introduction

During the 2005-06 price negotiations, it was generally agreed to adopt a 70:30 ratio of fixed to variable costs. The Boyne River and Tarong Tier 2 group accepted that the tariff structure based on 70% of the efficient irrigation lower bound costs be collected through the Part A fixed charge with the remaining 30% of required revenue collected through Part B variable charge.

Draft Report

Stakeholder Submissions

SunWater (2011d) submitted that the fixed charge should recover fixed costs and the variable charge should recover variable costs (Volume 1).

During the Authority's first round of consultations (May 2010), concerns were raised that:

(a) the current tariff structure does not provide sufficient incentive to SunWater to sell available water;

(b) the current process for deciding actual allocations penalises efficient water users by imposing relatively larger reductions which remove incentive to pursue more efficient irrigation practices; and

(c) the Authority's review was being undertaken prior to finalisation of Resource Operations Plan (ROP) and Water Asset Management Plan (WAMP) which will impact future water allocations and 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 considered that, in general, aligning the tariff structure with fixed and variable costs will manage volume risk over the regulatory period and send efficient price signals. To signal the efficient level of water use, the Authority recommended that all, and only, variable costs be recovered through a volumetric charge.

The process for determining announced allocations is the responsibility of DERM. As SunWater must deliver the required quantum of water under the announced allocation rules (consistent with the terms and conditions of the specified level of service agreement) there is no need for further incentives for this regard. However, the Authority also noted that where SunWater holds WAEs, high fixed tariffs will provide SunWater with the incentive to sell those WAEs because fixed costs associated with SunWater's WAE are not paid for by other customers and thus represent holding costs for SunWater. Further an adjusted price will also provide an incentive to sell water.

The volumes of permanent and temporary water traded for the Boyne River and Tarong WSS are identified in Table 3.1.

Table 3.1: Volume of Permanent and Temporary Water Traded in Boyne River and Tarong WSS (ML)

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2010-11*
Permanent water traded	0	0	0	0	0	3,421	600	460
Temporary water traded	1,935	1,388	981	5	114	244	1	144

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

The Authority noted that the relevant ROP and WAMP which will impact future water allocations and availability are yet to be finalised. The nature of any changes and their implications for prices are outside the scope of the current pricing review.

Submissions in Response to the Draft Report

In Round 3 Consultations, irrigators were concerned that under the proposed tariff structure, irrigators' bills would remain high during drought years when water is not available.

Authority's Response to Submissions Received on the Draft Report

As outlined in Volume 1, the Authority considers that irrigators are best placed to manage short-term volume risk – i.e. risk associated with fluctuating customer demand/and or water supply. The Authority considers that this short-term volume risk is best managed through cost-reflective tariffs, where the Part A fixed tariff is aligned with fixed costs and the Part B variable tariff is aligned with variable costs.

The Authority notes the view that having a higher Part A charge than historically has occurred is excessive particularly in those times when modest announced allocations are made. However, the Authority considers that any alternative to cost-reflective tariffs could lead to an inefficient outcome through biasing risk to the detriment of SunWater.

As an example, if the Authority were to recommend that some fixed costs were to be included in the volumetric charge then SunWater would be at significant risk of not achieving cost-recovery in those years where water use is, for whatever reason, less than forecast. This outcome would also be inconsistent with the Ministerial Direction which requires the Authority to have regard to SunWater's legitimate commercial interests.

3.2 Water Use Forecasts

Introduction

During the 2006-11 price path, 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 allocations, announced allocations and volumes delivered. The final water usage forecasts were based on the long term average actual usage level. Where there was a clear trend away from the long term average, SunWater adjusted the forecast in the direction of that trend. Usage forecasts also took into account SunWater's assessment of future key impacts on water usage, such as changes in industry conditions, impact of trading and scheme specific issues (SunWater, 2006a).

For Boyne River and Tarong WSS, SunWater (2006b) assumed a water use forecast of 60% of WAE.

Draft Report

Stakeholder Submissions

SunWater

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

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

SunWater's usage forecasts for 2011-16 are made having regard to historic averages over an eight-year period and the usage forecast applied for the current price path.

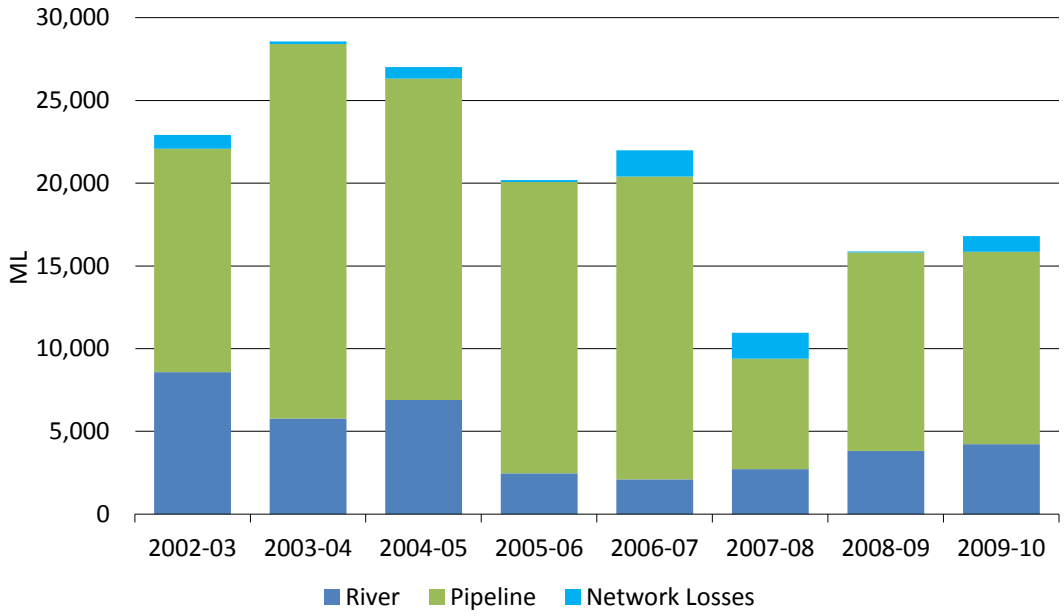
Based on the last eight years' observations, SunWater has forecast use as follows:

(a) at a whole scheme level (all sectors) – an average of 46% of WAE (including SunWater's WAE); and

(b) for the irrigation sector only – 40% of WAE. This compares with the eight-year average of 37%.

Figure 3.1 shows the historic usage information for the Boyne River and Tarong WSS submitted by SunWater. The river category includes all irrigation and other usage sourced from the river. Pipeline volumes refer to sales to industrial customers.

Figure 3.1: Water Usage for Boyne River and Tarong WSS (All Sectors)



Source: SunWater (2011).

Other Stakeholders

Boyne River Irrigator Advisory Committee (BRIAC, 2011) stated that the unreliability of the Boyne River due to the 70,000ML cut off [below which allocations to irrigators are zero] must be taken into account in usage assessment.

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 – Recommended 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 – Recommended Prices).

No submissions were received in regard to water use forecasts in the Boyne River and Tarong WSS. The Authority proposes no changes to its Draft Report recommendations.

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 one tariff group, River, for the Boyne River and Tarong WSS.

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

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

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).

Issues

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

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

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

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

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

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

(c) the methodology for apportioning 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 noted 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 the renewal of every individual asset.

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

Subsequently, the Authority liaised directly with SunWater to obtain further information, and commissioned Sinclair Knight Merz (SKM) to address material expenditure items (that is, those renewals items which represented more than 5% of the present value of forecast expenditure) and/or those of particular concern (usually in response to customers' submissions). Across all schemes, a total of 35 past and forecast renewals items were reviewed by SKM for the Draft Report.

An additional six past renewals items across the schemes were reviewed for the Final Report, bringing the total proportion of past items reviewed to 34%. A further 14 forecast renewals items were reviewed, increasing the proportion reviewed from 13% in the Draft Report to 29%.

The size of the sample is sufficiently large to determine and apply separate cost savings to past (and forecast) non-sampled items.

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

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

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

SunWater submitted that the opening balance for the Boyne River and Tarong WSS was $287,000.

In Volume 1, the Authority noted that the opening ARR balance at 1 July 2006 is not subject to review for the 2012-17 regulatory period.

The 1 July 2006 opening balance is unchanged at 287,000.

4.3 Past Renewals Expenditure

Draft Report

As noted above, the Authority has reviewed the prudency and efficiency of selected renewals expenditures over the 2006-11 price paths. The Authority 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 Boyne River and Tarong WSS for 2006-11 (Table 4.1) in real terms as at 2010-11. This expenditure included indirect and overhead costs which are subject to a separate review by the Authority (see Chapter 5 – Operating Costs). SunWater advised that it was unable to provide the forecast renewals expenditure (approved for the 2005-06 review) for this period.

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

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

	2006-07	***2007-08***	***2008-09***	***2009-10***	***2010-11***
Direct Costs	53	6	141	38	116
Indirect & Overheads Costs	15	3	74	29	23
Total	68	9	215	67	139

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

Other Stakeholders

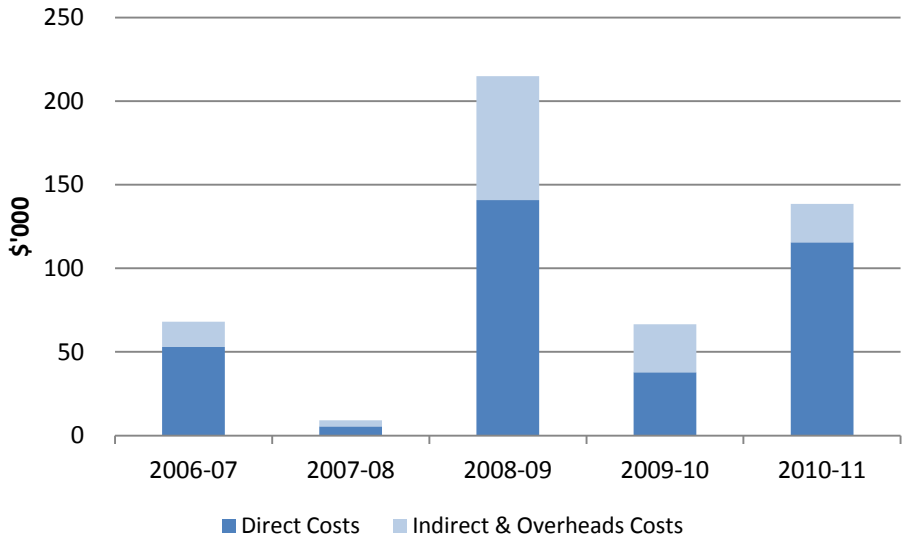
No other stakeholders have commented on these items.

Authority's Analysis

Total Renewals Expenditure

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

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



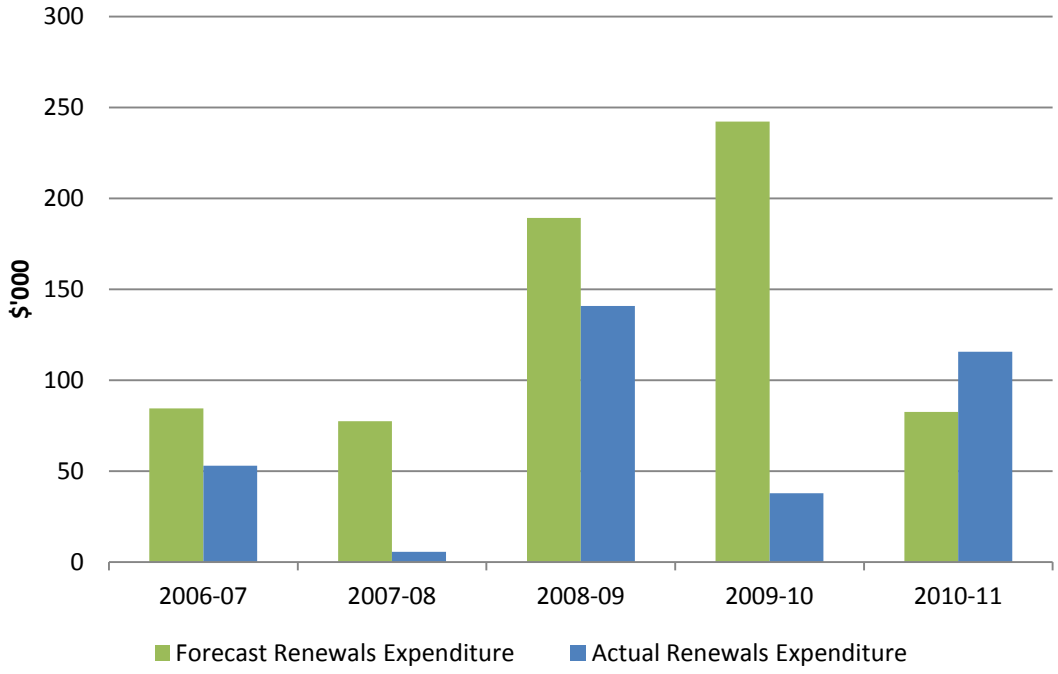
Note: The estimates reflect the most recent information provided by SunWater to the Authority in September 2011.
Source: Indec (2011d).

Comparison of Forecast and Actual Costs

The Authority was able to source details of forecast 2006-11 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 Boyne River and Tarong WSS for 2006-11 is shown in Figure 4.2.

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



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

Actual renewals expenditure was $323,000 (direct costs) lower than forecast over the 2006-11 period.

Review of Past Renewal Items

Draft Report

Aurecon 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), Aurecon sought to identify variances between annually budgeted and actual expenditure for certain items. However, due to information deficiencies Aurecon was unable to conclude on the prudency and efficiency of past renewals expenditure.

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

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

(b) totals including indirect and overhead costs, so any proposed changes in allocation methods would impact on renewal activity costs;

(c) many items running over several financial years, in which Board approved budget only appeared in the first year, and not subsequently; and

(d) the summation of annual totals within the database, did not equate with stated renewals expenditure for the scheme. Aurecon stated that this discrepancy could be due to a significant number of renewal items being below $10,000 in value and that Aurecon requested expenditure items valued at only $10,000 and above.

Item 1: Flood Damage Repairs

Submissions Received from Stakeholders on the Draft Report

In its submission in response to the Draft Report, SunWater advised that additional information is now available on required flood damage repairs which need to be taken into account for the renewals annuity calculation. For the Boyne Tarong WSS, the flood repair costs are $88,256 (actual) for 2010-11 and $1,488,378 (estimated) for 2011-12.

