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Synergies Economic Consulting

Report to the Queensland Competition Authority

Rural Water Pricing
Business and Scheme Overview

January 2010

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In conducting the analysis in the report Synergies has used information available at the date of publication, noting that the intention of this work is to provide material relevant to the development of policy.

Mark Christensen is a Principal with Synergies and is also a member of the Queensland Competition Authority. Mark has had no involvement in the preparation of this report.

EXECUTIVE SUMMARY

SunWater owns 22 water supply schemes servicing irrigators.

SunWater and customer representatives (comprising a Tier 1 peak reference group, and Tier 2 scheme-level reference groups) developed price paths from 2006/07 to 2010/11, in accordance with the State Government's rural water pricing policy. At the end of this time, 15 of the 22 schemes will have achieved the minimum lower bound cost recovery target.

The Queensland Competition Authority (QCA) anticipates that it will be directed to develop prices at the end of this current price path, from 1 July, 2011 to 30 June, 2016.

The QCA engaged Synergies Economic Consulting (Synergies) to compile background information to inform the Authority's investigation, in relation to general scheme descriptions, scheme infrastructure, service standards, segment prices and known scheme level issues.

Business overview

SunWater Ltd (SunWater) supplies water to customers in rural and regional Queensland. Its major assets include dams, weirs, pump stations, pipelines and distribution channels, and drainage infrastructure servicing irrigators, mines, local governments, industrial users and power stations.

While around 80% of water deliveries are to irrigators, they account for less than one third of total revenue.

SunWater's water supply activities encompass bulk water, network and drainage services.

SunWater has three wholly-owned subsidiaries – Eungella Water Pipeline Pty Ltd, North West Queensland Water Pipeline Pty Ltd and Burnett Water Pty Ltd. Of these, Burnett Water holds bulk water storage assets, while the other two own pipeline assets supplying the mining sector. Both entities hold water access entitlements (WAE).

SunWater's other services include water trading, external consultancies and contracts, and hydro-electric generation.

General scheme descriptions

Many SunWater schemes only provide bulk water services, while others provide network and drainage services to irrigators as well. Some of these schemes also have network assets (eg pipelines) that supply the non-irrigation sector.

Bulk water assets are typically storages such as dams, weirs and offstream storages. These assets are described in, and regulated under, Resource Operations Licenses (ROLs).[1] In some cases, these licenses include pipeline and associated assets (eg pump stations) where WAE are supplemented in streams or groundwater area not supplied by the ponded area of a storage, or releases from it. Hence these assets provide a bulk water service. Such assets include:

- the Redgate Relift system in the Barker Barambah WSS;
- the Callide Diversion Channel in the Callide Valley WSS;
- the Yaramalong Pump Station and Pipeline in the Upper Condamine WSS; and

[1] Or interim Resource Operations Licenses, where applicable.

- the Youlambie Channel in the Three Moon Creek WSS.

In some irrigation districts, network assets (typically main channels) provide a dual function, delivering water to channel segments as well as supplementing streamflows.

The table below provides a summary of the services provided in each scheme.

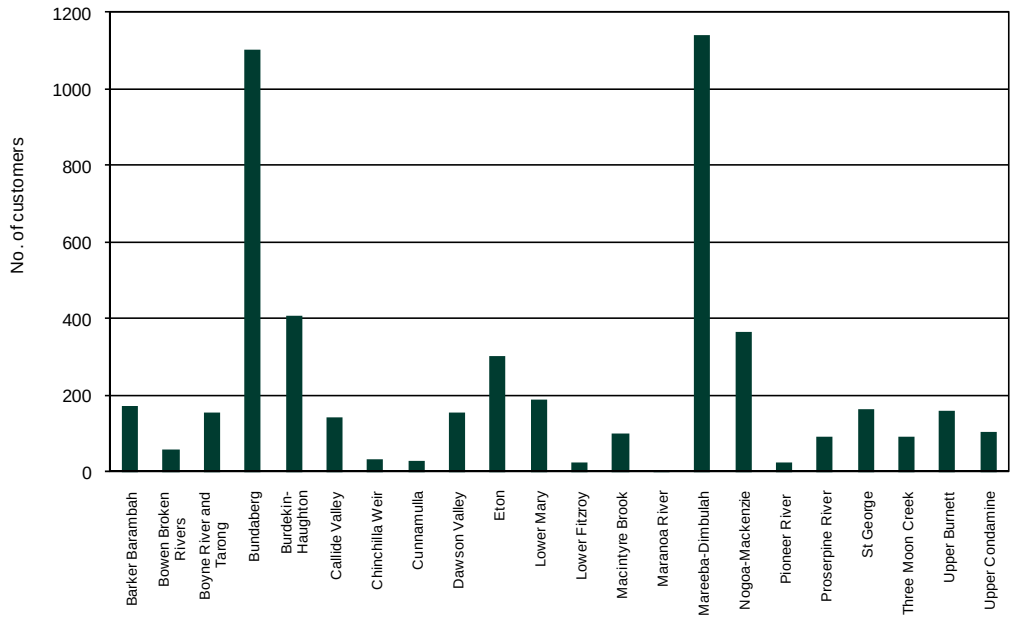
Summary of scheme services.

Scheme	***Bulk water***	***Network Service (Irrigation District)***	***Drainage Service***	***Non-irrigation networks***
Barker Barambah	✓			
Bowen Broken Rivers	✓			Eungella Pipeline (subsidiary) Collinsville Pipeline
Boyne River and Tarong	✓			Tarong Pipeline
Bundaberg	✓	✓		
Burdekin – Haughton	✓	✓	✓	Burdekin-Moranbah Pipeline
Callide Valley	✓			Awoonga-Callide Pipeline
Chinchilla Weir	✓			
Cunnamulla	✓			
Dawson Valley	✓	✓	✓	
Eton	✓	✓		
Lower Mary	✓	✓		
Lower Fitzroy	✓			Stanwell Pipeline
Macintyre Brook	✓			
Maranoa River	✓			
Mareeba-Dimbulah	✓	✓	✓	
Nogoa-Mackenzie	✓	✓	✓	Blackwater Pipeline
Pioneer River	✓			

Scheme	*Bulk water*	*Network Service (Irrigation District)*	*Drainage Service*	*Non-irrigation networks*
Proserpine River	✓			
St George	✓	✓	✓	
Three Moon Creek	✓			
Upper Burnett	✓			
Upper Condamine	✓			

The figure below provides a comparison of customer numbers between schemes, and shows the dominance of Bundaberg and Mareeba-Dimbulah in terms of customer numbers.

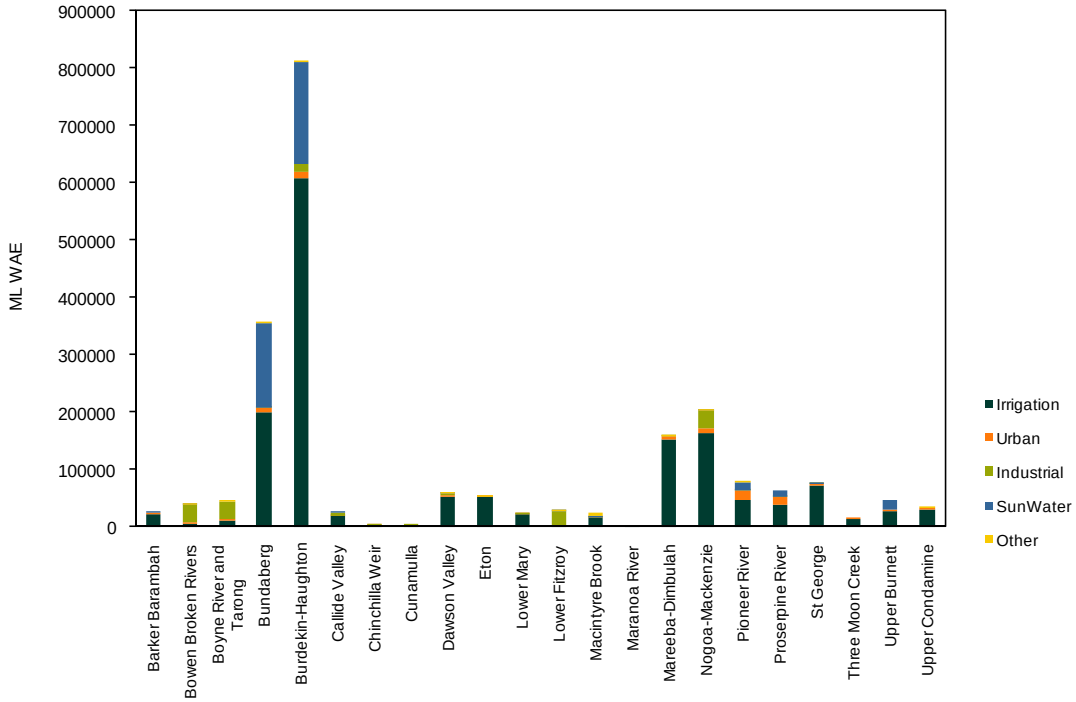
Comparison of No. of customers between water supply schemes



Source: SunWater Annual Report, 2008-09.

Burdekin-Haughton, Bundaberg and Nogoa-Mackenzie are the largest schemes in terms of WAE (refer below).

Amount of WAE supplied in each scheme by sector



Notes: Mareeba-Dimbulah excludes supplies to the Barron Gorge hydroelectric station. Bundaberg and Upper Burnett include WAE held by Burnett Water Pty Ltd.

Source: SunWater Annual Report, 2008-09.

Water sales in each scheme are typically lower than the forecasts adopted for price setting. In some schemes, but not all, this is due to limited water availability over the first three years of the price paths.

Status of water planning activities

The Department of Environment and Resource Management has completed the initial water planning process for most schemes, with Resource Operations Plans (ROPs) and ROLs already established. This means that WAE have been formalised in those schemes, and permanent trading of those entitlements can occur.

In five schemes, Interim Resource Operations Licences (IROLs) are still in place. The table below provides an overview.

Summary of water planning status by scheme

Scheme	*WRP Catchment*	*IROL*	*WRP*	*ROP*	*ROL*
Barker Barambah	Burnett Basin		✓	✓	✓
Bowen Broken Rivers	Burdekin		✓	✓	✓
Boyne River and Tarong	Burnett Basin		✓	✓	✓
Bundaberg	Burnett Basin		✓	✓	✓
Burdekin – Haughton	Burdekin		✓	✓	✓
Callide Valley	Fitzroy Basin	✓	✓		
Chinchilla Weir	Condamine Balonne		✓	✓	✓
Cunnamulla	Warrego / Paroo / Bulloo / Nebine		✓	✓	✓
Dawson Valley	Fitzroy Basin		✓	✓	✓
Eton	Pioneer		✓	✓	✓
Lower Mary	Mary	✓			
Lower Fitzroy	Fitzroy Basin		✓	✓	✓
Macintyre Brook	Border Rivers		✓	✓	✓
Maranoa River	Condamine Balonne		✓	✓	✓
Mareeba-Dimbulah	Barron		✓	✓	✓
Nogoa-Mackenzie	Fitzroy Basin		✓	✓	✓
Pioneer River	Pioneer		✓	✓	✓

Scheme	*WRP Catchment*	*IROL*	*WRP*	*ROP*	*ROL*
Proserpine River	Whitsunday	✓			
St George	Condamine Balonne	✓	✓		
Three Moon Creek	Burnett Basin	✓	✓		
Upper Burnett	Burnett Basin		✓	✓	✓
Upper Condamine	Condamine Balonne		✓	✓	✓

Source: http://www.derm.qld.gov.au/wrp/timetable.html

Some WRPs are currently under review, in accordance with the 10-year planning and review cycle.

Scheme service standards

SunWater operates under a 'decentralised' service regime, whereby customers hold their own WAE and manage supply risks accordingly (eg through trading). SunWater's role under this regime is to supply the owner of that WAE with water, in accordance with the conditions of that WAE and other contractual terms. This means that customers bear the risks of water availability and risks associated with conditions for their WAE generally.

Bulk water service

The bulk water service is provided in all 22 schemes, and involves making water available to a customer's nominated diversion point, in accordance with their WAE. This service is largely constrained by water management regulation, and in particular the ROP and SunWater's ROL.

Generic service aspects and responsibilities – bulk water service

Service Aspect	*Service Provider*	*Customer*	*Comment*
Water availability		✓	Customers hold WAE, and bear the risk of availability.
Water quality		✓	Water is typically provided in its raw state.
Supply continuity	NA	NA	Service providers are typically responsible for scheduling releases of water to meet demands. This often relies on a water ordering regime.
Pump access		✓	Customers own the pump works and are responsible for

			pump location, repair etc.
Diversion rate		✓	A customer's diversion rate is subject to planning and development approvals for their works.
River transmission losses	NA	NA	These are factored into water plans and water sharing rules.

The majority of the value generated by the service relates to the 'creation' of a regulated or supplemented WAE, through construction of water storage. These WAE have different characteristics, which are set out in the table below.

The water resource planning process sets the performance standards for WAE in each scheme.

The Water Allocation Security Objectives (WASOs) for each scheme provide an indication of the relative performance or standard between medium and high priority WAE. The table below provides a summary of these WASOs, where they are being set.

WASOs for water supply schemes

Scheme	***Water Resource Plan***	***High priority***		***Medium priority***	
		Annual	*Monthly*	*Annual*	*Monthly*
Barker Barambah	Burnett Basin	95% (monthly/annual not stated)		85% (monthly/annual not stated)	
Bowen Broken Rivers	Burdekin Basin	95%/90%[a]	98%	65%	85%
Boyne River and Tarong	Burnett Basin	95% (monthly/annual not stated)		73% (monthly/annual not stated)	
Bundaberg	Burnett Basin	95% (monthly/annual not stated)		90% (monthly/annual not stated)	
Burdekin – Haughton	Burdekin Basin	100%	-	90%	95%
Callide Valley	Fitzroy Basin	95-100% [b]		82-88% [b]	
Chinchilla Weir	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]
Cunnamulla	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]
Dawson Valley	Fitzroy Basin	95-100% [b]		82-88%[c] [b]	
Eton	Pioneer Valley	-	95%	-	85%
Lower Mary	Mary Basin	-	95%	-	88%
Lower Fitzroy	Fitzroy Basin	95-100% [b]		82-88% [b]	
Macintyre Brook	Border Rivers	Note[e]	Note[e]	Note[e]	Note[e]
Maranoa River	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]
Mareeba-Dimbulah	Barron	95%	95%	75%	90%

Scheme	***Water Resource Plan***	***High priority***		***Medium priority***	
		Annual	*Monthly*	*Annual*	*Monthly*
Nogoa-Mackenzie	Fitzroy Basin	95-100% [b]		82-88% [b]	
Pioneer River	Pioneer Valley	-	95%	-	85%
Proserpine River	Whitsunday (draft)	99% - 100%	97%-100%	65% - 70%[e]	75% - 80%[e]
St George	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]
Three Moon Creek	Burnett Basin	95% (monthly/annual not stated)		Not specified[d]	
Upper Burnett	Burnett Basin	95% (monthly/annual not stated)		90% (monthly/annual not stated)	
Upper Condamine	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]

a For water allocations in the high A1 priority group in the Bowen Broken Water Supply Scheme, the annual supplemented water sharing index must be at least 95%, while for allocations in the high A2 priority group, the annual supplemented water sharing index must be at least 90%.

b The 'water allocation security performance indicator' for schemes within the Fitzroy Basin region are defined as the median of the simulated monthly reliabilities for water allocations of a particular priority group.

c For as 'Medium A reliability' WAE. A different WASO applies for Medium B WAE.

d Whilst the Water Resource Plan for the Burnett Basin specified a percentage relating to medium priority allocations for the Three Moon Creek water project area below which allocation losses should be minimised, no minimum security level was specified for medium priority allocations in this region.

e The water resource plan does not specify the WASO as a percentage, but instead refers to it as needing to be not less than the percentage immediately before any decision is made in relation to the ROP or amendment/change of a WAE under the ROP.

f Lower WASOs apply to WAE held by the Kelsey Creek and Six Mile Creek water boards.

In recent years, conversion factors have been developed for three schemes that enable a WAE to be changed from one priority to another (Nogoa-Mackenzie, Lower Fitzroy and Burdekin-Haughton).

However, these conversion factors are not without other constraints, in particular constraints about the minimum and maximum amount of high priority and medium priority WAE that can exist in various river zones or in the scheme as whole. Hence, these conversion factors may provide an indication of equivalence between the two products, but should not be interpreted as being definitive across the whole scheme.

Network service

The network service involves diverting water available to a customer under their WAE, and transporting that water to their offtake, via a physical connection to SunWater's infrastructure. SunWater is required to manage distribution losses in that network, and holds a specific WAE for this purpose. This means that a customer's WAE is effectively measured at their network offtake, with SunWater managing losses from the point of river diversion.

Other key aspects to the network service are summarised in the table below.

Generic service aspects and responsibilities – network service

Risk / Service Aspect	*Service Provider*	*Customer*	*Comment*
Water availability		✓	Customers hold WAE, and bear the risk of availability.
Water quality	NA	NA	Water is provided 'as is' at the point of diversion, although the service provider may have obligations in relation to chemical treatments for weeds.
Supply continuity	✓		Service providers have responsibilities in terms of the timing and period of shutdowns for weed control, maintenance etc.
Flow rate	✓		Service providers may be expected to supply in accordance with a defined flow rate or roster during times of peak demand.
Frequency and duration of peak demand periods		✓	The incidence of peak demand periods will often depend on crop diversity, weather etc.
Channel distribution losses	✓		Service providers typically hold a water entitlement to cover these losses in the network.