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

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

Authority's Response to Submissions Received on the Draft Report

As outlined in Volume 1, the Authority reviewed a sample of flood damage repairs across SunWater's schemes.

One such item was flood damage repairs at Boondooma Dam.

SKM's Analysis

This project concerns the repair of the flood damage to the spillway at Boondooma Dam after spilling in January 2011 that caused extensive erosion. The erosion to the spillway was highlighted by the operators after the spill and noted within the annual dam inspection (April 2011). A subsequent geotechnical investigation was conducted making the recommendation to empty out the scoured holes to establish the extent of the scour. This review concerns the prudency and efficiency of the costs associated with the flood damage repair works carried out at Boondooma Dam.

A brief history of the project is presented below:

(a) 1983 - Completion of the construction of the Boondooma Dam Spillway. Experienced the first spill in late April 1983. The spill caused considerable erosion to the spillway. A 20 metre high scarp, 180 meters downstream of the spillway crest structure was formed. An erosion control structure was installed 134 meters downstream of the spillway crest structure to limit the scour;

(b) December 1997 – further erosion to the spillway was caused after a spill. Twelve locations upstream from the erosion control structure were identified that have been eroded. It is reported, based on anecdotal evidence, that the areas of erosion were remediated in accordance to the recommendations developed at the time. A large cavern downstream from the erosion control structure formed and it was recommended that a geological map of the downstream area be compiled;

(c) 1999 – A geological map was compiled for the area downstream of the erosion control structure;

(d) January 2011 – The spillway experience its largest spill on record. It is to note that this was lower than the probable maximum flood (PMF) that the spillway is designed for by a factor of approximately 3;

(e) 29 April 2011 – Annual dam safety inspection was conducted. At the time of the inspection the dam was still spilling. Holes within the spillway was spotted from the viewing platform and noted within the asset condition assessment;

(f) August 2011 – The holes within the spillway were pumped empty and an inspection was conducted to establish the extent of remedial works that was required;

(g) August to September 2011 – The post spill inspection identify considerable further erosion both upstream and downstream of the erosion control structure; and

(h) October 2011 - The variation to the budget is approved due to scope change.

SKM noted that the risk assessment that was undertaken in 2005 records this structure as a low priority with a consequence score above eight. In accordance with SunWater's Policies and Procedures this implies that the asset has to degrade to an asset condition score of five (Major deterioration such that the asset is virtually inoperable) before remedial work is to be undertaken. At the time of the annual dam inspection the extent of the erosion could not be ascertained to the same degree it could be after pumping out the water within the erosion holes. The geological investigation at the time determined that should the erosion holes not be repaired the extent of remedial works required would escalate following future spill events. SunWater made a decision to act on the advice before the next rainy season to limit the extent of damage. SKM considered that should an asset condition assessment have been recorded at the time of the

geological investigation that an asset condition rating have of five would have been scored and therefore that remedial work should proceed.

From the review of the data in SAP, SKM considered that SunWater has followed its policies and procedures that it has in place to determine the date of refurbishment.

Options Evaluation

The geological site visit conducted in August and September 2011 made a recommendation to remove all loose material from the eroded area, drill and anchor steel reinforcement within the base rock and fill the erosion cavity with concrete.

An internal email in October 2011 notes that a change in scope was required. The following changes were deemed necessary:

(a) After a risk assessment was conducted it was decided to install rock anchors to the erosion control structure to tie it back to the spillway;

(b) A large enough concrete pump could not be sourced and therefore vehicular access to the site will be required;

(c) The additional time to construct an access road and to tie the erosion control structure to the spillway will require additional site supervision;

(d) Additional design and specifications will be required to install the rock anchors

A variation was approved for the above scope changes in October 2011 which, in practice, approved a temporary repair to the spillway and erosion control structure until a more permanent solution of filling the scour hole and restructuring the spill way to enable it to accommodate future spills to the dam's design capacity could be undertaken as future works (that is, phases 2 and 3 of the repair/upgrade works).

SKM considered the repair method implemented conformed to current good practice and agreed that the additional changes were required to stabilise the bank for the interim. The information reviewed from SunWater addresses this repair as Phase 1 of a three phase approach to repair the flood damage.

Timing of Renewal/Refurbishment

The timing of the repair work was driven by the fact that the next rainy season was underway. The water level within the dam was close to (0.5 m below FSL) the full supply level and even a small rain event could cause the spillway to spill.

The geological report as referenced above states:

> *The erosion that has taken place has left the unlined section of the spillway chute vulnerable to further erosion should further considerable spills occur. It is difficult to predict the rate and/or degree of any such erosion, however, if a similar spill occurred to that which was experienced in the early months of 2011, then almost certainly all of the existing erosional holes would be deepened and widened, further holes would form and there exists some potential for erosion to headwardly advance towards the spillway crest. Should this occur, the cost of repairs would be considerably increased.*

Although the report does not state the extent of erosion that could be expected, it does highlight the consequence of not undertaking the repair. Based on this information SunWater made the decision to fill in the erosion holes with dental concrete to form a bridge and lock the spillway together.

Based on the review of the available documents, SKM considered the timing of the phase 1 refurbishment to be prudent.

SKM further notes that the repair work undertaken in phase 1 should be viewed as a temporary solution.

Efficiency Evaluation

Based on the annuity value submitted to the Authority, SKM indicated that $1,130,059 has been spent for phase 1 works. However the information presented by SunWater did not contain a detailed breakdown of the cost for the phase 1 works. Verbal information presented to SKM indicates that a total of 1,500 m^3 of dental concrete was required to fill the erosion holes. An internal email message sited by SKM indicate that 65 rock anchors, 32 mm diameter and 25 m long, was required to tie the erosion structure back. SKM has used a bottom up approach to calculate the cost for the repair work undertaken as an order of magnitude cost estimate (±30%).

Table 4.2: SKM's Cost Estimate

Description	***SKM Cost Estimate***
Direct Costs	
Dental Concrete (20MPa)	562,500
Rock Anchor (65no, 32 mm diameter@25m long)	286,000
30% contingency	254,550
Sub-total	**1,103,050**
SunWater Overhead	
Design Cost – 5% of construction cost)	55,153
Project Management 35% of construction cost	386,068
Subtotal	**441,221**
Total	**1,544,270**

The overall expenditure by SunWater for the project to date is less than the bottom up cost estimate prepared by SKM. SKM therefore concluded that the costs associated with the phase 1 work of the repair of the flood damage to the spillway at Boondooma Dam is efficient and that the project had followed the SunWater policy and processes for establishing the contracts where required.

Authority's Analysis

The Authority accepted SKM's review. In total, the sampled flood damage repair items accounted for 30% of total flood repairs. SKM found that all sampled items were prudent and efficient.

However, the Authority notes that if flood damage repair costs are to be included then so should any offsetting insurance revenues. As insurance revenues are yet to be determined, the

Authority has not included flood damage repairs costs in prices. [See also the Authority's review of forecast flood damage repair costs to Boondooma Dam below].

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

Conclusion

Draft Report

In the Draft Report, the Authority noted that SunWater's past renewals expenditure was significantly less than originally forecast. No items for the Boyne River and Tarong WSS were sampled for detailed review in the Draft Report.

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

As a consequence, the Authority adjusted SunWater's total past renewals for Boyne River and Tarong by 10%.

Final Report

After review of submissions in response to the Draft Report, the Authority has concluded that flood repair costs previously included in 2010-11 are now to be excluded.

As outlined in Volume 1, the Authority undertook further sampling of past renewals expenditures across SunWater's schemes. The larger sample of items reviewed indicated that a lower average savings of 4% for past renewals expenditures could have been achieved. (A separate level of savings was calculated for forecast renewals expenditures – see further below).

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

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

Item	*Date*	*SunWater ($'000)*	*Authority's Draft Findings*	*Draft Recommended ($'000)*	*Authority's Final Report Findings*	*Final Recommended ($'000)*
Flood damage repairs	2010-11, 2011-12	$88 in 2010-11 and $1,488 in 2011-12	Not sampled	10% saving on 2010-11 cost, 2011-12 not included	Excluded pending outcome of insurance claim	0
Non-sampled Items	Various		Insufficient information.	10% saving applied		4% saving applied

Source: QCA (2011, 2012).

As a result, the Authority has not included flood repair costs and made an adjustment to other past renewals.

4.4 Opening ARR Balance (at 1 July 2012)

Draft Report

Stakeholder Submission

SunWater indicated that the renewals opening ARR balance for 1 July 2011 was $1,136,000 for the Boyne River and Tarong WSS. This estimate reflects the most recent information provided by SunWater to the Authority in September 2011 and differs from the NSP.

Authority's Analysis

Based on the Authority's Draft Report assessment of the prudency and efficiency of past renewals expenditure, the recommended opening ARR balance for 1 July 2011 for Boyne River and Tarong is $1,141,000.

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

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

(b) adding 2006-2011 renewals annuity revenue;

(c) subtracting 2006-2011 renewals expenditure; and

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

To establish the closing ARR balance as at 30 June 2012 of $1,088,000, 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.

Submissions Received from Stakeholders on the Draft Report

During Round 3 Consultation (November 2011), stakeholders questioned Government policy that was maintaining revenues in excess of costs, even when the ARR balance was positive.

Authority's Response to Submissions Received on the Draft Report

The Authority notes that a renewals annuity recovers renewals expenditure through a series of annually smoothed charges. A positive ARR balance at the start of the regulatory period results in a lower renewals annuity.

The renewals annuity forms part of the cost reflective tariffs developed by the Authority. However, in accordance with the Ministerial Direction, the Authority has recommended prices that maintain SunWater's revenue. This matter is discussed in Chapter 6: Final Prices.

The Authority revised its Draft Report estimate of the 30 June 2012 ARR to take account of the key changes since the Draft Report as outlined above including the application of a 4% saving to non-sampled items and sampled items for which there was insufficient information (instead of 10% in the Draft Report).

The resulting revised ARR balance as at 30 June 2011 is $1,140,000 and the revised ARR balance as at 30 June 2012 is $1,074,000.

4.5 Forecast Renewals Expenditure

Draft Report

Planning Methodology

During the second round of consultations (2011) irrigators noted that:

(a) it was not clear whether the basis of forecasts renewals is the last four years;

(b) it was not clear why the next 20 years of annuity is a concern for irrigators;

(c) budgeting beyond 12 months is difficult and that ordinary businesses only make budgets for the next 12 months; and

(d) SunWater spends a lot on forecasting renewal expenditures.

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

(b) detailed options analysis (which also takes 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; and

(c) SunWater to adopt the Authority's consultants' suggested improvements for forecasting renewals expenditure.

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that:

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

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

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

Authority's Response to Submissions Received on the Draft Report

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

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

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

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

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

Prudency and Efficiency of Forecast Renewals Expenditure

Submissions

SunWater

SunWater's proposed renewals expenditure for the Boyne River and Tarong WSS is presented in Table 4.3 as provided in its NSP (submitted prior to the Government's announced interim prices for 2011-12).

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

Facility	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Boondooma Dam	157	30	200	124	9
Boyne River Distribution	6	-	-	-	-
Total	**163**	**30**	**200**	**124**	**9**

Source: SunWater (2011).

The major items incorporated in the above estimates are:

(a) a five-year comprehensive inspection of Boondooma Dam in 2013-14 at a forecast cost of $124,000. A comprehensive inspection of all facets of Boondooma Dam, including its structural integrity is proposed. This inspection is required by law to be completed at five-yearly intervals and the next inspection must be completed by 1 June 2014; and

(b) an upgrade to the wall of dissipater chambers at Boondooma Dam in 2014-15 at a forecast cost of $124,000. SunWater submitted that the need for this work was identified by a safety inspection in 2009 and is due to the condition of the asset.

The major expenditure items from 2016-17 are:

(a) replacement of sealer in upstream slope and replace water level recorder at Boondooma Dam in 2016-17 at a forecast cost of $336,000;

(b) replacement of cables and cableways at Boondooma Dam in 2031-32 at a forecast cost of $561,000; and

(c) a five-yearly comprehensive inspection of Boondooma Dam in 2031-32 at a forecast cost of $164,000[1].

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

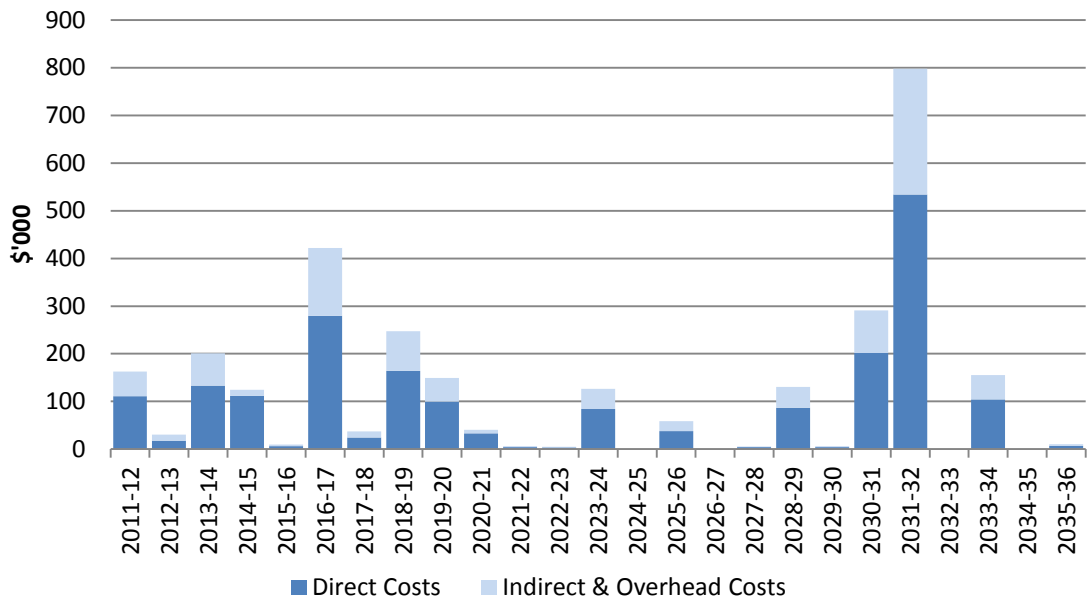
BRIAC (2011) stated that further explanations of the renewals items for 2016-17 and 2029-30 are needed.

Authority's Analysis

Total Costs

SunWater's proposed renewals expenditure for 2011-36 for the Boyne River and Tarong 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 indirect and overheads component of expenditure relating to these items are reviewed in Chapter 5 – Operating Costs.