Service differentials – irrigation and non-irrigation

There is no differentiation in service between irrigation and non-irrigation users. Rather, the service provided to all users is largely determined through their WAE.

Drainage

The drainage service involves removal of water from serviced providers and disposal via a drainage network. This network is normally designed to remove flows from rainfall events. There are not normally requirements about the quality of water accepted (unlike, for example, trade waste).

Drainage services are offered in five of the eight irrigation districts.

Service standards

SunWater has set service standards for 21 of the 22 schemes.[2] These standards largely relate to supply interruptions, and are set under provisions in standard supply contracts.[3]

SunWater reports performance against these standards in its annual report.[4]

Service standards were considered for the current price paths, but the Tier 1 reference group considered the issues were better dealt with in subsequent reviews. Tier 1 also considered the likely quantum of any price-service trade-off as immaterial, and there should be majority customer support for any change.[5]

Prices

The current price paths span from 2006/07 to 2010/11. Prices are set in $2005/06, and are indexed annually at CPI.

The outcomes are documented in various reports on SunWater's website.[6]

Government's rural irrigation pricing policy

The price paths for bulk water, network and drainage services were set in accordance with State Government policy parameters.

Tariff structure

The current tariff structure essentially carries forward that set in 2000, for the original price paths. This is a two part tariff, subject to a minimum charge, for the bulk and network services. These tariffs are applied as follows:

- Part A – which is a fixed charge (or equivalent to an access fee for network services), and applies per ML of WAE; and

- Part B – which is a volumetric charge, applied to each ML taken.

In general, Part A and Part B charges were set to recover a nominated proportion of lower bound costs, with Part A charges typically set to recover around 70% of costs, and Part B charges the residual. There were also some cases where particular costs or revenues were assigned to either tariff. For example:

- any 'above lower bound' revenues, where prices were already achieving above lower bound cost recovery were incorporated into the Part B tariff; and

- increases in drainage charges in the Burdekin-Haughton and Dawson Valley schemes were included in the Part A charge (rather than via an increase to the drainage charge).

Prior to the current price path, separate drainage rates were set on a per hectare basis in four of these districts. In Mareeba-Dimbulah, drainage costs were recovered in the network service charge. However, separate lower bound drainage costs were not identified in the original 2000/01 – 2005/06 price paths. This was remedied for the current price paths, with lower bound

2 There are no standards published for Pioneer Valley WSS.
3 These can be found at http://www.sunwater.com.au/water_schemes_rules-targets.htm.
4 For example, page 31 of the 2008-09 Annual Report.
5 Statewide Irrigation Pricing Working Group. *Tier 1 Report* (April 2006). p62.
6 Refer to http://www.sunwater.com.au/irrigationpricing.htm.

drainage costs determined for each of the five schemes with drainage services, and are recovered under a mix of arrangements, including through (wholly or partially) network service prices.

Price or revenue cap

Three schemes opted for a revenue cap: Bowen Broken Rivers, Cunnamulla Weir and Macintyre Brook.

Key pricing inputs and assumptions

SunWater and the Tier 1 reference group set and published the lower bound costs at a scheme-level, rather than a tariff level. This comprised operating, maintenance and administration costs, electricity, and an asset renewals annuity.

A productivity adjustment was specified for each scheme.

Indec Consulting were engaged to review SunWater's operating costs for efficiency and potential improvements, using the 2003/04 year as a baseline. This review identified potential savings to be realised through continuous improvement, and did not identify "any readily (instantaneously) realisable savings with respect to the 2003/04 year".[7]

A refurbishment program was prepared for each scheme, and reviewed by Gutteridge, Haskins and Davey (GHD) who found them reasonable and appropriate. The Tier 1 reference group accepted this program.

The renewals annuity was calculated over a rolling 30 year period, and adopted the estimated annuity balance at 30 June, 2006 rather than the actual balance.

Cost allocation

The following approach was adopted for cost allocation for the existing price paths:

- corporate head office and regional office costs to assets: allocated proportional to direct operating and maintenance costs (less electricity); and
- between customer sectors from the same asset: based on water entitlements held by each sector, with an adjustment between high and medium priority.

A conversion factor was calculated using hydrologic modelling to establish an equivalent yield for each product.

Drought tariffs

SunWater offered flexible arrangements to apply in the event of severe drought, and drought tariff arrangements were adopted in two schemes, both of which have since been transferred to Seqwater.

Community service obligations (CSO)

A CSO was provided to SunWater to recover the shortfall between the efficient lower bound costs and anticipated revenues from irrigators. For some schemes, this CSO will end over the course of the current price path.

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[7] SunWater Statewide Irrigation Pricing Working Group. Tier 1 Report (April 2006). Appendices, Section 9.3.

However, CSO payments will continue through to the end of the price path (including the final year) for 7 Category 3 schemes. CSOs were also provided in relation to development costs for ROPs. These CSOs were specified for each scheme.[8]

Scheme price paths

Attachment 1 sets out the price paths for each scheme, by tariff group, and compares the lower bound cost reference tariff to the actual price path.

Known scheme-level issues

While there are generic, regulatory issues to consider (eg asset value, cost allocation etc), there are a range of specific issues arising (or identified in) the current price paths:

- treatment of ongoing Category 3 schemes which will not have reached the minimum lower bound cost recovery target by 2010/11;
- the appropriate tariff structure going forward for each service, and in particular the price signals from the fixed and volumetric components, as well as the merits of continuing with the current approach to postage stamp pricing;
- the ongoing form of regulation, and dealing with the three schemes currently under a revenue cap (with unders and overs provisions) in the subsequent pricing period;
- recovery of forthcoming and past spillway upgrade costs;
- assigning costs to the irrigation sector (including conversion factors for high and medium priority); and
- other issues specifically raised by the Tier 1 and Tier 2 customer reference groups.

[8] These CSOs may be included in the amounts in the above table.

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GLOSSARY

The terminology used in the water sector, and the rural irrigation sector in particular, has for some time been inconsistent across different jurisdictions. Following the recent National Water Initiative reforms, including the introduction of the ACCC in a regulatory capacity in the Murray Darling Basin, some uniformity is now emerging. However this has meant inconsistency with past terms used in Queensland, and for the current price paths.

In this report, we have used or adapted the definitions and terminology adopted by the ACCC in their review of infrastructure charges in the Murray Darling Basin.[9] We acknowledge that in some cases this terminology may be different to that used in the past.

The terms used in this report are set out below. Other terms have been defined as they occur in this report.

Access fee – is a fee charged to the holder of a delivery entitlement for the right to ongoing access to water delivery services.

Bulk water service – involves the storage and delivery of water to a customer's diversion works (or the works nominated by them, for example a pump station into an irrigation district), in accordance with their water access entitlement.

Irrigation district – is an area or district supplied with water via an infrastructure supply network (channels, pipes and other structures) operated and maintained primarily to supply water for use within that district.

Lower bound pricing – is equivalent to Upper bound pricing, without any recovery of the cost of capital.

Network service – involves diverting water into an irrigation district, on behalf of a water access entitlement holder, and supplying that water to a customer's offtake in accordance with their delivery entitlement.

Permanent transfer – is the trade of a water access entitlement from one entity to another.

Temporary transfer – is the trade of water allocation between two entities. This is also known as a seasonal water assignment in water resource planning literature (eg Water Resource Plans, Resource Operations Plans, etc).

Upper bound pricing – means the level at which, to avoid monopoly rents, a water business should not recover more than:

- the operational, maintenance and administrative costs, externalities, taxes or tax equivalent regimes;
- provision for the cost of asset consumption; and
- provision for the cost of capital (calculated using a weighted average cost of capital).

Volumetric fee – is a fee charged on the basis of the quantity of water delivered.

Water access right – is any right conferred by or under a law of a state to hold water from a water resource or to take water from a water resource. This includes stock and domestic water

[9] Refer to ACCC, Water Charge Rules, Position Paper. September, 2008.

rights, riparian rights, a water access entitlement, a water allocation and any other right relating to the taking or use of water.

Water access entitlement (WAE) – is a perpetual or ongoing entitlement to exclusive access to a share of the water resources that are available for consumption as specified in a water plan.

Water allocation – is the specific volume of water allocated to a water access entitlement in a given water accounting period (in Queensland, this is commonly referred to as the announced allocation).

1. INTRODUCTION

SunWater owns 22 water supply schemes servicing irrigators.

Prices to these irrigators were subject to initial reforms from 2001/02, where the first five year price path was set by the State Government (via the Water Reform Unit), with some schemes transitioning to lower bound cost recovery over this time. SunWater and customer representatives (comprising a Tier 1 peak reference group, and Tier 2 scheme-level reference groups) then developed price paths from 2006/07 to 2010/11, in accordance with the State Government's rural water pricing policy. At the end of this time, 15 of the 22 schemes will have achieved the minimum lower bound cost recovery target.

The Queensland Competition Authority (QCA) anticipates that it will be directed to develop prices at the end of this current price path, from 1 July, 2011 to 30 June, 2016.

The QCA engaged Synergies Economic Consulting (Synergies) to compile background information to inform the Authority's investigation, in relation to general scheme descriptions, scheme infrastructure, service standards, segment prices and known scheme level issues.

This report is a compilation of this information, and is structured as follows:

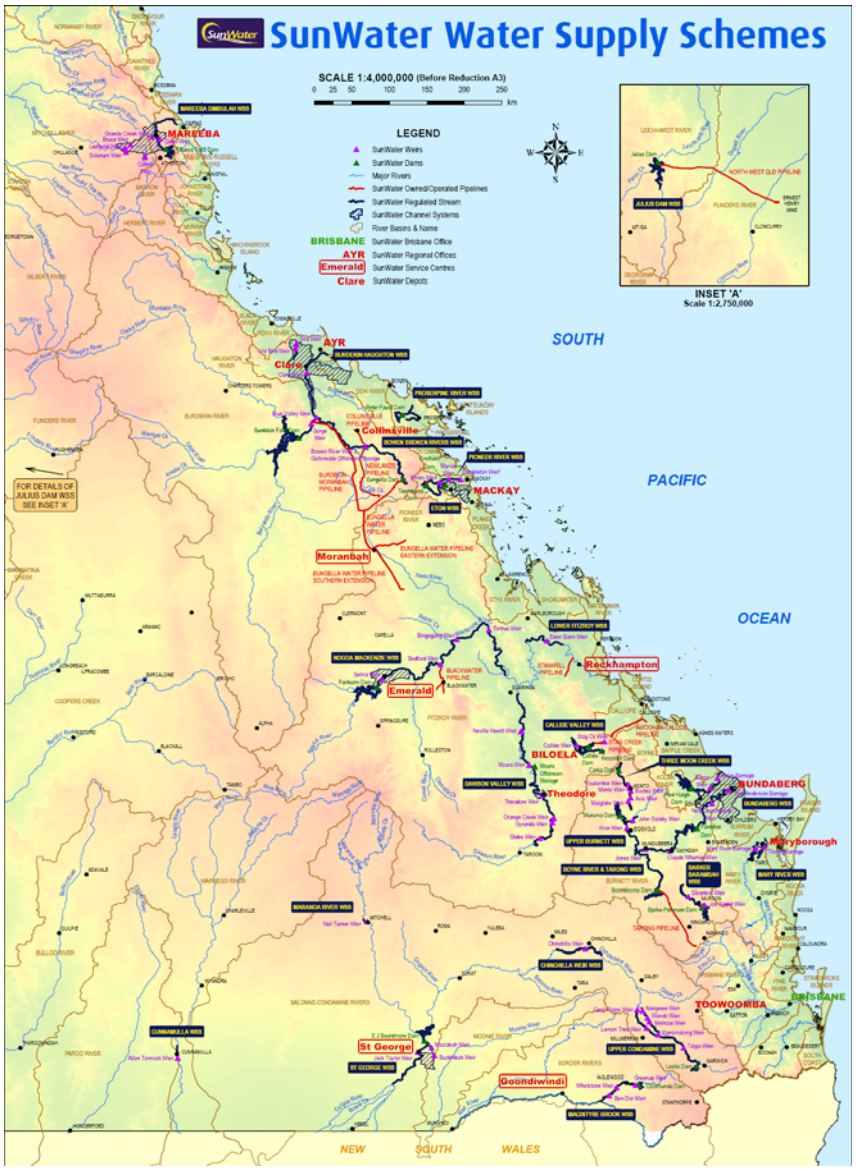
- Chapter 2 provides an overview of SunWater's business;
- Chapter 3 describes each water supply scheme, including the scope of services provided, customer composition, historic water availability and use, as well as setting out infrastructure and cost structure details;
- Chapter 4 describes the status of water planning activities for each scheme;
- Chapter 5 discusses the various water supply and drainage services provided under the price paths, and the service standards for each;
- Chapter 6 provides an overview of how the current price paths were developed and their key features;
- Chapter 7 highlights the known, scheme-specific issues.

Attachment 1 presents the price paths for each scheme, compared to the lower bound reference tariff.

2. SUNWATER BUSINESS OVERVIEW

SunWater Ltd (SunWater) supplies water to customers in rural and regional Queensland. Its major assets include dams, weirs, pump stations, pipelines and distribution channels, and drainage infrastructure servicing irrigators, mines, local governments, industrial users and power stations. It has a central office located in Brisbane, six regional offices, five service centres and four depots (refer Figure 1).

Figure 1. SunWater Infrastructure and office locations



Source: SunWater. http://www.sunwater.com.au/who/SunWater_Water_Supply_Schemes.pdf

2.1 Nature and scope

SunWater Ltd is a Government Owned Corporation, supplying water and related services throughout rural and regional Queensland. SunWater's Statement of Corporate Intent states its core business activities as:

- Bulk water storage and distribution
- Water treatment, reticulation and drainage
- Water infrastructure development
- Water facilities management
- Water accounting and management services
- Specialist consultancy services

or doing anything likely to complement or enhance the above activities. Hydro-electricity development associated with SunWater storages is recognised as a complementary function.

Summary of assets and services

SunWater owns and manages 23 water supply schemes (WSS), of which all except Julius Dam supply water to irrigators. These 23 WSS comprise 19 major dams and 63 weirs and barrages, and several pump stations.

SunWater also owns and operates eight irrigation districts, involving over 2500km of pipelines and open channels.

SunWater provides drainage services in five of the irrigation districts, and has mini-hydro plants at two water storages.

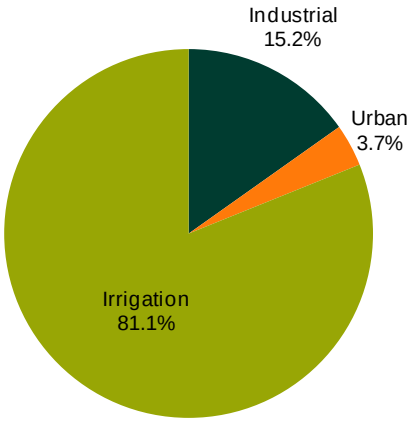
SunWater also owns water access entitlements (WAE) in Queensland, and trades these entitlements on the temporary and permanent transfer markets.

SunWater provides asset management and operations services to other water infrastructure owners.

Customers

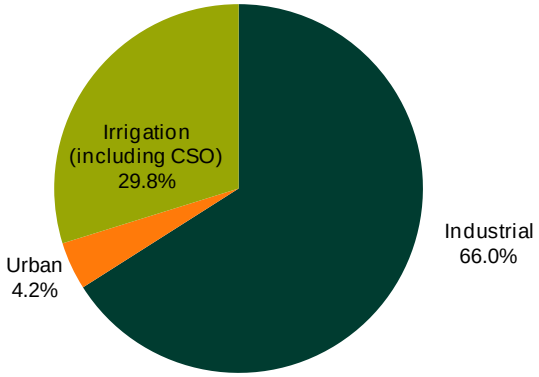
SunWater provides services to irrigation, mining, local government, industrial and power generation customers. Irrigators account for the vast majority of SunWater's customers and water deliveries, but for only a small portion of revenue, as can be seen from the following diagrams.

Figure 2. Proportion of water deliveries, 2008-09



Source: SunWater Annual Report, 2008-09.

Figure 3. Proportion of revenues, 2008-09.



Source: SunWater Annual Report, 2008-09.

Commercial arrangements

SunWater and its customers hold contracts for supply. These contracts were either 'deemed' under the *Water Act 2000*[10] as part of the transitional arrangements for corporatisation, or following this time, have been agreed bi-laterally with customers.