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



Source: SunWater (2011 am)

[1] The Authority understands that this item was mislabelled in SunWater's NSP and actually relates to the replacement of the water level recorder at Boondooma Dam in 2031-32 at a cost of $164,000.

Review of Forecast Renewals Items

The Authority engaged Aurecon and SKM to review the prudency and efficiency for a sample of future renewal items.

Item 1: Boondooma Dam – Replacement of Sealer in Upstream Slope

Draft Report

Stakeholder Submissions

SunWater submitted that this renewals item is for the replacement of the sealer to the upstream concrete contraction joints of the dam wall at Boondooma Dam in 2016-17 at an estimated cost of $171,000 (including direct and indirect costs).

In relation to this expenditure item, SunWater stated that there is no asset life information for the sealer, a bill of materials (BoM) did not exist and that no unit rates were available. SunWater noted that the item was identified during the 2010 annual dam safety inspection and is therefore prudent.

No other stakeholders have commented on this item.

Aurecon's Review

Aurecon noted that as no details regarding the scope of works and/or costing had been made available by SunWater, it was unable to validate the efficiency of this expenditure item.

SKM's Review

SKM reviewed information relating to this item by accessing and reviewing information recorded in SunWater's Systems, Applications and Products (SAP) Works Management System (WMS) identifying a value of $140,000.

In particular, SKM has drawn on the following refurbishment report produced by SunWater together with information from a number of as installed drawings for the asset.

Table 4.4: SKM's Reviewed Documents - Sealer Replacement at Boondooma Dam

Document No.	*Document Name*	*Document Title*	*Date*
1106444	v1A – Boondooma Sealant	Boondooma Dam – Refurbish: Replacement of Sealer in Upstream slope to specification detailed in scoping item of 2012 (BYR-BOON-WALL)	8 Aug 2011

Source: SKM (2011).

(a) Prudency Review

SunWater advised that the contraction joints were constructed in 1980 as part of the original construction of the dam wall. SunWater submitted that there is no specific standard object type (asset type) for this sealer infrastructure, and therefore SunWater has not allocated a standard run to failure asset life nor a refurbishment period for the sealer specifically.

SunWater has allocated a standard run to failure asset life of 200 years with no refurbishment period allocated for this asset type. SKM considers that the standard run to failure is more likely to be 100 years for a Concrete Faced Rockfill Dam (CFRD).

SKM viewed the WMS record for this asset and confirmed that the asset, dam wall, has been in service since 1980. No work has been conducted in regards to the joint seals and as such would be the first time that replacement of the joint seals or refurbishment of the dam wall is required.

In SKM's review of the data in SAP and the information contained in the SunWater report specified above, it was identified that SunWater does not have any policy or procedure to determine the renewals item replacement/refurbishment dates and costs for joint sealers of a CFRD. As such, the planned replacement of this sealant has been established outside of SunWater's established asset management policies and procedures that utilise a run to failure asset life adjusted by a condition and risk assessment.

SKM considered that there may be merit in investigating ways of addressing various wall types within the Dams section contained within the Standard Asset Lives Document 956033. At present, the embankment (EMBK) object type is used for an array of wall types such as: CFRD, clay core rock fill dams and earth fill dams. However, the different wall types contained within the EMBK object type have different standard run to failure and refurbishment lives which SunWater is not currently able to capture given that a single object type is used. There is therefore merit in SunWater considering creating object types for each type of wall construction. By distinguishing between the different types of walls it will also be possible to adapt a more specific condition assessment and capture the relevant run to failure asset life for that wall type.

SunWater's asset management policy and procedures currently do not classify joint sealers as an asset and therefore do not provide for a standard run to failure asset life for joint sealers or a recommended refurbishment period. Equally, the procedures do not specifically require that a condition assessment is undertaken for joint seals separate to a general condition assessment of the dam wall/embankment. It is common for the joint seals to perish as they are exposed to cycles of wet and dry, exposed to UV light, direct sunlight and temperature differentials. As such, there is merit in SunWater considering whether the joint seals should be viewed as an asset or as part of the planned refurbishment of the dam wall/embankment.

The latter option would benefit from the inclusion of the joint seal as a condition criterion within the condition assessment criteria for assessing the dam wall. The issue with the joints was highlighted during the 2010 annual inspection of the Boondooma Dam. SunWater makes reference to an Engineering Study to be commissioned in 2012 to establish the need for replacement and to make recommendation in relation to a refurbishment/replacement method to be implemented.

Given the above, SKM did not consider that SunWater has provided enough information to make an informed assessment as to the prudency for refurbishment of this renewals item. SKM therefore considered that the Engineering Study should be completed before including the replacement of this renewals item within the overall renewals expenditure.

The proposed refurbishment operation of removing and replacing the existing sealant within the contraction joints has been sufficiently detailed within a report provided by SunWater to SKM. This report makes reference to undertaking an Engineering Study to determine the optimal solution. SunWater has advised that the scope of the Engineering Study, which will include an analysis of a 'Do Nothing' option, will focus on determining the need for replacement of the joint sealer and consequences should it not be replaced. The Engineering Study is intended to evaluate:

(a) best product selection, determine the most appropriate product for the job. Investigate the cost of the material, expected life and installation methods;

(b) costing options to investigate how best to address cash flow by either spreading out the item over more than one year or do it all in one hit; and

(c) method to be used to investigate if there is an alternative product or method that would suit the application.

SKM considered that the above scope of work for the Engineering Study is appropriate given the limited options available.

Based on the 2010 yearly inspection of the Dam Wall, in absence of a SunWater policy or procedure and in reference to the Engineering Study to be commissioned on the replacement of the joint sealer to the upstream face of the embankment, SKM considered that it is not possible to establish the optimum date for the replacement or refurbishment of the sealant. SKM did not consider the proposed timing of this refurbishment/replacement to be prudent. Further, SKM believed that the above mentioned Engineering Study should be carried out to determine a maintenance intervention strategy for the joint seals before a replacement date is established.

SKM concluded that the need for replacement of this annuity asset has not been demonstrated. SunWater has put in place a process to give guidance, in the form of an Engineering Study, to making a decision on the timing and method to be implemented. As such, until the Engineering Study is complete, SKM considered that the inclusion of this renewals item in the renewals expenditure is not prudent.

(b) Efficiency Evaluation

For asset refurbishment works where the planned refurbishment date is less than five years hence from the planning date, SunWater's Planning Team draws on actual costs for similar activities undertaken recently or from a zero based budgeting approach in absence of recent item data.

Given the volume of renewals items that SunWater's Planning Team is engaged with at any point in time, this approach was considered reasonable and in accordance with good industry practice, where the management of a large portfolio of assets is concerned. Since SunWater has no records of any similar work undertaken of this nature, SunWater's Planning Team has undertaken the replacement costing from first principles.

SKM developed benchmark costs for refurbishing/replacing the sealant to the contraction joints on the upstream embankment of the Boondooma Dam.

SunWater has undertaken an approximate costing, making use of labour and materials components. SKM considered the cost component items proposed by SunWater and included an additional component to make provision for specialist equipment and preliminary and general expenses that an item of this nature would normally attract. SKM's costing for this item is as per Table 4.5 below.

Table 4.5: SKM Costing of Sealer Replacement at Boondooma Dam

No.	*Description*	*Quantity Required*	*Unit Cost*	*Cost ($)*
1	Materials			
1.1	Joint Sealant	9260, 600 ml tubes. (3.7 tubes/m @ 2525m). Includes 10% for wastage	$5/tube	46,300
1.2	Backing Strip	2525 m/60m rolls = 42 Rolls	$115/roll	4,830
2	Labour	421 hours for a 3 person team (6 m/hr)	$85/hr/person	107,355
3	**Sub Total A**			**158,485**
4	Preliminary and General (P & G) + Specialist Equipment.	17% of Sub Total A		26,942
5	**Total**	**No. 3 + No. 4**		**185,427**

Note: Preliminary and General covers costs associated with mobilising and demobilising the contractor, and includes items such as an environmental planning and execution, workplace health and safety (WHS) plan and execution. It also includes the overheads for running this type of item from the contractor's perspective and would also include insurances and bonds. Source: SKM (2011).

The item cost included in SunWater SAP is $140,000. The costing calculation that SKM has undertaken, as per Table 4.4 above, yields a cost that is 32% more than that included in SunWater's SAP. Both SKM and SunWater costings make no allowance for any contingency and SKM's is based on the following assumptions:

(a) the length of contraction joints was taken and scaled from the As-Built drawings with the slope taken as 1:1.3;

(b) a bulk discount, of 33% of normal price, will apply for the tubes of joint sealant; and

(c) the 17% allowed for the P&G and Specialist Equipment section is deemed to include Health and Safety and Environmental aspects that will need to be addressed for the expected 11-week construction period.

From SKM's experience, the majority of the costs involved in a item of this nature relate to preparation works such as draining the dam, drying and cleaning the surfaces, removal of old sealant from the joints, rectifying any mechanical defects with the joints. SKM therefore considered the costs submitted to the Authority for this renewals item to be efficient.

SKM concluded that the value submitted for this renewals item is efficient but potentially understated and should be reviewed to make provision for expected additional cost associated with an item of this nature.

(c) SKM Summary and Conclusions

In relation to prudency, SKM were not satisfied that SunWater's robust procedures for determining the timing of replacement/refurbishment of a renewals item have been followed. SKM did not consider that the timing and need for replacement/refurbishment of this renewals item can be determined until such time that the Engineering Study sets a clear policy on how SunWater is to deal with CFRD contraction joint sealant failures.

In relation to efficiency, the cost submitted by SunWater is 32% lower than the costing done by SKM. SKM was not satisfied that SunWater has fully accounted for all the costs likely to be incurred by it in replacing the sealant. However, as the renewals item value submitted by SunWater to the Authority is below SKM's benchmark costs, SKM considered the cost of the replacement/refurbishment to be efficient.

Authority's Analysis

For the Draft Report, the Authority accepted SKM's recommendation that the replacement of sealer at Boondooma Dam is not prudent. As a result, the Authority has excluded all of SunWater's submitted $171,000 of expenditure relating to this item from renewals expenditure.

The Authority noted that the total cost (including direct and indirect) submitted by SunWater and reviewed by Aurecon for this renewals item ($171,000) does not equate to the amount reviewed by SKM ($140,000). As discussed in Volume 1, this is because SKM's review was based on SunWater's SAP system, which uses a simplified method for calculating indirect and overhead costs than SunWater's financial system, which formed the basis of SunWater's NSPs and submissions to the Authority. However, where direct costs were reviewed by SKM this aligns with the direct costs submitted to the Authority.

The discrepancy between the two figures is not relevant in this case, as the item is considered not prudent.

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that this work was identified in dam safety inspections and certainly cannot be delayed beyond the 20-year planning period. SunWater submitted that the work will need to be undertaken in the next 5 years, and requested the Authority re-instate this expenditure in 2017.

Authority's Response to Submissions Received on the Draft Report

The Authority notes SunWater comments in regards to this project. However SunWater has not addressed SKM's concerns that robust procedures for determining the timing of replacement/refurbishment of a renewals item have been followed. The Authority notes that SKM has accepted the level of proposed cost as being efficient – if it is required to be undertaken in the next 5 years it can be incorporated in an ex post review. As such the Authority proposes no change to the Draft Report recommendation that this project is not prudent.

Item 2: Boondooma Dam – Replace Water Level Recorder

Draft Report

Stakeholder Submissions

SunWater submitted that this renewals item is for the replacement of the water level recorder at Boondooma Dam in 2016-17 at an estimated cost of $165,000 including direct and indirect costs.

No other stakeholders have commented on this item.

Consultant's Review

Aurecon noted that despite the water level recorder being in existence since 1980 and its prescribed asset life being 15 years, the condition assessments indicated that the recorder is still

functioning adequately. Aurecon noted that SunWater had made a decision to defer its replacement until 2016-17, suggesting a possible operational life of 37 years (more than double the initial assigned asset life).

SunWater provided Aurecon with a BoM from the SAP records for the asset that related to 1997 valuation. Aurecon used the Cardno recommended indexation rate for this equipment of 2.13, and estimated that the updated 2007-08 replacement cost is approximately $85,000.

Based on the information presented by SunWater, Aurecon viewed the proposed timing of the replacement activity as prudent, considering the prescribed asset life and actual operating life achieved.

Without more detailed asset information pertaining to the water level recorder, Aurecon was unable to ascertain the relative commercial replacement value based on the information at hand. As such, Aurecon was unable to evaluate the efficiency of the proposed renewal expenditure.

Authority's Analysis

For the Draft Report, the Authority accepted Aurecon's conclusion that insufficient information was provided by SunWater to establish the efficiency of the replacement of the water level recorder at Boondooma Dam. The Authority has therefore made no specific adjustment to this item.

The Authority proposes no change to its Draft Report recommendation.

Item 3: Boondooma Dam – Replace Cables and Cableways

Draft Report

Stakeholder Submissions

This renewals item is for the replacement of cables and cableways at Boondooma Dam in 2031-32 at an estimated cost of $561,000 including direct and indirect costs. The renewals item encompasses the replacement of low voltage underground cables and conduits.

No other stakeholders have commented on this item.

Aurecon's Review

Aurecon noted that the cable assets at Boondooma Dam have been in existence since 1985 and based on a 35-year asset life, indicating a replacement date of 2021-22. However, SunWater had undertaken a condition assessment that indicated that the cables were performing adequately and therefore the decision had been made to defer their replacement by 10 years. SunWater indicated that the works will be scheduled within the five-year window, unless there is a change in either condition or risk to bring the works forward.

SunWater provided Aurecon with an extensive BoM for the proposed replacement works, along with unit charge rates for inputs (predominately cable and cable conduit). The BoM provided was based upon a pre-2000 valuation (mainly 1997). SunWater utilised the Cardno (2008) study to index all BoM related to electrical assets by 2.13 to inflate them to a 2008 valuation. Aurecon reviewed the stated unit rates (2008) for a number of listed items against quoted commercial rates, and found that the unit rates adopted by SunWater were efficient. However, Aurecon encountered difficulty substantiating the unit rate costs proposed for the 150mm cable due to a lack of information (product detail).

An examination of the BoM (2008 valuation) indicated direct materials cost of $347,000 for replacement.

Aurecon noted that an expenditure of $561,000 has been assigned for this task in 2031-32. Aurecon was not been provided with a cost breakdown but assumes that the total cost is based on the indexed BoM, project management fees, possibly a percentage for contingency costs (to cover over-runs for material cost inputs and contractor expenses), and overheads.

Based upon a desktop review of the information provided, Aurecon viewed that the proposed renewal activity as prudent in terms of timing, particularly as the proposed replacement date is well beyond the ascribed asset life.

Due to a lack of information, Aurecon was not able to validate the unit cost rate attributed to the 150mm cable replacement which represented 56% of the total direct costs for the activity. Therefore, Aurecon was not in a position to validate the efficiency of the proposed unit costs for this activity.

SKM's Review

Information provided to SKM by SunWater identified a value of $464,675 for replacement the Boondooma Dam cables and cableways in 2031-32.

SKM accessed and viewed SunWater's SAP-WMS, and asset condition and risk assessment policy and procedures.

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

Table 4.6: SKM's Reviewed Documents – Boondooma Dam Replace Cable and Cableways

Document No.	*Document Name*	*Document Title*	*Date*
1109858	5 - QCA Justification paper H10 – Boondooma Dam – Cable and Cableways	BYR – BOON-OWKS-ELEC-CBL Replace Cable Main Wall	21 Aug 2011

Source: SKM (2011).

Prudency Review

SKM noted that SunWater has allocated a standard run to failure asset life of 35 years and a maximum condition assessment frequency of every five years. SKM consider the standard run to failure asset life to be conservative for both above and below ground low voltage (LV) cable.

For example, most electrical distribution utilities in Australia would apply an asset life of 45 to 60 years for above ground LV cable depending on whether it is operated in wet (tropical) or dry conditions respectively. SKM considered the condition assessment frequency of every five years applied to this asset type to be reasonable.

SKM viewed the WMS record for this asset confirmed that the asset has been in service since 1981.

SKM noted that SunWater has applied its risk evaluation method to this asset and determined, during the most recent risk assessment in 2005, that it has a financial risk criterion consequence

rating of insignificant (score 3). This, together with a probability (likelihood of occurrence) score of 10 results in an overall risk score of 30 which, under SunWater's risk assessment method, places this asset in a Low risk category. SKM viewed the WMS record for this asset and confirmed that it has been allocated a Low risk rating. An overall risk category of Low should not trigger any reduction in the standard run to failure asset life of this type of asset and SKM confirmed this to be the case for this asset. Hence, the risk adjusted run to failure asset life for this asset is 35 years (as per the standard asset life).

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

The last condition assessment, a field assessment, was undertaken in 2010 with the highest scoring condition criterion being an age-based criterion score of 3 (Moderate deterioration with minor refurbishment required to ensure ongoing reliable operation). SKM questioned the use of age as a criterion for assessing condition, given that asset age is implicit and inherently built into the standard asset condition decay curve.

A well maintained asset, operating within its design parameters may exhibit a condition that is superior to that which its standard asset condition decay curve may predict at any point in time. By using age as a criterion for a particular asset precludes the option of extending the run to failure asset life of that asset in circumstances where its condition is superior to that which the decay curve would predict. The net result of this, applied across the asset base, would be to skew the replacement date of those types of assets for which an age criterion is used to asset condition to an, on average, earlier than the standard run to failure replacement date.

However, inputting a 2010 condition score of 3, a risk adjusted run to failure life of 35 years and in operation date of 1981 into SunWater's condition based replacement life adjustment modelling tool yields a projected run to failure asset life of 77 years and a recommended condition based replacement date of 2058.

SKM considered that assuming an asset life of 77 years as predicted by SunWater's condition based replacement asset life modelling tool would be unreasonable, even if a standard run to failure asset life of 45 years was adopted.

As such, SKM agreed with SunWater's proposal to extend the asset life, based on this condition assessment, by 16 years beyond the standard asset life replacement date of 2015-16 to 2031-32. Whilst SunWater considers this to be a 'risky strategy', given the business risk category of Low applied to this asset and that power utility industry norms would be to adopt a minimum of a 45-year life, SKM considered that planning a replacement at 2031-32 is prudent. Further, SKM noted that should future condition reports indicate that the asset condition is beginning to deteriorate more rapidly, SunWater has the ability to bring this replacement date forward.

SunWater advised SKM that, as per its standard procedures, an option analysis will need to be carried out before any planned works [are commenced]. This would basically revolve around the optimum time for replacement for the asset and if possible each of its components. This would involve a detailed study and condition assessment, occurring around 2028-29. SunWater suggested that at this stage of planning, there is no obvious alternative to like for like replacement that would reduce costs by more than 30%.

SKM concurred with this view and agreed that the option analysis should identify the optimum date for replacement, as well as alternative options to replacing like for like. SKM also considered it is prudent to consider a like-for-like replacement at this stage of the planning process. SKM assumed that, in assessing condition under this item, SunWater will conduct

electrical condition tests on the cable at this time such as earth impedance testing, insulation breakdown testing rather than operational performance.

SKM agreed with SunWater's planned replacement date for this renewals item of 2031-32 based on a condition related extension to its standard operating life. SKM therefore considered that inclusion of the replacement value of this renewals item in the current price reset annuity period to be prudent.

Efficiency Evaluation

For assets that are planned to be replaced five years or more hence of the planning date, SunWater uses a valuation method based on a BoM for the asset. The BOM has been developed from as built drawings and a 1997 value (determined from a 1997 valuation) attached to each item making up the BoM based on a 1997 valuation.

The 1997 value for each line is then escalated by a multiplier determined by Cardno in a 2008 valuation. This multiplier varies according to the component type being escalated. For example, all electrical equipment should be escalated by a 2.13 multiplier. The sum of costs is then adjusted by an indirect multiplier (in this case (1+33.86%) to take account of renewals item replacement specific factors such location, project management costs etc.

This approach (including the indirect uplift multipliers) was been audited by Arthur Anderson in 2000, who found it to be robust and appropriate. Given the large portfolio of assets that SunWater is required to determine a replacement value for over a 25 year asset replacement/refurbishment cycle, SKM agreed with Arthur Anderson's conclusions and consider the approach to be appropriate.

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

SKM reviewed SunWater's calculation for determining a replacement cost and confirmed that it has instead applied the Indirect Cost multiplier contained in the BoM for this asset item in its SAP-WMS of 33.86%.

SKM benchmarked the renewals item replacement costs proposed by SunWater as submitted to the Authority against its database costs for a modern equivalent electrical asset. SKM categorises its estimates based on a modern equivalent asset unit rate database as a class 4 estimate, having an accuracy of +30%/-20%.

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

Table 4.7: Boondooma Dam Replace Cables and Cableways - SunWater and SKM Cost Estimates

SunWater Estimate $2009-10	***SKM Estimate $2009-10***	***Variance***
$464,657	$402,010	+15.7%

Source: SKM (2011).

The renewals expenditure submitted by SunWater for replacement of this renewals item is within the estimating range of SKM's estimated cost for a modern equivalent replacement asset. As such, SKM considered the SunWater proposed renewals item value of $465,657 to be efficient.

SKM Summary and Conclusions

SKM agreed with the timing of the replacement of this asset and consider it prudent to include this asset's replacement value in this current renewals planning period since if an industry standard 45-year asset life is applied, this asset would reach the end of its run to failure asset life by 2019-20.

From SKM's benchmarking of the replacement costs, it was satisfied that the $464,657 renewals item replacement value provided by SunWater to SKM is efficient.

Authority's Analysis

For the Draft Report the Authority accepted SKM's recommendations that the costs it reviewed are prudent and efficient.

The Authority noted that the total cost (including direct and indirect) submitted by SunWater and reviewed by Aurecon for this renewals item ($561,000) does not equate to the amount reviewed by SKM ($464,657).

As discussed in Volume 1, this is because SKM's review was based on SunWater's SAP system, which uses a simplified method for calculating indirect and overhead costs than SunWater's financial system, which formed the basis of SunWater's NSPs and submissions to the Authority. However, where direct costs were reviewed by SKM this aligns with the direct costs submitted to the Authority.

Despite the cost discrepancy, the Authority accepted SKM's recommendation that the renewals item is prudent and efficient. The Authority has therefore included SunWater proposed costs of $561,000 in its recommended tariffs.

The Authority proposes no change to its Draft Report recommendation.

Item 4: Boondooma Dam Spillway refurbishment

Following the Draft Report, SunWater (2011as) provided additional details relating to proposed future capital expenditure, as detailed below.

Submissions Received from Stakeholders on the Draft Report

SunWater submitted that in addition to the flood damage costs already incurred, major refurbishment works are required at Boondooma Dam in the Boyne River WSS to ensure that the service life of the spillway is consistent with the life of the dam.

The spillway at Boondooma Dam was constructed as an unlined rock channel. The 2010-11 flood event exposed significant weak zones in the rock that are highly erodible. The expenditure identified as flood repairs will stabilise the spillway in the short term, but will not be sufficient to ensure the stability of the spillway in the long term.

In order to ensure that the spillway remains serviceable for the life of the dam it is necessary to concrete line the spillway channel and construct an energy dissipater at the downstream end of the spillway channel. The detailed engineering to define the scope of works is in progress, however a preliminary engineering assessment has determined the refurbishment outlined above as the most likely option. SunWater has costed this work and submitted that the following amounts be added to the renewals profile for the Boyne River and Tarong water supply scheme:

(a) 2013 – $8.88 million; and

(b) 2014 – $6.73 million.

SKM Analysis

The additional costs to repair Boondooma Dam Spillway were not identified by SunWater prior to the Authority's Draft Report. The Authority engaged SKM to review this additional expenditure.

The annuity item for which an annuity value has been submitted to the Queensland Competition Authority (Authority) is for the flood repair of the Boondooma Dam. The total cost of phase 2 and 3 of the repairs has been estimated to cost $15.6 million.

SunWater advised that the asset was initially constructed in 1980 as part of the dam's outlet structure.

Prudency Review

The standard object type (asset type) for this infrastructure is Spillway (SPWY) which SunWater has allocated a standard run to failure asset life of 200 years and a refurbishment period of 100 years. SKM considered both the run to failure asset life and refurbishment period to be appropriate for this asset type. The asset condition assessments have been recorded within the concrete spillway (object type: CONC) component that SunWater has allocated a standard run to failure asset life of 80 years and a refurbishment period of 40 years. SKM considers both the run to failure asset life and refurbishment period to be appropriate for this asset type.

SKM noted that the existing damage has been caused to the spillway as a result of a significant wet weather event causing the dam to spill over the spillway and that the solution proposed will be allocated as a concrete object type with the associated run to failure life and refurbishment period. SKM noted that the damage caused was the result of an overtopping of the spill way of some 30% of the designed overflow for the dam. As such it is important that SunWater designs the improvement works to be capable of withstanding an overtopping event of magnitude approximately 3 times greater than the event which caused the current damage to the spillway and downstream river bed.

The spilling that occurred caused major scour to the downstream slope of the rock spillway. Phase 1 of this project has been undertaken to fill the erosion holes created, also reviewed by SKM elsewhere. The timing of phases 2 and 3 of this project has been established to ensure that a fit for purpose design solution has been selected and ensure that a robust design process has been followed before implementation. It is expected that this process will take between 3 and 5 years

The geological investigation conducted by SunWater concluded with a recommendation that the spillway be capped with a concrete slab and that the banks be protected and that a stilling basin be constructed downstream from the erosion control structure. SKM has been advised by SunWater that the detailed design of this works has not commenced and that the cost estimate is based on engineering judgement. SunWater has verbally indicated that various solutions will be developed at concept design stage that will be refined to preferred solution that will undergo detail design and entail the development of a physical hydraulic model. SKM considered this approach to conform to industry good practice for such works. SKM agreed that, in light of the short turn-around time proposed, between the spill in 2011 and the proposed implementation in 2015, that a detailed cost estimate based on a fully developed design is not cap able of being provided at present, but rather at the detailed design stage.

SKM considered it prudent that phases 2 and 3 be undertaken in a timely manner to ensure the structural integrity of the spillway. SKM has not sighted a risk assessment to determine the order of implementation of the concrete capping of the spillway and the energy dissipation

structure. SunWater indicated that the expected risk profile would indicate that the concrete capping should be undertaken first. SKM agreed with SunWater's staged implementation methodology and the proposed order of the stages.

The geological report as referenced above states:

> *The erosion that has taken place has left the unlined section of the spillway chute vulnerable to further erosion should further considerable spills occur. It is difficult to predict the rate and/or degree of any such erosion, however, if a similar spill occurred to that which was experienced in the early months of 2011, then almost certainly all of the existing erosional holes would be deepened and widened, further holes would form and there exists some potential for erosion to headwardly advance towards the spillway crest. Should this occur, the cost of repairs would be considerably increased.*

Although the report does not state the extent of erosion that could be expected, it does highlight the consequence of not undertaking the repair. Based on the information presented above, the concrete capping will protected the weather rock from eroding in future and a stilling basin will ensure that the downstream edge doesn't erode towards the spillway.

Based on the review of the available documents, SKM considered the timing of the phase 2 -and 3 refurbishment to be prudent.

Efficiency Evaluation

The proposed annuity refurbishment operation of the asset considers concrete capping and the construction of a concrete stilling basin. The extent of the scope of works has not been established and SunWater has advised that the intent is to develop a full scope of works after the detailed design option has been determined. At this stage, SunWater has prepared order of magnitude cost estimates only.

SKM undertook a site visit to establish the extent of damage and the scope of the proposed works. SunWater provided a cost estimate for both phase 2 and 3, and used this in conjunction with the information gathered during the site visit to prepare a bottom up cost estimate.

Table 4.9: Boondooma Dam Spillway Refurbishment Cost Estimates

Description	*SunWater cost estimate ($)*	*SKM cost estimate ($)*
Phase 2 – Concrete capping of spillway	8,889,175	4,954,580
Phase 3 – Concrete stilling basin	6,730,053	8,793,414
Total	15,619,228	14,747,994

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

SKM found that SunWater's costs are within the order of magnitude +/- 30% estimating range used to develop the cost estimates. Based the two cost estimates proximity SKM considered the annuity value submitted to be efficient at $15,619,228.

The annuity value submitted by SunWater for refurbishment of this annuity item is within SKM's order of magnitude cost estimating range. As such SKM considers that the SunWater proposed annuity item value of $15.6 million to be efficient.

SKM was satisfied that the timing and need for refurbishment of this annuity item is prudent and that these works should be carried out as soon as practicable following detailed engineering studies and to commence no later than the planned commencement year of 2015 for phase 2.

Authority's Response to Submissions Received on the Draft Report

On the basis of SKM' advice, the Authority accepts that the proposed project is prudent as a long term solution is clearly required to enable effective and safe operations. SKM has also endorsed the efficiency of SunWater's proposed expenditure.