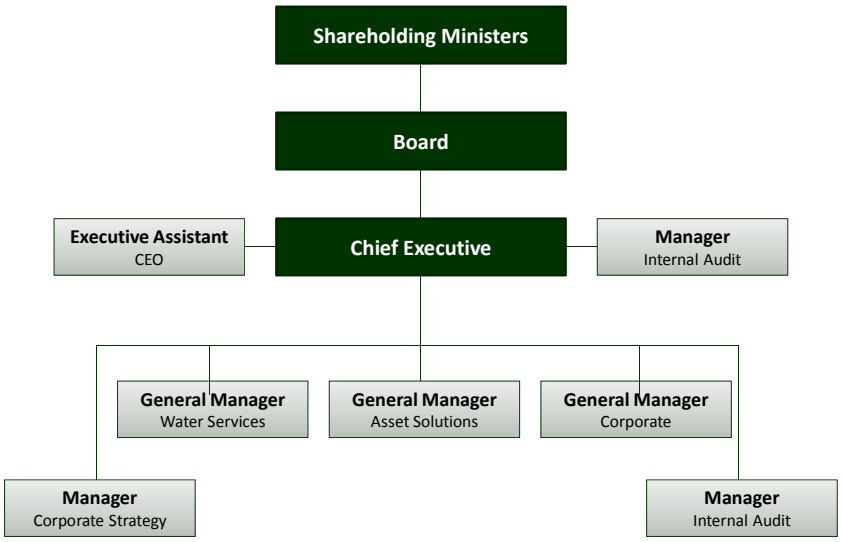
2.2 Business structure

Organisational structure

SunWater is structured in three divisions: corporate, asset solutions and water services.

[10] Refer in particular to S1116 of the Act.

Figure 4. Organisational structure



Source: SunWater Annual Report, 2008-09.

The Water Services group is responsible for servicing customers from existing infrastructure, and also provides facilities management services to other asset owners. The Asset Solutions group focuses on new commercial opportunities and investments. The Corporate group provides the internal finance, legal, human resources and related functions in the organisation.

Corporate Strategy is responsible for policy and reform matters, including water pricing and economic regulation.

Resourcing

In general, SunWater provides services using internal resources. This includes technical, operational corporate staff, as well as its own customer billing and water accounting system.

SunWater has engaged Psi Delta-Elders Ltd as a broker for trading its water on temporary transfer markets.

Subsidiaries

There are three subsidiary companies.

The Eungella Water Pipeline Pty Ltd and the North West Queensland Water Pipeline Pty Ltd own pipelines servicing mining and urban users respectively. These pipelines are connected to SunWater-owned storages (Eungella Dam and Julius Dam). Both companies hold WAE to supply their customers.

The third subsidiary – Burnett Water Pty Ltd – owns Paradise Dam and Kirar Weir near Bundaberg. Burnett Water also owns the unsold portion of the 184,000ML of WAE associated with these storages.

2.3 Key business centres and functions

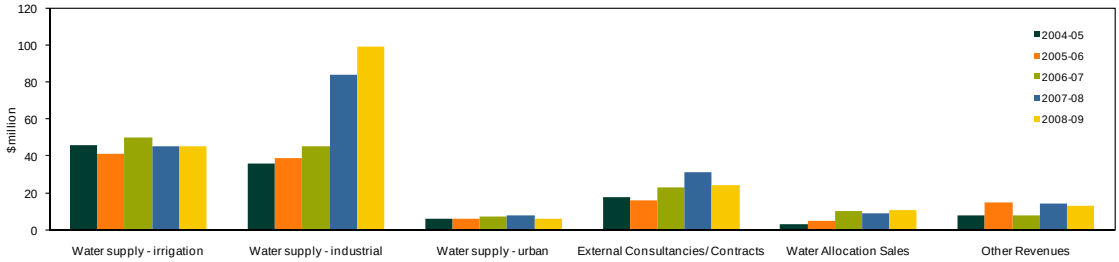
SunWater staff are located in Brisbane, as well as in offices in 15 locations across Queensland, with six regional offices, five business centres and four depots.

Key areas of technical expertise (eg hydrology and other engineering) are generally centralised in the Brisbane Office.

2.4 Services

SunWater provides a range of water supply and related services. Revenues (2008-09) from these services are summarised below.

Figure 5. 2008-09 Revenues from activities



Source: SunWater Annual Report, 2008-09.

The following sections describe these services.

Water supply services

SunWater supplies bulk water, network and drainage services to customers, who typically hold their own WAE.

Bulk water service

The bulk water service is provided in all of SunWater's 23 WSS, and involves making water available to a customer's nominated diversion point, in accordance with their WAE.

Network service

SunWater provides network services in eight major irrigation districts, as well as industrial pipelines.

Channel harvesting

SunWater makes additional water available to customers in irrigation districts in the Burdekin-Haughton and St George schemes under its waterharvesting (unsupplemented) entitlements. This product is termed channel harvesting, and is over and above the water available to a customer under their WAE. Water sales under this product are significant, and have totalled around 25,000ML in the Burdekin-Haughton and 13,000ML in St George. Channel harvesting revenues are effectively applied toward lower bound cost recovery.

Drainage

SunWater provides drainage services in five of its irrigation districts.

SunWater also allows for customers to divert water from drains, for a drainage diversion charge. Revenues from this service are offset against the cost base to be recovered from network service charges.

CSO services

SunWater provides community service obligation (CSO) services to the Department of Environment and Resource Management (DERM). We understand this is related to the implementation of rural water price paths, with the CSO payment set to reflect the shortfall between expected revenues under the price paths, and the efficient lower bound level of cost recovery. CSO's are also provided in relation to the implementation of Resource Operations Plans.

In 2008/09, this payment totalled $2M.

There is no CSO payment in relation to the shortfall in recovery of upper bound costs.

Recreation at storages

There are recreation services at most of SunWater's dams and some weirs. In some cases, these services are provided by third parties, including local governments or private operators.

The net costs from recreation services (costs less any revenues) are recovered in charges for bulk water services.

Other revenues related to bulk water assets

SunWater receives minor revenues from rental of houses, flood margin leases, application fees, etc. These revenues are offset against schemes costs when determining the cost base for pricing.

Water exchange

SunWater offers a water trading platform via the SunWater Exchange. It does not charge for this service.

External consultancies/contracts

Facilities management

SunWater provides facilities management services for other asset owners. Its major contracts for the 2008/09 year were for:[11]

- BHP Mitsubishi Alliance, for six pipelines in central Queensland;
- Department of Local Government, Sport and Recreation, for potable water supplies to five communities in Cape York;
- Department of Infrastructure and Planning, for meter reading and maintenance services for bores and a pipeline in the Border Rivers area;
- National Capital Authority, for operations and maintenance services for Scrivener Dam in Canberra; and
- Seqwater, for maintenance, stream gauging data and dam surveillance.

[11] SunWater Annual Report, 2008-09, p.15.

Engineering / Consulting services

In 2008/09, SunWater provided engineering consulting services, including design services for construction projects, and as owners engineer or peer reviewer.

Water allocation sales

SunWater owns around 210,000ML of WAE in 14 of the 22 price path schemes, which it trades on the temporary and permanent transfer markets (excluding subsidiaries). Most of these WAE are located in the Burdekin-Haughton WSS.

Revenues from trading activities have been around $10M over recent years.

Temporary trades are outsourced to a water broker, who negotiates and trades at arms length to SunWater (but within trading guidelines and strategies).

Permanent trades and leases are conducted directly by SunWater.

SunWater has published a code of conduct for its water trading activities, which includes undertakings in relation to market facilitation and education, transparent trading processes, pricing and non-discriminatory pricing, approval of trades, and ring-fencing of the trading function from other activities. SunWater has also published its ring-fencing arrangements.[12]

Other revenues

SunWater owns two mini-hydro electricity generators at Tinaroo Falls Dams (Mareeba-Dimbulah WSS) and Paradise Dam (Bundaberg WSS – Burnett Water Pty Ltd).

SunWater is investigating a number of new water infrastructure projects, which are mainly related to servicing demand from new mining, industrial or urban users in Central Queensland. These include the Connors River Dam and pipelines, the Nathan Dam and pipelines, and storage infrastructure in the Lower Fitzroy. Other projects with irrigation-related demands include Nullinga Dam in far north Queensland, the raising of Kinchant Dam (Eton WSS), and the Water for Bowen project.

[12] These documents can be found at http://www.sunwater.com.au/watertrading.htm.

3. GENERAL SCHEME DESCRIPTION

3.1 Overview

Many SunWater schemes only provide bulk water services, while others provide network and drainage services to irrigators as well. Some of these schemes also have network assets (eg pipelines) that supply the non-irrigation sector.

Bulk water assets are typically storages such as dams, weirs and offstream storages. These assets are described in, and regulated under, Resource Operations Licenses.[13] In some cases, these licenses include pipeline and associated assets (eg pump stations) where WAE are supplemented in streams or groundwater area not supplied by the ponded area of a storage, or releases from it. Hence these assets provide a a bulk water service. Such assets include:

- the Redgate Relift system in the Barker Barambah WSS;
- the Callide Diversion Channel in the Callide Valley WSS;
- the Yaramalong Pump Station and Pipeline in the Upper Condamine WSS; and
- the Youlambie Channel in the Three Moon Creek WSS.

In some irrigation districts, network assets (typically main channels) provide a dual function, delivering water to channel segments as well as supplementing streamflows.