However, the Authority notes that if flood damage repair costs are to be included then so should any offsetting insurance revenues. To ensure confidentiality, the Authority has not included the submitted expected revenues in prices. Consequently, the Authority has not included flood damage repairs costs in prices either. This provides an incentive for SunWater to submit the information once the matter is settled.

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

Conclusion

Draft Report

In the Draft Report, three items for the Boyne River and Tarong WSS were sampled. Of these:

(a) one item was not prudent and was removed from forecast expenditure;

(b) one item was prudent but insufficient information was provided by SunWater to establish efficiency; and

(c) one item was prudent and efficient.

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

Final Report

The Authority has retained its findings on the prudency and efficiency of items sampled for the Draft Report. Following SunWater's submission, with new information and further analysis, the Authority finds that SunWater's Boondooma Dam Spillway Refurbishment costs are prudent and efficient. However, the Authority has concluded that flood repair costs (an additional item) are not to be included in renewals expenditure pending the outcomes of insurance claims.

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

In total, the Authority recommends the direct renewals expenditure be adjusted as shown in Table 4.10.

Table 4.8: Review of Forecast (Direct) Renewals Expenditure 2011-36 (Real $'000)

Item	*Year*	*SunWater ($'000)*	*Authority's Draft Report Findings*	*Draft Recommended ($'000)*	*Authority's Final Report Findings*	*Final Recommended ($'000)*
Sampled Items						
1. Boondooma Dam – Replacement of Sealer in Upstream Slope	2016-17	171	Not prudent	0	Not prudent	0
2. Boondooma Dam – Replace Water Level Recorder	2016-17	165	Insufficient information.	10% saving applied	Insufficient information	20% saving applied
3. Boondooma Dam – Replace Cables and Cableways	2031-32	561	Prudent and efficient	561	Prudent and efficient	561
4. Boondooma Dam spillway refurbishment	2013-14	15,610	Not sampled	N/a	Excluded pending outcome of insurance claim	0
Not Sampled Items				10% saving applied		20% saving applied

Source: SunWater (2011, 2011as), Aurecon (2011) and SKM (2011, 2012).

4.6 SunWater's Consultation with Customers

Draft Report

Submissions

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

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

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

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

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

During the round two (2011) consultations, the following concerns were raised by irrigators relating to consultation:

(a) that SunWater has not been consulting with them; and

(b) that consultation by the Authority is a myth and that issues brought forward by irrigators are just ignored by the Government which will ignore the Authority's price recommendations.

Authority's Analysis

In Volume 1, the Authority noted customers' concerns about the lack of involvement in planning future renewals expenditure.

In the context of the Draft Report, the Authority recommended that there be a legislative requirement for SunWater to consult with customers about any changes to its service standards and proposed renewals expenditure program. SunWater should also be required to submit the service standards and renewals expenditure program to irrigators for comment whenever they are amended and that irrigators' comments be documented and published on SunWater's website and provided to the Authority.

Submissions Received from Stakeholders on the Draft Report

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

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

Authority's Response to Submissions Received on the Draft Report

In response to SunWater's concerns that excessive costs will be incurred undertaking consultation, the Authority considers that SunWater's estimated cost should be compared to the savings from doing so, as noted previously. The benefits of greater consultation are likely to outweigh the costs, as noted in Volume 1.

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

4.7 Allocation of Headworks Renewals Costs According to WAE Priority

Draft Report

Previous Review

For the 2006-11 price path, the renewals costs for the Boyne River and Tarong bulk water infrastructure were apportioned between priority groups using converted nominal water allocations. The WPCF for the Boyne River & Tarong WSS was 2.5:1; that is, one ML of high priority WAE was considered equivalent to 2.5 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 outline of the HUFs methodology, outlining its derivation and application for each scheme.

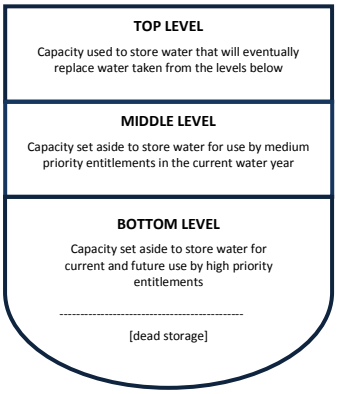
This methodology, discussed in detail Volume 1, can be summarised as follows.

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

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 Boyne River and Tarong WSS are summarised in Table 4.9. The HUFs for this scheme (SunWater, 2010d) are 9% for medium priority and 91% for high priority.

[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.

Table 4.9: Application of HUFs Methodology

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

Nominal Group	(ML)	HUF Group	(ML)
Medium Priority	11,809	MP_A	11,809
High Priority	32,990	HP_A	32,990

STEP 2: ROP Conversion Factor Adjustment

Conversion Factor: ROP_{CF}	2.5
Maximum volume that can be converted to HP: $HP_A max$	33,340
Corresponding volume of MP: $MP_A min = MP_A-(HP_A max-HP_A)*ROP_{CF}$	10,934

STEP 3: Water Sharing Rules & Operational Requirements

Water Sharing Rules	
Volume below which MP not available: $MP_0 AA$	119,856
Volume above which max MP available: $MP_{100} AA$	137,742
CWSAs and other operational requirements	
Likely increase in volume effectively reserved for HP: MP_0	119,856
Likely increase in min. Storage before maximum MP available: MP_{100}	137,742
Key Dam Level Measures	
Full Supply Level: FSV_{hwks}	204,200
Dead Storage Level: DSL_{hwks}	8,360

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= 9,187; HP_2 = 57,271	7%	MP_{2u}= 1,553; HP_{2u}= 9,679
Middle: $min\{(MP_{100}-MP_0),(FSV_{hwks}-MP_0)\}$	MP_1 = 17,886	45%	MP_{1u} = 8,050
Bottom: $MP_0 – DSV_{hwks}$	HP_1 = 111,496	79%	HP_{1u} = 87,759

STEP 5: Calculation of HUFs for each Water Entitlement Group

Formula	HUF Group	Nominal Group
MPA: (MP1u+MP2u) / (MP1u+HP1u+MP2u+HP2u) = (8,050+1,553) / (8,050+87,759+1,553+9,679)	HUF_{mp} = 9%	Medium Priority = 9%
HPA: (HP1u+HP2u) / (MP1u+HP1u+MP2u+HP2u) = (87,759+9,679) / (8,050+87,759+1,553+9,679)	HUF_{hp} = 91%	High Priority = 91%

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

Other Stakeholders

BRIAC (2010 and 2011) noted that Boyne River irrigators may face price increases as a result of the conversion of medium priority water to high priority water for the South Burnett Regional Council. BRIAC stated that in the previous price path (2006-2011) the agreed cost sharing was 70% high priority and 30% medium priority based on water use. BRIAC further stated that DERM and SunWater assured the irrigators that costs associated with the conversion would be passed on.

BRIAC argued that cost sharing should be based on water storage volumes, that is, 80% High Priority (HP) and 20% Medium Priority (MP).

BRIAC (2010 and 2011) noted that they share the top 70% of Boondooma Dam volumetrically with Tarong 70:30, with the bottom 30% being the 70,000 ML cut off limit, which is not used by the irrigators [when dam levels are below 70,000 ML, allocations to irrigators are zero].

BRIAC argued that they only use a maximum of 20% of the storage facility, but are required to meet 30% of the usage bill. The irrigators contend that the HP water users require SunWater to store more of the water on the HP users' behalf to ensure water reliability, and should be charged for the water stored.

BRIAC (2010 and 2011) submitted that when the Government implemented the 70,000 ML cut off rule it reduced the reliability of the scheme to irrigators in favour of Tarong Power station. BRIAC submitted that irrigators received no compensation for this decline in reliability.

BRIAC (2011) stated that the conversion of 2,000 of MP to HP had not been considered in indexation of usage against 2003-04 and that this conversion had reduced the amount of allocation to pay for the same level of costs. BRIAC (2010 and 2011) also stated that further trading of MP to HP will only increase the cost burden to the irrigators.

BRIAC (2011) stated that specific analyses of the scheme have been conducted by SunWater and DERM that verify the application of HUFs. BRIAC submitted that the Boyne River and Tarong WSS is a special case that warrants special consideration of renewals, capital cost allocation and operating costs.

The Lower Boyne Rivers Irrigators (2010) noted that Lower Boyne irrigators cannot convert their water to HP because of the unreliability of supply. Lower Boyne Irrigators also suggested that the 70,000 ML cut off should be abolished as the Tarong Power Station now has access to recycled water.

During the second round of stakeholder consultations (2011), irrigators stated that:

(a) pipeline costs which are mostly for the HP user Tarong Power Station should not be borne by irrigators;

(b) the 70,000ML cut off benefits HP users the most. The more MP water sold to HP users, the more costs will be borne by the remainder of the MP users; and

(c) HUF's are not done on a scheme basis but at the State level, and that the HUF is not better for irrigators relative to the old conversion factor.

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.

SunWater (2011x) accepted these recommendations and submitted recalculated HUFs for each scheme. For the Boyne River and Tarong WSS, the changes resulted in the HUF_{mp} value rising from 9% to 10%, and the HUF_{hp} value falling from 91% to 90% (Table 4.10).

Table 4.10: Revised HUF Calculations

STEP 4: Hydrologic performance of headworks storage

Storage Layer	Storage Capacity (ML)	Prob. Of Utilisation	Utilised Capacity (ML)
Top layer			
Initial	MP_2= 9,187; HP_2 = 57,271	7%	MP_{2u}= 1,553; HP_{2u}= 9,679
*Revised**	MP_2= 17,518; HP_2 = 48,940	no change	MP_{2u}= 2,961; HP_{2u}= 8,271
Middle Layer	MP_1 = 17,886	45%	MP_{1u} = 8,050
Bottom Layer	HP_1 = 111,496	79%	HP_{1u} = 87,759

STEP 5: Calculation of HUFs for each Water Entitlement Group

	Initial	Revised	Nominal Group
HUF_{mp}	9%	10%	Medium Priority = 10%
HUF_{hp}	91%	90%	High Priority = 90%

**Apportioned between MP_2 and HP_2 using the ratio of nominal volumes (MP_A:HP_A). Source: SunWater (2011x).*

The Authority estimates that based on the HUF methodology, the conversion for MP to HP would be 3.2:1. This compares with the WPCF of 2.5:1 used for 2006-11 price paths. Further, the Authority noted that under the HUF approach, MP irrigators will now pay 10.0% of the cost of renewals whereas previously MP irrigators paid 12.5%.

The HUF takes into account the 70,000ML cut off for MP allocation as defined in the Burnett River ROP. SunWater advised that the cut-off is a long-standing arrangement to ensure critical supplies are available to Tarong power station.

On this basis, the HUF methodology results in a greater proportion of renewals costs being allocated to HP users than was the case in the previous review. Under the revised approach, although MP WAE accounts for 26% of total nominal WAE, it is allocated only 10% of total renewals costs for the scheme (compared to 12.5% if the ROP conversion factor were to be used). The Authority considers that the HUF approach largely addresses BRIAC's (2011) concerns, at least in regard to the sharing of renewals annuity cost, as it takes into account the higher utilisation of storage capacity by HP users.

In response to submissions regarding the 70,000 ML cut off, the Authority noted that the scheme rules relating to when water can be drawn from Boondooma Dam are beyond the scope of the Authority pricing review. However, the HUF submitted by SunWater (2011x) and accepted by the Authority takes into account the reliability of water available to Boyne River and Tarong irrigators, including the impact of the 70,000 ML cut off at Boondooma Dam.

In regard to the conversion of 2,000 ML of MP to HP usage, the Authority noted that the costs are shifted in proportion to this volume, so that the remaining MP users should not be disadvantaged.

In relation to issues raised in the second round of consultation:

(a) pipeline renewals costs are not attributed to irrigators in SunWater's or the Authority's modelling of irrigation pricing. The renewals costs above relate only to headworks related costs;

(b) the HUF approach takes into account the low utilisation of MP water and the high utilisation of HP water. This results in a conversion factor for renewals costs that favours irrigators compared to the previous approach; and

(c) the Authority noted that the HUF take into account scheme-specific hydrological modelling and do vary between schemes.

No submissions were received in regard to this matter in the Boyne River and Tarong WSS. The Authority proposes no changes to its Draft Report recommendations.

4.8 Calculating the Renewals Annuity

Draft Report

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

For the Boyne River and Tarong WSS, the draft recommended renewals annuity for the 2012-17 regulatory period is shown in Table 4.11.

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 2011-16. SunWater did not submit a disaggregation between high and medium priority customers.

Final Report

For the Final Report, there have been a number of changes to the Authority's recommended forecast renewals annuity including:

(a) application of a 4% saving to non-sampled items and sampled past renewals items for which there was insufficient information (instead of 10% in the Draft Report);

(b) exclusion of 2010-11 flood damage repairs that were included in the Draft Report; and

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

The revised renewals annuities are compared to the Draft Report recommendations in Table 4.11

Table 4.11: Boyne River and Tarong 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*
Draft Report											
SunWater	46	60	60	62	47	-13	1	1	3	3	3
Total Authority	-	-	-	-	-	-	17	16	20	19	19
High Priority	-	-	-	-	-	-	15	15	17	17	17
Medium Priority	-	-	-	-	-	-	2	2	2	2	2
Final Report											
Total Authority							13	12	15	15	15
High Priority							11	10	13	13	13
Medium Priority							1	1	2	2	2
Distribution Losses							1	1	1	1	1

Note: Includes indirect and overhead costs relating to renewals expenditure, which is discussed in Chapter 5. Negative renewals annuities are addressed in Chapter 6 – Recommended Prices. Source: Actuals (SunWater, 2011) and Recommended (QCA, 2011, 2012).

5. OPERATING COSTS

5.1 Background

Ministerial Direction

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

Issues

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

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

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

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

(d) the most appropriate methodologies for assigning operating costs to service contracts[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, corrective maintenance, 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 41 staff are located at the Bundaberg depot and are responsible for the day-to-day water supply management and for delivery of the programmed works for all users in the region. Operational staff are also located at Boondooma Dam and Mundubbera;

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

(b) service provision relates to:

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

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

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

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

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

Storage	***Monitoring requirements***			
	Inflow	***Head Water***	***Tail Water***	***BGA***
Boondooma Dam	Yes	No	Yes	Yes

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

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

Routine dam safety inspections are carried out monthly on Boondooma Dam. Specific dam safety inspections are required at the dam, which include monitoring of embankments, piezometers, seepage and general condition, as defined in the dam surveillance specification. 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;

(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. The recreation facilities at Boondooma Dam are managed by the South Burnett Regional Council;

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

(g) all electricity costs at Boondooma Dam accrue to the Tarong Pipeline. As a result, no electricity costs have been allocated to irrigators.

Previous Review

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

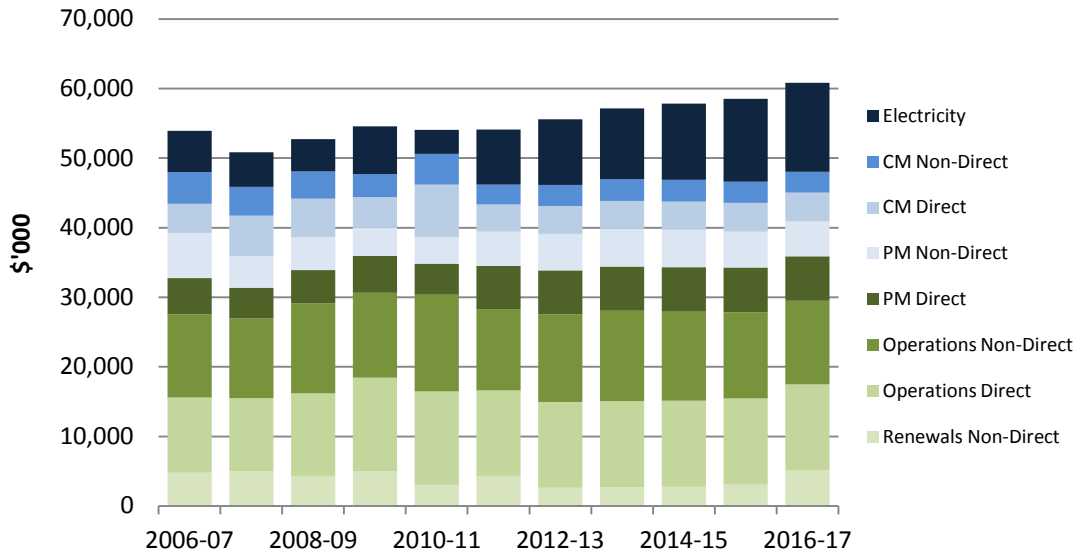
Draft Report

Stakeholder Submissions

SunWater

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

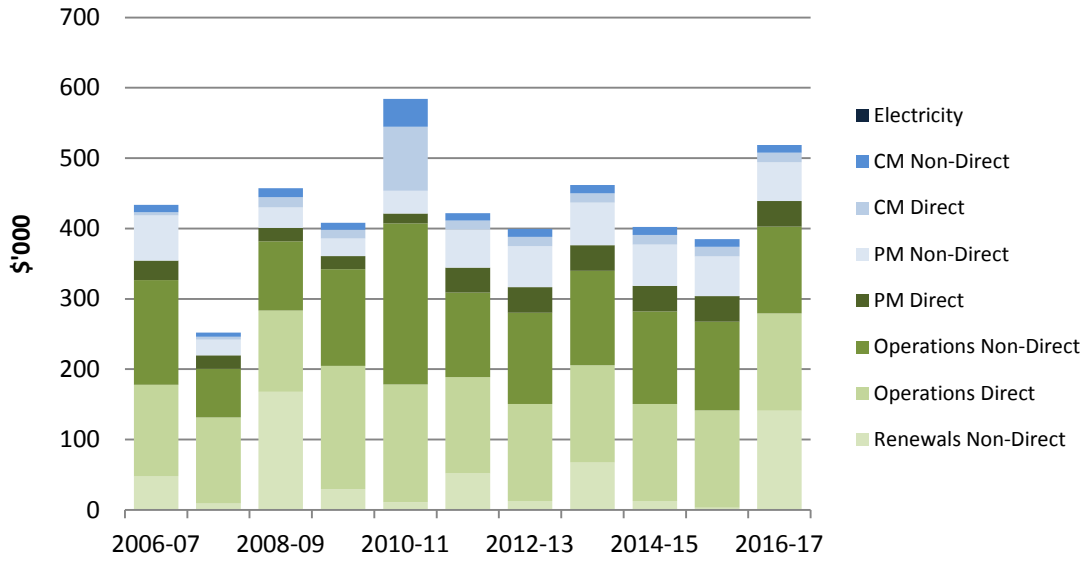
Figure 5.1: Total Operating Costs (Real $'000) – All Service Contracts



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

Expenditure by activity in Boyne River and Tarong WSS (all sectors) is shown in Figure 5.2 and Table 5.2 and Table 5.3.

Figure 5.2: Total Operating Costs (Real $'000)



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

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations	278	192	214	313	397	257	268	273	269	264	261
Electricity	0	0	0	0	0	0	0	0	0	0	0
Preventive maintenance	92	41	49	44	46	90	94	97	95	93	92
Corrective maintenance	15	10	27	22	130	23	25	25	25	25	24
Renewals non-direct	48	9	168	30	11	52	13	67	12	3	141
Total	**434**	**252**	**457**	**408**	**584**	**422**	**400**	**462**	**402**	**385**	**519**

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).

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	70	34	56	88	120	98	100	100	100	100	100
Electricity	0	0	0	0	0	0	0	0	0	0	0
Materials	5	13	12	8	8	14	14	14	15	15	15
Contractors	3	7	12	7	76	5	5	6	6	6	6
Other	84	91	69	102	69	68	68	68	68	68	68
Non-direct	272	106	309	202	311	236	212	274	214	197	330
Total Operating Costs	**434**	**252**	**457**	**408**	**584**	**422**	**400**	**462**	**402**	**385**	**519**

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

In its NSP, SunWater submitted that the operating costs for this scheme averaged $318,000 per year over the period of the current price path. [Operating costs as defined in the NSP exclude the indirect and overhead costs allocated to renewals expenditure.] The projected efficient average operating costs in the NSP for 2012-16 are $365,000 per annum.

Other Stakeholders

During the first round of stakeholder consultations (2010) irrigators raised concern about the level and allocation of costs, particularly in light of recent reduction in SunWater staff numbers. Irrigators were also concerned that compliance costs for the implementation of new environmental programs would form part of the costs of operating the water assets.

During the second round of stakeholder consultations (2011) irrigators stated that it was not clear whether operating costs from NSPs presented are the same as the current price path.

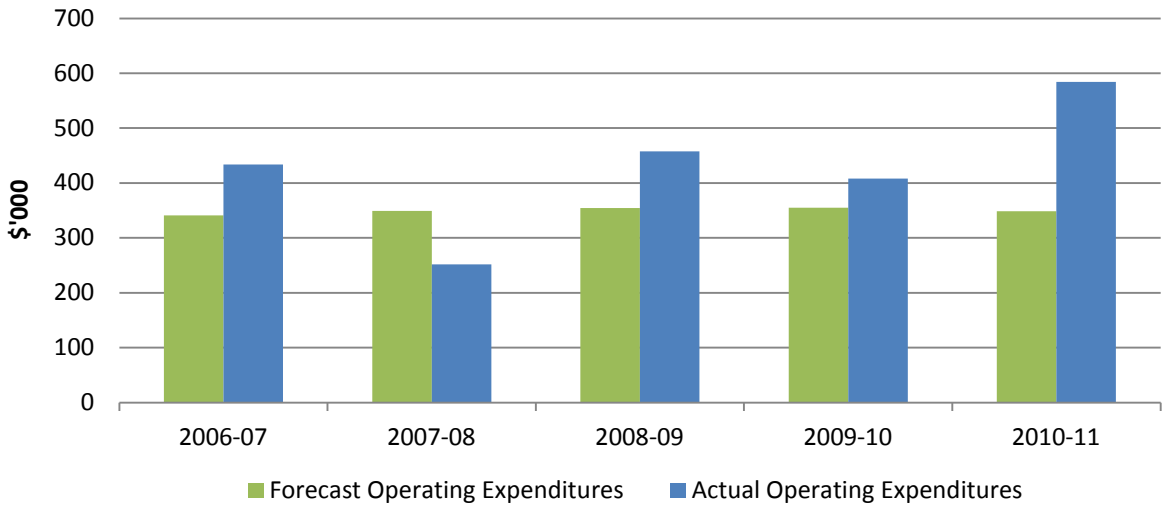
Authority's Analysis

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

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

In 2011, the Authority engaged Indec to assess whether SunWater achieved the cost savings forecast in 2005-06. A comparison of forecast and total actual operating costs for the Boyne River and Tarong WSS is shown in Figure 5.3 below. For this scheme, SunWater's actual operating costs were greater than Indec's forecast efficient operating costs by $347,000 over the period.

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



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

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

In response to concerns raised by irrigators regarding environmental management costs, the Authority considers these costs are inherent in managing a water supply scheme and that irrigators should bear the efficient level of environmental management costs.

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

5.3 Non-Direct Costs

Introduction

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

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

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

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

Previous Review

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

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

Draft Report

Stakeholder Submissions

SunWater

As noted in Volume 1, SunWater submitted that it will incur $23.5 million in total non-direct costs in 2012-13 (Table 5.4). 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 Boyne River and Tarong WSS are in Table 5.4 below.

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

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
SunWater	27,831	25,097	25,872	24,579	25,152	23,770	23,512	24,244	24,055	23,708	25,089
Boyne River and Tarong	272	106	309	202	311	236	212	274	214	197	330

Source: SunWater (2011ap).

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

Other Stakeholders

During the second round of stakeholder consultations (2011) irrigators stated that:

(a) the basis for spikes in operating costs were not well explained;

(b) cost allocation of labour is difficult if staff are shared between schemes;

(c) the allocation of indirect costs and overheads is very confusing to irrigators; and

(d) some schemes incur more costs than others, and concern existed that the lower cost schemes bear the costs of the higher cost schemes.

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 Touché 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 the Pioneer Valley Water Board (PVWater) and other Australian rural water service providers. Deloitte noted that PVWater's non-direct costs were higher than those of SunWater as a percentage of total operating costs – but that there are differences between PVWater and SunWater which made the comparison unreliable.[4]

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

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

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

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

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

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

(a) the overhead component of Infrastructure Management (Regions) should be allocated directly to the service contracts serviced by each relevant resource centre (South, Central,

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

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

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

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

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

Final Report

Allocation of Non-directs to Service Contracts

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

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

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

For the Final Report, the cost of options analyses and consultation with customers on renewals items ($445,000 for SunWater as a whole) has also been allocated to schemes on the basis of direct labour.

Proportion of Non-direct to Total Costs

The Authority also notes that in many schemes irrigators considered that the non-direct costs allocated to their schemes appeared to be high, and in some cases much higher than the SunWater-wide average ratio of non-direct to total costs. The reason for the wide variation of non-direct to total cost ratios across service contracts is because non-direct costs are allocated on the basis of DLC. It follows that if a service contract has a relatively high proportion of labour costs it will attract a relatively high proportion of non-direct costs.

In addition, the greater the indirect resources absorbed by a particular scheme, the higher will be the ratio of non-direct costs to direct labour costs. Together, these factors result in a relatively high non-direct to total cost ratio for irrigation service contracts. The Authority's draft and final recommended level of non-direct costs to be recovered from the Boyne River and Tarong WSS (from all customers) is set out below. The allocation of these costs between high and medium priority customers is discussed below.

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	272	106	309	202	311	236	212	274	214	197	330
Authority Draft							206	261	202	183	245
Authority Final							209	259	204	186	240

Source: SunWater (2011ap).

5.4 Direct Costs

Introduction

SunWater has classified its direct operating expenditures into operations, preventive maintenance (PM), corrective maintenance (CM) and electricity. 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 jobs (or a service contract) but not included in the categories (above), including insurance, local government rates, land tax and miscellaneous costs.

Draft Report

Stakeholder Submissions

SunWater

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

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

Table 5.6: 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*
Operation	130	123	116	175	168	137	138	138	138	138	138
Electricity	0	0	0	0	0	0	0	0	0	0	0
Preventive Maintenance	28	19	19	18	14	36	36	36	36	36	36
Corrective Maintenance	5	4	14	12	91	13	13	13	13	13	13
Direct Operating Costs	**162**	**146**	**149**	**206**	**273**	**186**	**187**	**188**	**188**	**188**	**188**

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	70	34	56	88	120	98	100	100	100	100	100
Electricity	0	0	0	0	0	0	0	0	0	0	0
Materials	5	13	12	8	8	14	14	14	15	15	15
Contractors	3	7	12	7	76	5	5	6	6	6	6
Other	84	91	69	102	69	68	68	68	68	68	68
Direct Operating Costs	**162**	**146**	**149**	**206**	**273**	**186**	**187**	**188**	**188**	**188**	**188**

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

Authority's Analysis

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

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

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

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

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

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

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

(f) retrieving information regarding individual assets was difficult.

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

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

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

(a) attain greater operating efficiency;

(b) achieve greater transparency;

(c) facilitate future price reviews; and

(d) promote more meaningful stakeholder engagement.

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

Final Report

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

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

Review of Direct Operating Expenditure

Item 1: Operations

Draft Report

Stakeholder Submissions

SunWater noted that operations relate to the day-to-day operational activity (other than maintenance) enabling water delivery, customer management, asset management planning, financial and ROP reporting, WHS compliance, administration and environmental and land management.

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

SunWater's proposed operations costs are set out in Table 5.6 above.

No other stakeholders commented on this item for the Draft Report.

Authority's Analysis

Aurecon reviewed SunWater's operations costs in more detail as shown in Table 5.8.

Table 5.8: Operations Expenditure by Type (Real $'000)

Type	*Actuals*					*Forecast*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Labour	48	24	39	68	63	63	63	63	63	63
Materials	0	5	2	1	3	3	3	3	3	3
Contractors	3	7	10	4	3	3	3	3	3	3
Other	79	88	65	102	64	63	63	63	63	63
Total Direct Costs	*130*	*124*	*116*	*175*	*133*	*132*	*132*	*132*	*132*	*132*
Indirects	106	38	53	59	54	54	62	66	63	59
Overheads	43	31	45	78	65	65	66	66	67	65
Total	**279**	**193**	**214**	**312**	**252**	**251**	**260**	**264**	**262**	**256**

Source: Aurecon (2011). Note: This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Particular observations by Aurecon were that:

(a) operations costs comprise between 70% and 86% of total operating costs; and

(b) cost items in the 'other' category included insurance ($51,000 in 2010-11), rates ($9,000) and other administrative costs.