The table below provides a summary of the services provided in each scheme.

Table 1. Summary of scheme services.

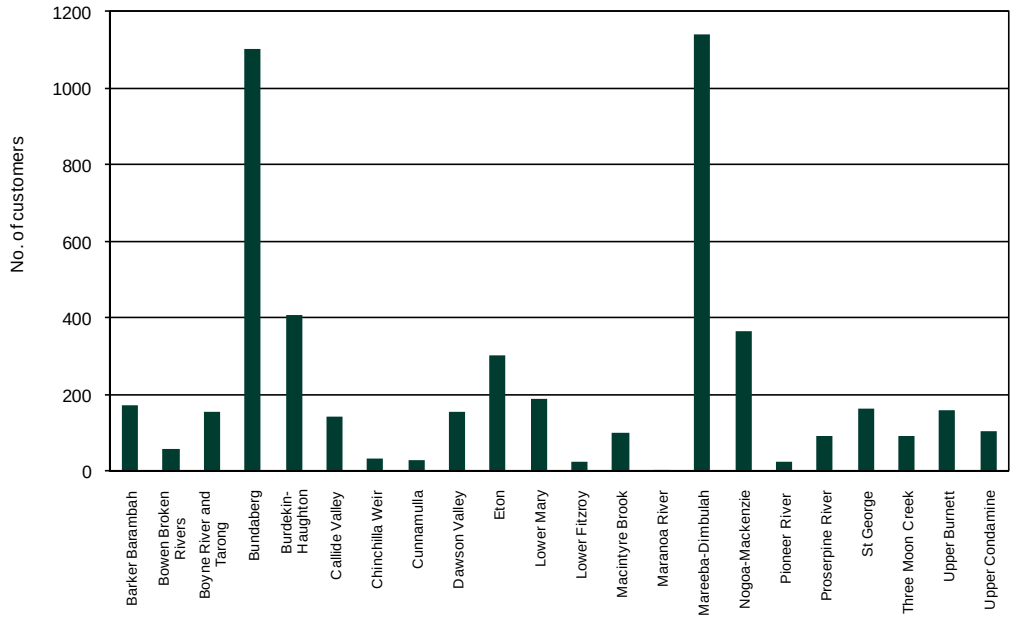
Scheme	*Bulk water*	*Network Service (Irrigation District)*	*Drainage Service*	*Non-irrigation networks*
Barker Barambah	✓			
Bowen Broken Rivers	✓			Eungella Pipeline (subsidiary) Collinsville Pipeline
Boyne River and Tarong	✓			Tarong Pipeline
Bundaberg	✓	✓		
Burdekin – Haughton	✓	✓	✓	Burdekin-Moranbah Pipeline
Callide Valley	✓			Awoonga-Callide Pipeline
Chinchilla Weir	✓			

[13] Or interim Resource Operations Licenses, where applicable.

Scheme	***Bulk water***	***Network Service (Irrigation District)***	***Drainage Service***	***Non-irrigation networks***
Cunnamulla	✓			
Dawson Valley	✓	✓	✓	
Eton	✓	✓		
Lower Mary	✓	✓		
Lower Fitzroy	✓			Stanwell Pipeline
Macintyre Brook	✓			
Maranoa River	✓			
Mareeba-Dimbulah	✓	✓	✓	
Nogoa-Mackenzie	✓	✓	✓	Blackwater Pipeline
Pioneer River	✓			
Proserpine River	✓			
St George	✓	✓	✓	
Three Moon Creek	✓			
Upper Burnett	✓			
Upper Condamine	✓			

The figure below provides a comparison of customer numbers between schemes, and shows the dominance of Bundaberg and Mareeba-Dimbulah in terms of customer numbers.

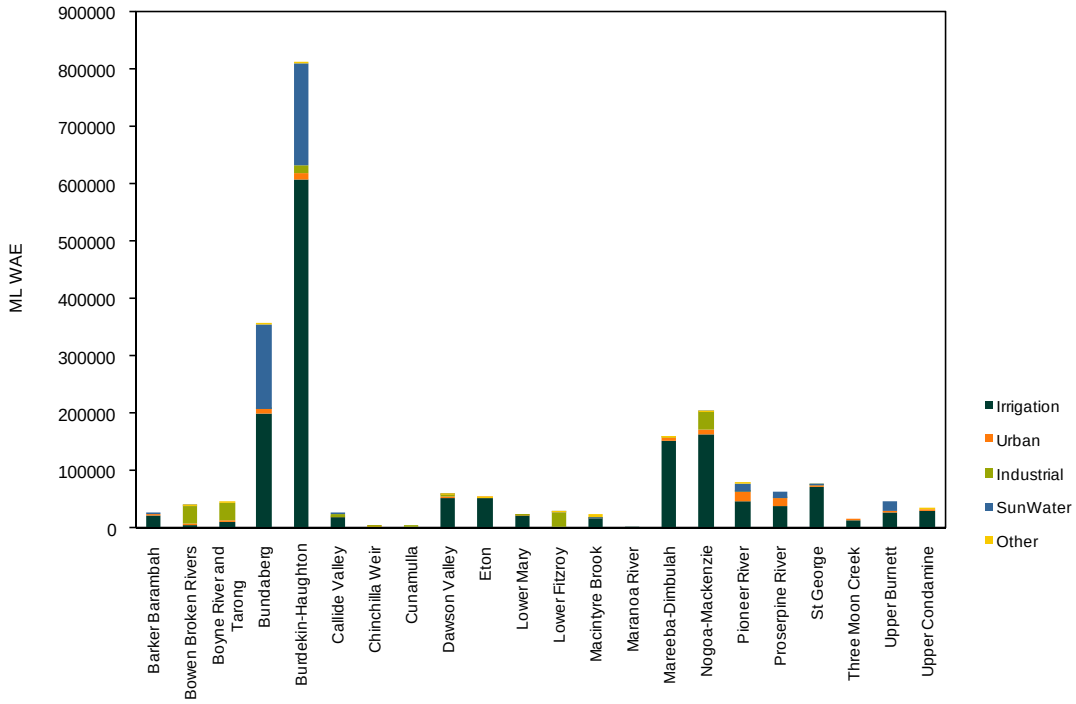
Figure 6. Comparison of No. of customers between water supply schemes



Source: SunWater Annual Report, 2008-09.

Figure 7 sets out the amount of WAE supplied in each scheme, by sector. Burdekin-Haughton, Bundaberg and Nogoa-Mackenzie are the largest schemes in terms of WAE.

Figure 7. Amount of WAE supplied in each scheme by sector



Notes: Mareeba-Dimbulah excludes supplies to the Barron Gorge hydroelectric station. Bundaberg and Upper Burnett include WAE held by Burnett Water Pty Ltd.

Source: SunWater Annual Report, 2008-09.

The following sections provide a general description for each of SunWater's 22 WSS subject to irrigation price paths.

3.2 Scheme description – Barker Barambah

Customer and water use information

The table below provides a summary of the key information for the Barker Barambah WSS.

Table 2. Summary of Barker Barambah WSS

Details	*Barker Barambah*
Business Centre	Bundaberg
Number of Customers	170
Uses of Water	
• Irrigation	Main irrigation use is for broad acre cropping.
• Urban Water Supplies	Water is provided to supplement the town water supply for the townships of Murgon, Wondai, Byee and Cherbourg.

Scope of services

Bulk water services are provided in relation to 33,621ML of WAE, and includes supplementation of a separate stream from the Redgate Relift system (1,600ML of WAE).[14]

Customer composition

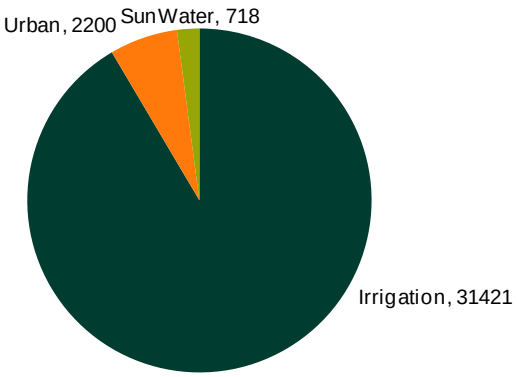
There are some 170 customers serviced by the Barker Barambah WSS, comprising irrigators and local authorities. SunWater holds 718ML of medium priority WAE which it trades itself.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority). Irrigation is clearly the dominant use of water in the scheme, accounting for over 90% of total WAE.

There are also 1,588ML of 'free' allocations in the scheme, which did not attract any cost allocation in the current water prices.

[14] SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006). p23. In more recent information provided by SunWater, this appears to have fallen to around 1000ML although we have not verified this with SunWater.