Aurecon provided a summary of the operations costs by activity for the four years 2006-10 (Table 5.9).

Table 5.9: Operations Expenditure by Activity (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*
Customer Management	8	7	6	10
WHS	-	-	-	3
Environmental Management	22	2	-	11
Water Management	0	43	34	26
Scheme Management	109	92	106	168
Dam Safety	17	15	20	23
Schedule /Deliver	123	33	40	65
Metering	-	-	2	6
Facility Management	-	-	6	-

Source: Aurecon (2011). Note: includes indirect and overhead costs. This table is based on SunWater's original NSP and may differ from more recent SunWater data.

Significant items include:

(a) water management – activities related to announcement of water allocations, water quality monitoring and sampling, blue-green algae management, shoreline inspections, monitoring of groundwater levels. Contractors are used for water quality monitoring. SunWater noted that 2006-07 was a transition year in switching from the previous internal trade model to the new Business Operating Model, giving rise to comparability problems with line items;

(b) scheme management – energy management, land and property management, manual development, scheme strategies, facility contingency plans and emergency action plans, system leakage management plans (SLMPs), insurance, rates and land taxes;

(c) dam safety – routine monthly dam inspections, monitoring of embankments, piezometers, seepage surveillance, compliance documentation and reporting; and

(d) schedule/deliver – scheduling, releasing, operations of pump stations and SCADA, monitoring of water entitlements, reporting of breaches, water harvesting, ROP compliance of water levels and flows.

Aurecon noted that the provision of disaggregated historical activity data for Operations by SunWater provided substantial insights, but also identified substantial activities and issues requiring additional information and explanation from SunWater.

Aurecon noted that SunWater was not able to provide 2010-11 cost estimates for the sub-activities which Aurecon views as critical in verifying the prudency and efficiency of these costs. Aurecon recommended that to verify the prudency and efficiency of 2010-11 expenditure, the following information and analysis is required:

(a) that 2010-11 cost estimates for sub-activities be released and examined to ensure compliance with SunWater's averaging methodology (preceding 4/5 years);

(b) that cost estimates for metering be examined and projected based on 2009-10 costs (assuming that it represents improved efficiencies reading meters, and if it reflects the fact that all meters were read in 2009-10); and

(c) that the Dam Safety forecast 2010-11 costs is reduced by $1,850 to account for the transfer of activities to Preventive Maintenance.

Due to the above data limitations, Aurecon was unable to validate the prudency and efficiency of operations costs.

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

The Authority noted that Aurecon was unable to validate the prudency and efficiency of SunWater's operations costs due to insufficient information. The Authority noted that Aurecon did not recommend any adjustment to forecast operations costs, and has therefore included SunWater's proposed operations costs in its recommended tariffs.

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

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

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

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Item 2: Preventive Maintenance

Draft Report

Stakeholder Submissions

SunWater's proposed costs for this item are identified in Table 5.6 above.

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

Preventive maintenance includes:

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

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

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

Typical examples of preventive maintenance are:

(a) mechanical and chemical weed control including Acrolein injections;

(b) desilting of channels and drains;

(c) electrical and mechanical servicing of regulating gates, valves, meters and water level sensors;

(d) mechanical and electrical servicing of pumps, motors and filter systems; and

(e) servicing batteries and back-up systems.

No other stakeholders commented on this item for the Draft Report.

Authority's Analysis

Aurecon observed that:

(a) in 2006-07, costs that should have been coded to refurbishment were included in preventive maintenance causing a spike in these costs. Corrective maintenance costs were likewise understated;

(b) although preventive maintenance should generally be correlated to usage, Aurecon did not find a consistent correlation;

(c) in 2010-11, 60.7% of preventive maintenance costs were indirect costs and overheads, 32.6% was labour, 3.4% was materials and 2.2% other. The 2010-11 cost structure was used as a basis for 2012-17;

(d) the total cost of labour at $29,000 in 2010-11 was higher than the average of $12,000 for 2009-08 to 2009-10; and

(e) weed control activities around the storages varied from $7,000 (2008) to $16,000 (2009), with labour component ranging from $1000 to $6000.

Aurecon noted that SunWater's proposed labour costs for preventive maintenance of $29,000 in 2010-11 are informed by a study by PB in 2009-10. PB proposed that for 2010-11, a total of 491 hours would be required at a total cost of $27,314 for condition monitoring and servicing. This included 66 hours of new monitoring and inspection activities.

In considering historical preventive maintenance costs, Aurecon noted the differences between 2006-07 observations and later years (possibly due to error due to the change in the business model used). However, SunWater advised that 2006-07 was a transition year in which the previous internal trade model was removed and the new BOM model developed and implemented in 2007-08. This causes difficulties in comparability over this time period.

Aurecon identified historical preventive maintenance between 2006-07 and 2009-10 at an average of 224 hours (noting that 2006-07 data was questionable) and labour at an average of $40/hour. Aurecon recommended that that an audit of historical activities (particularly 2009-10) be undertaken to identify if all activities were previously undertaken and if coding errors resulted in these costs being allocated to other activities before accepting SunWater's proposal of 491 hours of labour input.

Aurecon also noted that the 2010-11 hourly labour rate adopted by PB ($55/hour) exceeded SunWater's actual costs in 2009-10 ($38/hour), possibly due to an assumption by PB of the utilisation of more senior SunWater staff.

Aurecon recommended that 290 hours of labour be budgeted at $45/hour at a total cost of $13,500 for these activities (224 being the average between 2006-07 and 2009-10 and 66 additional hours recommended by SunWater). Aurecon further recommended that an allowance of $4200 should be provided for the labour input to weed control costs, based on a 10% mark-up on the four-year average of these costs.

In total for labour for monitoring and weed control, Aurecon recommended that the $29,000 estimate projected by SunWater be revised to $17,700. Aurecon's analysis results in a reduction of $11,300 in total preventive maintenance, to be applied to each year for the next pricing period.

SunWater's Response

In relation to Aurecon's suggested reductions in labour costs related to preventive maintenance based on a four-year historical average, SunWater submitted that past data is not a reliable indicator of actual costs or work. SunWater noted that some past preventive maintenance at storages was booked to operations, rather than preventive maintenance.

SunWater considered that the PB review (which informed SunWater's submission) identified the labour effort and materials – contractor costs for each maintenance item from first principles. SunWater submitted that this was a thorough and detailed review undertaken by an independent party, is forward looking and is the best source of reliable information for Operations costs forecasts.

In response to Aurecon's comments regarding the difference in wages rates between SunWater's historic costs, and those recommended by PB, SunWater responded that the costs for 2010-11 were based on information received from field staff through consultation. Each preventive maintenance job was costed by identifying the different staff required to complete the work. Depending on the level of employee, different hourly labour rates were used.

Further, SunWater submitted that, in reviewing its preventive maintenance activity costs, Aurecon (and Halcrow in its review of WSSs in the North region) tried to evaluate the costs by sub-activity. This has occurred because there is information about two of the three preventive maintenance sub-activities cost, condition monitoring and servicing, which were recently reviewed and quantified by PB. SunWater noted that Aurecon took the PB costs and concluded that the residual relates to weed control.

Aurecon then looked to understand the basis of this residual and evaluate whether it was prudent and efficient. In some cases, Aurecon compared the residual to past labour costs for weed control, and used historic figures as proxy for weed control labour costs to recommend adjustments to the preventive maintenance activity costs.

SunWater stated that it is understandable that Aurecon would follow this logic given the information provided, and its frustration about the lack of data to support this residual is apparent.

SunWater submitted that its expenditure forecasts, particularly labour costs, are not intended to be viewed at the sub-activity level, and indeed examining labour costs even at the activity level should be done with some caution. This is because labour is shared between activities and schemes, and any examination of the costs will tend to be more about the assumptions about how the existing workforce will spend its time, rather than an overall assessment of efficiency.

SunWater accepted that discrepancies exist when comparing the 'residual' labour costs for weed control against historic costs for weed control. However, SunWater did not recommend examining costs at the sub-activity level, given:

(a) historic costs are heavily dependent on how employees have recorded their time, and there scope for error in these entries; and

(b) forecasts were developed at the activity, not sub-activity level. Attempts to recreate a labour or other cost at the sub activity level will be fraught and misleading.

SunWater suggested that a better approach, which more closely aligns with its workforce arrangements, is to examine the labour costs for each WSS at the scheme level, and assess whether the total labour dedicated to that scheme is efficient for a given level of workload.

SunWater did not agree with recommendations made in relation to preventive maintenance costs which are made on the basis of examining labour costs at the sub activity level.

In the Draft Report, 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 recommended that SunWater implement PB's earlier recommendations that:

(a) SunWater's maintenance plans and work instructions. 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 noted Aurecon's suggested revisions to SunWater's preventive maintenance costs, and also SunWater's responses. As noted by SunWater, the Authority considers that Aurecon's analysis reflects the level of information provided to them. SunWater objects to Aurecon's use of historical costs to forecast labour costs to inform forecast labour costs, based on the fact that historical labour data is not reliable.

However, the Authority noted that the historical cost data was provided by SunWater. The Authority does not consider that adopting SunWater's forecasts in place of those recommended by Aurecon because SunWater's historical data is unreliable provides the appropriate regulatory incentives.

In objecting to Aurecon's findings regarding weed control, SunWater submitted that costs be reviewed on a scheme-wide basis, rather than on a sub-activity basis. However, the Authority considers that it is necessary to understand the sub-activities performed by SunWater staff to be able to evaluate the efficiency of labour costs.

The Authority accepted Aurecon's recommendations, and has reduced SunWater's proposed preventive maintenance costs by $11,300 per annum in its recommended tariffs.

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Item 3: Corrective Maintenance

Draft Report

Stakeholder Submissions

SunWater's proposed costs for corrective maintenance are identified in Table 5.6 above.

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

SunWater identifies two types of corrective maintenance activities:

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

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

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

Typical corrective maintenance examples on drains and channels are:

(a) erosion repairs;

(b) flow meter repairs and replacements;

(c) removing weed blockages;

(d) repairing regulating gates, pumps and control systems; and

(e) repairing pipe leaks and seals on offtake gates.

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

No other stakeholders commented on this item for the Draft Report.

Authority's Analysis

Aurecon noted that corrective maintenance costs mainly related to indirect costs and overheads (47.8%), labour (26.1%), materials (27.1%) and contractors (4.3%).

Aurecon noted the difficulty in forecasting corrective maintenance costs, and that SunWater's approach of using historical expenditure as a basis for forecasting is commonly used by other water utilities. On this basis, the annual average direct cost (2006-10) was $9,000 (excluding

indirect costs and overheads). This compares to SunWater's forecast of $12,000 for the period starting at 2010-11. Aurecon noted that SunWater only averaged the two most recent years (2008-09 and 2009-10) in order to arrive at its forecast (the past two years average is $13,000).

Aurecon questioned why SunWater did not use the average of the past four years to arrive at its forecast and therefore recommended that additional clarification be sought from SunWater before accepting its forecast as being prudent and efficient.

SunWater's Response

In response's to Aurecon's concerns about a two-year average, SunWater replied that the forecast was made based on the expected operating conditions over 2011-16, not a simple average of actual costs over 2006-10.

SunWater submitted that Aurecon did not consider the impact of above-consumer price index (CPI) cost escalations in its analysis.

In the Draft Report, the Authority recommended an optimal mix of preventive and corrective maintenance should be pursued by SunWater. Further, for corrective maintenance, the Authority recommended that SunWater formally document its processes for the development of correct maintenance expenditure forecasts.

For this scheme, the Authority noted the discrepancy between the view of Aurecon and SunWater. Aurecon considered that SunWater forecasts corrective maintenance costs on the basis of historical expenditure, whereas SunWater submitted that this is not the case. However, SunWater's response did not provide a detailed explanation of the approach that it did use.

The Authority recommended that further information be provided by SunWater subsequent to the Draft Report. In the meantime, the Authority recommended that the four-year historical average of $9,000, as identified by Aurecon, be included in recommended tariffs.

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Item 4: Electricity

Draft Report

SunWater submitted that all electricity costs at Boondooma Dam accrue to the Tarong Pipeline.

The Lower Boyne Rivers Irrigators (2010) are concerned that since water from Boondooma Dam is supplied to the irrigators through gravity then there is no cause of adding on pumping costs.

The Authority noted that no electricity costs have been allocated to irrigators.

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Item 5: Cost Escalation

Draft Report

As noted in Volume 1, as part of their assessment of the prudency and efficiency of SunWater's operating costs, the Authority's operating cost consultants across all schemes were required to examine the appropriateness of SunWater's proposed cost escalation methods.

Direct Labour

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

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

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

Direct Materials and Contractors

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

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

Direct Electricity

As noted above, there are no electricity costs allocated to irrigators in this scheme.

Other Costs

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

Final Report

No submissions on these matters were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

Conclusion

A comparison of SunWater's and the Authority's direct operating costs for the Boyne River and Tarong 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.

The Draft Report the Authority applied a minimum 2.43% saving to direct operating costs (excluding electricity) in 2012/13. A further 0.75% saving arising from labour productivity is also applied, compounding annually.

Final Report

For the Final Report, the Authority's proposed costs include a change to the escalation of electricity costs to reflect new information.

Further, as noted in Volume 1, in the Draft Report the Authority inadvertently understated cost saving percentage estimates. These have been corrected and as a result, the Authority has now applied a minimum 4.5% saving to direct operating costs (excluding electricity) in 2012-13. A further 0.75% saving arising from labour productivity is also applied, annually.

The Authority's final recommended direct costs are shown in Table 5.10 compared to the Draft Report recommendations.

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

	SunWater					***Authority***				
	2012-13	***2013-14***	***2014-15***	***2015-16***	***2016-17***	***2012-13***	***2013-14***	***2014-15***	***2015-16***	***2016-17***
Operations	138	138	138	138	138	133	133	133	133	133
Electricity	0	0	0	0	0	0	0	0	0	0
Preventive Maintenance	36	36	36	36	36	35	35	35	35	36
Corrective Maintenance	13	13	13	13	13	13	13	13	13	13
Direct Operating Costs	**187**	**188**	**188**	**188**	**188**	**180**	**180**	**181**	**181**	**181**
Final Report										
Operations						127	127	127	127	126
Electricity						0	0	0	0	0
Preventive Maintenance						33	33	34	34	34
Corrective Maintenance						12	12	12	12	12
Direct Operating Costs						172	172	172	173	173

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

5.5 Cost Allocation According to WAE Priority

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

Previous Review

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

Draft Report

Stakeholder Submissions

SunWater

SunWater (2011j) has proposed to assign operating costs to users on the basis of their current WAE, except for non-direct costs allocated to renewals (on the basis of DLC) which are to be allocated to priority groups using HUFs. SunWater's proposed HUF for this scheme is set out in Chapter 4 Renewals Annuity.

Other Stakeholders

BRIAC (2011) stated that the Boyne irrigators need to validate indirect and overheads for scheme compared with Tarong. They noted that all costs for the pipeline to Tarong must be seen to be segregated.

During the second round of stakeholder consultations (2011) irrigators stated that:

(a) mostly HP water was sold in the last four years to the Shire and therefore costs should be shared by HP water users;

(b) it was difficult to differentiate costs between HP and MP water users. HP users must not charge MP users their pumping costs;

(c) pipeline costs which are mostly for HP user Tarong Power Station should not be borne by irrigators; and

(d) the more MP water sold to HP users, the more costs will be borne by the remainder of the MP users.

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

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

In response to concerns raised by irrigators, the Authority noted that all electricity costs have been allocated to the Tarong Power Station.

Final Report

No general submissions on the allocation of insurance costs were received in response to the Draft Report. However, following further consultation with SunWater, the Authority has concluded that an allocation of bulk insurance costs based solely on HUF is not appropriate (as other than asset utilisation factors are also relevant) and has decided to allocate the cost in the same manner as fixed bulk operations costs (50% HUF and 50% WAE).

On other cost allocation matters, no submissions were received in response to the Draft Report and the Authority has not identified any other grounds to alter its approach. No changes are therefore proposed for the Final Report.

5.6 Summary of Operating Costs

SunWater's proposed operating costs by activity and type are set out in Table 5.11. The Authority's draft recommended operating costs are set out in Table 5.12, and final recommended operating costs are provided in Table 5.13.

Compared to the Draft Report, the Final Report estimated operating costs take account of:

(a) an increase in non-direct costs to include the cost of options analyses and consultation with customers on renewals items ($445,000 for SunWater as a whole) which has been allocated to schemes on the basis of direct labour; and

(b) lower direct operating costs reflecting higher efficiency gains.

Taken together, total operating costs are slightly lower since the Draft Report.

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	64	64	64	64	64
Materials	3	3	3	3	3
Contractors	3	3	3	3	3
Other	68	68	68	68	68
Non-direct	130	134	131	126	123
Preventive Maintenance					
Labour	30	30	30	30	30
Materials	5	6	6	6	6
Contractors	1	1	1	1	1
Other	0	0	0	0	0
Non-direct	58	61	59	57	55
Corrective Maintenance					
Labour	6	6	6	6	6
Materials	6	6	6	6	6
Contractors	1	1	1	1	1
Other	0	0	0	0	0
Non-direct	11	12	12	11	11
Electricity	0	0	0	0	0
Total	**387**	**395**	**390**	**382**	**378**

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 Draft Recommended Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	62	62	63	63	64
Materials	2	2	3	3	3
Contractors	3	3	3	3	3
Other	65	65	64	64	63
Non-direct	126	129	124	117	113
Preventive Maintenance					
Labour	29	29	29	29	29
Materials	5	5	5	5	5
Contractors	1	1	1	1	1
Other	0	0	0	0	0
Non-direct	57	58	56	53	50
Corrective Maintenance					
Labour	5	5	6	6	6
Materials	6	6	6	6	6
Contractors	1	1	1	1	1
Other	0	0	0	0	0
Non-direct	11	11	11	10	10
Electricity	0	0	0	0	0
Total	**374**	**379**	**371**	**361**	**354**

Source: QCA (2011).

Table 5.13: The Authority's Final Recommended Operating Costs (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Operations					
Labour	59	59	60	60	61
Materials	2	2	2	2	2
Contractors	3	3	3	3	3
Other	62	62	61	61	60
Non-direct	130	133	127	120	118
Preventive Maintenance					
Labour	27	27	28	28	28
Materials	5	5	5	5	5
Contractors	1	1	1	1	1
Other	0	0	0	0	0
Non-direct	57	58	56	53	51
Corrective Maintenance					
Labour	5	5	5	5	5
Materials	6	6	6	6	6
Contractors	1	1	1	1	1
Other	0	0	0	0	0
Non-direct	11	11	11	10	10
Electricity	0	0	0	0	0
Total	**369**	**375**	**366**	**356**	**351**

Source: QCA (2012).

6. RECOMMENDED PRICES

6.1 Background

Ministerial Direction

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

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

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

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

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

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

The Ministerial Direction also requires that:

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

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

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

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

Previous Review

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

For this scheme, total prices increased by $0.25/ML in the first year and $0.38/ML in the next year in real terms (plus CPI) to achieve lower bound costs, and were increased by CPI thereafter. In 2011-12, prices in this scheme were increased by 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.

For the Draft Report, the Authority adopted a 20-year price model mainly to promote long term price stability. Under this approach, prices are above costs for the first ten years of the 20-year model and below costs for the last ten years. Over the 20 year period, costs are fully recovered.

Some stakeholders raised concerns about estimated cost reflective prices exceeding lower bound costs over the 2012-17 price period.

In the Final Report, the Authority has adopted a five year pricing model for the purpose of developing prices. The Authority has retained the rolling 20 year renewals annuity planning period and used the relevant five years of the smoothed renewals annuity. For non-renewals costs the five year model now incorporates only five years of such costs, rather than 20 years. Such an approach also has the advantage of removing from prices the inaccuracies associated with longer term forecasts in non-capital costs.

6.3 Total Costs

Draft Report

The Authority's estimates of prudent and efficient total costs for the Boyne River and Tarong 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 Boyne River and Tarong 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	428	284	331	426	607	342	373	380	378	370	365
Renewals Annuity	46	60	60	62	47	-13	1	1	3	3	3
Operating Costs	385	243	290	379	573	370	387	394	390	382	377
Revenue Offsets	-4	-19	-18	-15	-13	-15	-15	-15	-15	-15	-15
Draft Report											
Authority's Total Costs	-	-	-	-	-	-	377	380	376	365	358
Renewals	-	-	-	-	-	-	17	16	20	19	19
Operating Costs	-	-	-	-	-	-	374	379	371	361	354
Revenue Offsets	-	-	-	-	-	-	-15	-15	-15	-15	-15
Return on Working Capital	-	-	-	-	-	-	0	0	0	0	0
Final Report											
Authority's Total Costs							367	372	367	356	351
Renewals							13	12	15	15	15
Operating Costs							369	375	366	356	351
Revenue Offsets							-15	-15	-15	-15	-15
Return on Working Capital							0	0	0	0	0

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: SunWater (2011ap), Draft Costs (QCA, 2011) and Final Costs (QCA, 2012).

6.4 Fixed and Variable Costs

Draft Report

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

SunWater submitted that all of its operating costs are fixed in the Boyne River and Tarong WSS.

BRIAC (2011) commented that there is a need to see further analysis of operating costs before 2007 to assess correlation of costs and usage as a significant proportion of these costs are variable costs.

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; and

(c) costs that *should* vary with water use under Indec's proposed optimal (prudent and efficient) management approach (this approach is outlined in Volume 1). On average across all SunWater's 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 Boyne River and Tarong WSS, Indec recommended 91% of costs should be fixed and 9% variable under optimal management. The Authority noted that this ratio differs from the current tariff structure which reflects the recovery of 70% of costs in the fixed charge and 30% of costs in the volumetric charge.

The Authority accepted Indec's recommended tariff structure for the reasons stated by Indec as outlined in Volume 1. No change is proposed from the Draft Report.

6.5 Allocation of Costs According to WAE Priority

Fixed Costs

The method of allocating fixed costs to priority groups is outlined in Chapter 4 Renewals Annuity and Chapter 5 Operating Costs. The outcome is summarised in Table 6.2. These costs are translated into the fixed charge using the relevant WAE for each priority group.

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

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Draft Report					
Net Fixed Costs	**341**	**345**	**341**	**331**	**324**
High Priority	278	281	278	270	264
Medium Priority	51	51	51	49	48
Distribution Losses	12	12	12	12	12
Final Report					
Net Fixed Costs	**333**	**338**	**333**	**322**	**317**
High Priority	269	273	269	260	256
Medium Priority	50	51	50	49	48
Distribution Losses	14	14	14	13	13

Note: Net fixed costs is net of revenue offsets and return on working capital. Source: SunWater (2011ap), Draft Costs (QCA,2011) and Final Costs (QCA, 2012).

Variable Costs

Draft Report

Volumetric tariffs are calculated based on SunWater's eight-year historical water usage data for all sectors. However, consistent with SunWater's assumed typical year for operating cost forecasts, the Authority has removed from the eight years of data, the three lowest water-use years for each service contract.

6.6 Cost-Reflective Prices

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

The cost-reflective prices in the Draft Report are contrasted with its Authority's final cost-reflective prices below.

Table 6.3: Cost-Reflective Prices for the Boyne River and Tarong 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***
Draft Cost-Reflective Prices											
Fixed (Part A)	16.80	17.52	18.36	18.96	19.52	20.24	4.40	4.51	4.62	4.74	4.86
Volumetric (Part B)	12.00	12.52	13.12	13.53	13.94	14.44	1.47	1.51	1.54	1.58	1.62
Final Cost-Reflective Prices											
Fixed (Part A)	16.80	17.52	18.36	18.96	19.52	20.24	4.51	4.63	4.74	4.86	4.98
Volumetric (Part B)	12.00	12.52	13.12	13.53	13.94	14.44	1.49	1.52	1.56	1.60	1.64

Source: Actual Prices (SunWater, 2011al), Draft Cost Reflective Prices (QCA, 2011), Final Cost-Reflective Prices (QCA, 2012)

6.7 Queensland Government Pricing Policies

Draft Report

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.

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

The Authority has calculated these current revenues using the relevant 2010-11 prices, current irrigation WAE and the five-year average (irrigation only) water use during 2006-11 (Table 6.4). The five year average water use has been updated for more reliable data, as noted in Volume 1.

For this scheme, current revenues are above the level required to recover prudent and efficient costs (Table 6.4). Therefore, the Authority is required to recommended prices that maintain revenues in real terms for the 2012-17 regulatory period.

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

Tariff and Priority Group	*2010-11 Prices $/ML (indexed to 2012-13)*		*Irrigation WAE (ML)*	*Irrigation Water Use (ML)*	*Current Revenue*	*Revenue from Cost-Reflective Tariffs*	*Difference*
	Fixed	*Variable*					
River (Draft)	20.51	14.65	9,461	2,994	237,877	46,027	191,850
River (Final)	20.51	14.65	9,461	2,756	234,396	46,789	187,607

Source: Source: SunWater (2011al), SunWater (2011ao) and QCA (2011 and 2012).

Submissions Received from Stakeholders on the Draft Report

In Round 3 consultations (November 2011), Irrigators questioned Government policy that was maintaining revenues in excess of costs, even when the ARR balance was positive.

Authority's Response to Submissions Received on the Draft Report

The Authority notes irrigators concerns however, but remains bound by the Ministerial Direction and Government policy on this matter.

6.8 The Authority's Recommended Prices

The Authority's draft and final recommended prices to apply to the Boyne River and Tarong WSS for 2012-17 are outlined in together with actual prices since 2006-07. In calculating the recommended prices, a 10-year average irrigation water use has been adopted (see Volume 1).

Table 6.5: Recommended Prices for the Boyne River and Tarong 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***
Draft River											
Fixed (Part A)	16.80	17.52	18.36	18.96	19.52	20.24	24.38	24.99	25.61	26.25	26.91
Volumetric (Part B)	12.00	12.52	13.12	13.53	13.94	14.44	1.47	1.51	1.54	1.58	1.62
Final River											
Fixed (Part A)							24.05	24.65	25.26	25.90	26.54
Volumetric (Part B)							1.49	1.52	1.56	1.60	1.64

Source: Actual Prices (SunWater, 2011am,) Draft Recommended Prices (QCA, 2011), Final Recommended Prices (QCA, 2012)

6.9 Impact of Recommended Prices

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

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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)*
Boondooma Dam	2011-12	REFURBISH SECTION OF SPILLWAY FLOOR	90
		refurbish: Stage2 - Repair the area of 'drummy' and cracked concrete; 2009 D/S discovered other areas requiring repair	26
		09BYR02 MAN/INSTALL ACCESS PLATFORM	15
		INVESTIGATE SAFE OPERATION OF DECKING	13
		Study: detailed inspection of Joints	12
	2012-13	REDESIGN GATE WINCH MECHANISM	12
	2013-14	Study: 5yr Dam Comprehensive Inspection (by 1 Jun 2014)	124
		DESILT MAIN DIVERSION CONDUIT	49
		REPLACE BULKHEAD GATE SEAL	22
	2014-15	UPGRADE WALL OF DISSIPATOR CHAMBERS	124
	2016-17	Refurbish: Replacement of Sealer in upstream slope to specifications detailed in scoping project of 2012	171
		Replace Water Level Recorder	165
		Replace Canteen	55
		Replace Valvehouse Electrics	12
		Replace Switchboard-Outlet, Low Voltage	10
	2017-18	Refurbish: Implement Recommendation 4i) - 2004 5-Yearly Dam Safety Inspection - 4WD Crossing (See ES	36
	2018-19	Study: 5yr Dam Comprehensive Inspection (by 1 Jun 2014)	122
		Study: 20yr Dam Safety Review (by 1 May 2019)	122
	2019-20	Refurbish Metalwork - Handrail/ ladder & 450 CICL replacement	97
		Replace 450 Butterfly Valve - Manual	31
		Refurbish Road - 1.5km to OWKS, fill potholes, reconstruct drainage, spray seal	18
	2020-21	11BYRXX 10Y CRANE INSPECTION	35
	2023-24	Study: 5yr Dam Comprehensive Inspection (by 1 Jun 2014)	121
	2025-26	Refurbish Valve - 750mm dia CDV patch painting - (iron problem in water)	36
		REFURBISH PIPEWORK D/S OF VALVE	11
	2028-29	Study: 5yr Dam Comprehensive Inspection (by 1 Jun 2014)	121
	2030-31	Replace Hydraulic Control System	173
		Replace Hoist-Inlet Tower	59
		11BYRXX 10Y CRANE INSPECTION	34
	2031-32	Replace Cables & Cableways	561
		Replace Water Level Recorder	164
	2033-34	Study: 5yr Dam Comprehensive Inspection (by 1 Jun 2014)	121
		Refurbish Road - 1.5km to OWKS, fill potholes, reconstruct drainage, spray seal	18