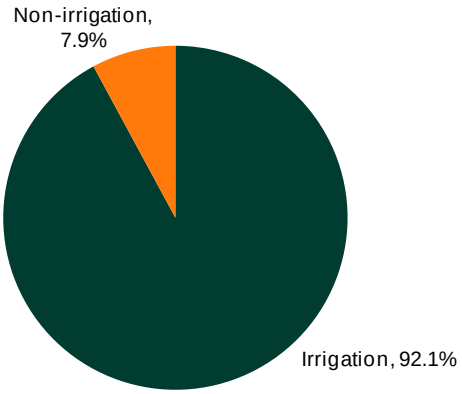
Figure 8. Sectoral split - Barker Barambah WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and the non-irrigation sectors.

Figure 9. Breakdown of lower bound cost recovery for the Barker Barambah WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Barker Barambah WSS, for medium priority WAE.

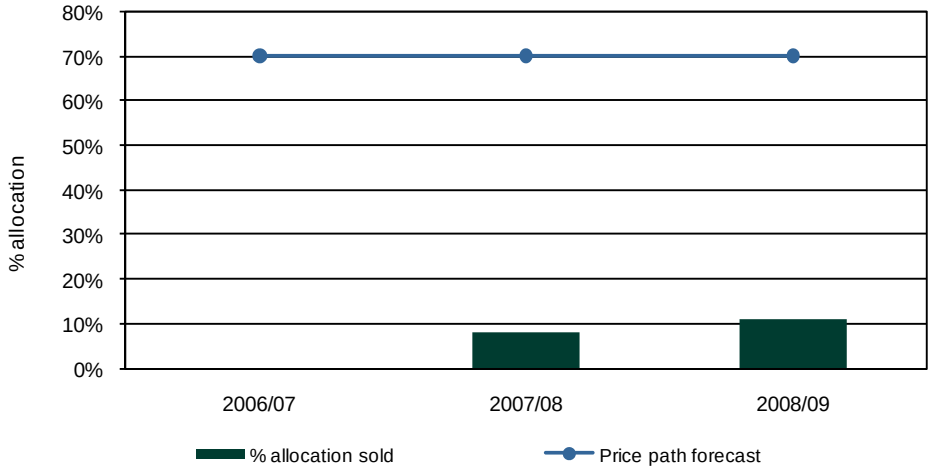
Table 3. Announced allocation for the Barker Barambah WSS (medium priority)

Year	*Announced allocation %*
2006/07	0
2007/08	46
2008/09	0

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations may increase through the year.
Source: SunWater online.

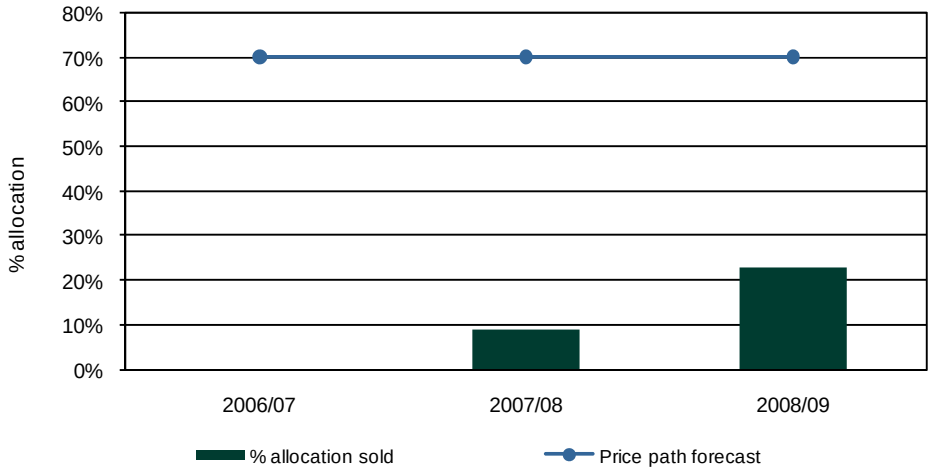
The figures below show historic use compared to the forecasts used for the current price paths for the Barker Barambah Redgate Relift and Regulated tariff groups. Sales are well below forecast for both of the tariff groups, which will be heavily influenced by low announced allocations.

Figure 10. Forecast and actual sales for the Redgate Relift tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 11. Forecast and actual sales for the Barker Barambah Regulated tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The main infrastructure in the scheme is the Bjelke-Petersen Dam, completed in March 1989. The other storages are the Joe Sippel Weir (completed in 1983) and the Silverleaf Weir (completed in 1953).

The table below presents an overview of the bulk storage infrastructure in the Barker Barambah WSS.

Table 4. Bulk water service infrastructure in the Barker Barambah WSS

Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Bjelke-Petersen Dam	134,900	21
Joe Sippel Weir	710	27
Silverleaf Weir	580	57

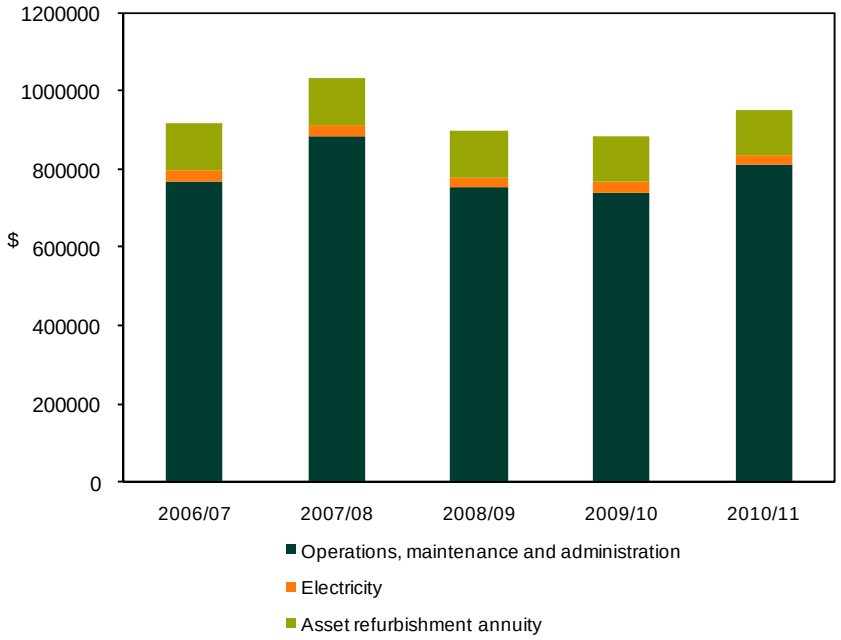
Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government.

The Redgate Relift system (pump station and pipeline) also forms part of the bulk water assets, diverting water from Silverleaf Weir to supplement supplies to other WAE holders.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Barker Barambah WSS for the 2006/07 to 2010/11 period.

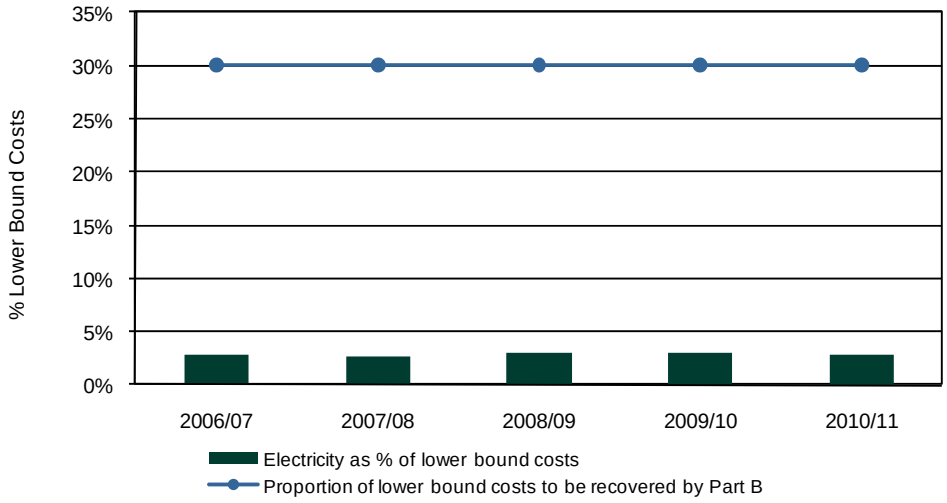
Figure 12. Lower bound costs for the Barker Barambah WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff (the variable component) to the proportion of lower bound costs that are accounted for by electricity.

Figure 13. Lower bound cost recovery and variable costs for the Barker Barambah WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.3 Scheme description – Bowen Broken Rivers

Customer and water use information

The table below provides a summary of the key information for the Bowen Broken Rivers WSS.

Table 5. Summary of Bowen Broken Rivers WSS

Details	***Bowen Broken Rivers***
Business Centre	Mackay
Number of Customers	56
Uses of Water	
• Irrigation	Supplies farms downstream of Bowen River Weir.
• Urban Water Supplies	Supplies the towns of Collinsville/Scottsville, Glenden and Moranbah
• Industrial	Supplies several mines and the Collinsville Power Station, as well as to Eungella Water Pipeline. There are a number of small users taking water from pipelines who are also SunWater customers.

Scope of services

Bulk water services are provided in relation to 38,092ML of WAE.

SunWater also provides network services to the non-irrigation sector, via the Collinsville Pipeline. SunWater's subsidiary, Eungella Water Pipeline Pty Ltd, is also supplied water from the scheme. It sells this water to its various customers from its pipeline network.

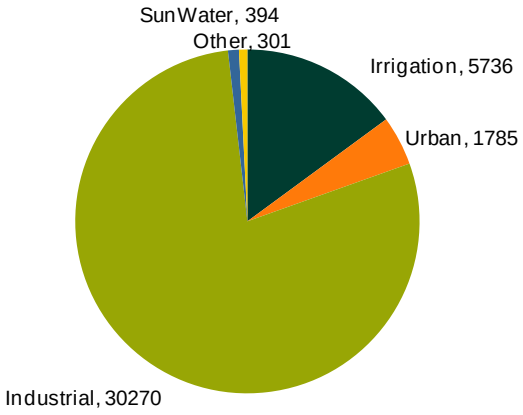
Customer composition

There are 56 customers serviced by the scheme, comprising irrigators, local authorities, mines and the Collinsville Power Station. There are also a number of small (non-irrigation) users from SunWater and other pipelines.

SunWater holds 394ML of high priority WAE which it trades itself.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority). Industrial (mining and power generation) dominates the customer profile of the scheme.

Figure 14. Sectoral split - Bowen Broken Rivers WSS (ML)

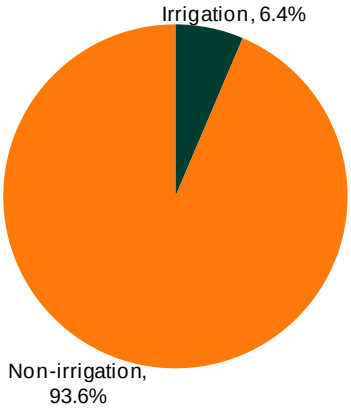


Source: SunWater Annual Report, 2008-09.

SunWater also holds 494ML as distribution loss WAE in relation to its Collinsville Pipeline.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors. A significant majority of lower bound costs are recovered from the industrial and urban sectors.

Figure 15. Breakdown of lower bound cost recovery for the Bowen Broken Rivers WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below shows that water has been available since the commencement of the price paths for medium priority WAE.

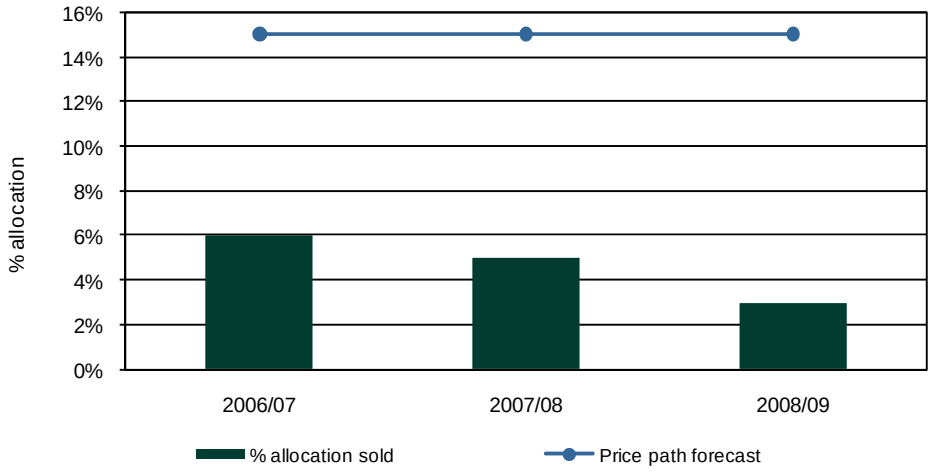
Table 6. Announced allocations for the Bowen Broken Rivers WSS (medium priority)

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

The figure below shows historic use compared to the forecasts used for the current price paths for the Bowen Broken Rivers tariff group. Sales have been significantly less than the level of use assumed for the current price paths.

Figure 16. Forecast and actual sales for the Bowen Broken Rivers tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Eungella Dam is the main piece of bulk water supply infrastructure in the scheme. Constructed in 1969, the dam has a total capacity of 112,400ML. It originally had a role in supplementing supplies to the Burdekin River, however this ceased following construction of the Burdekin Falls Dam.

The downstream storages to Eungella Dam are the Gattonvale Offstream Storage (constructed in 2005) and the Bowen River Weir (constructed in 1983).

The table below presents an overview of the bulk storage infrastructure in the Bowen Broken Rivers WSS.

Table 7. Bulk water service infrastructure in the Bowen Broken Rivers WSS

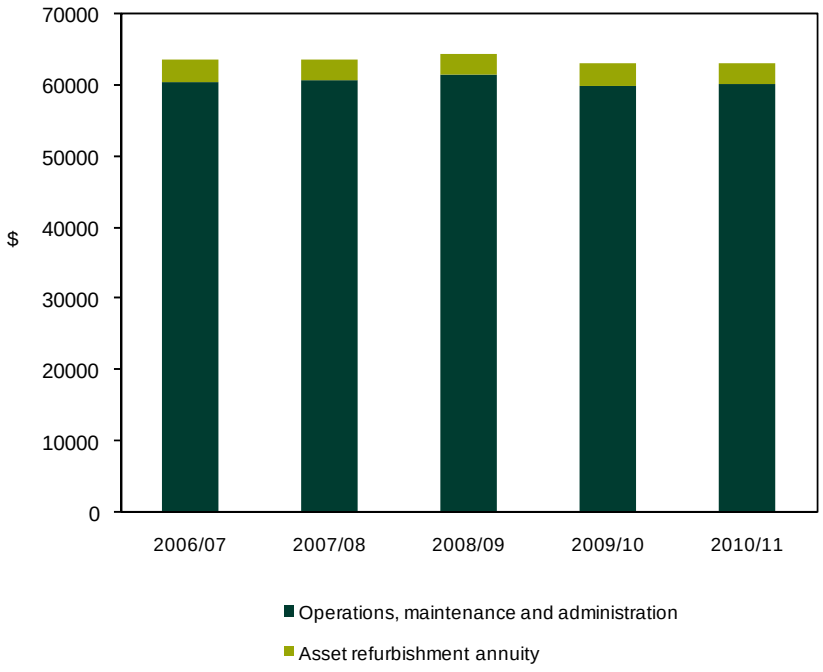
Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Eungella Dam	112,400	41
Gattonvale Offstream Storage	5,230	5
Bowen River Weir	943	27

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government; SunWater (2008). 'Final Report: Glendower Dam Site. Potential for Offstream Storage.'

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Bowen Broken Rivers WSS for the 2006/07 to 2010/11 period.

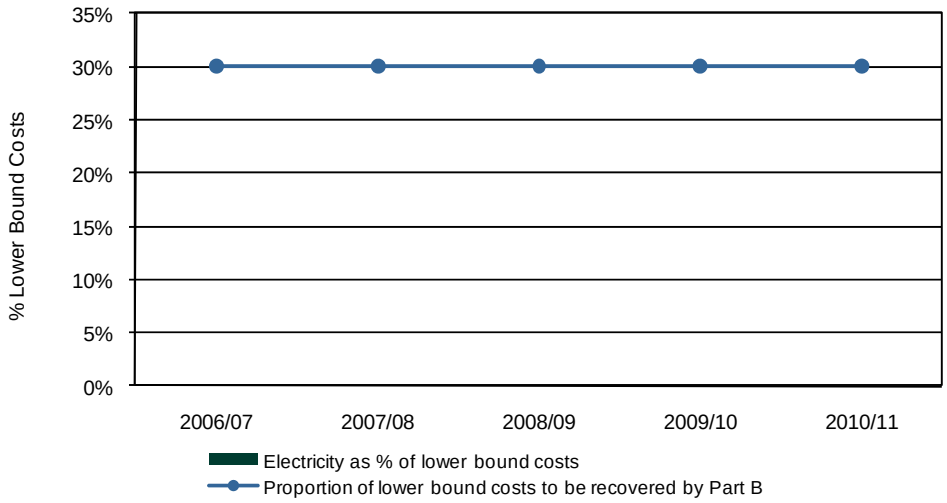
Figure 17. Lower bound costs for the Bowen Broken Rivers WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity.

Figure 18. Lower bound cost recovery and variable costs for the Bowen Broken Rivers WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.4 Scheme description – Boyne River and Tarong

Customer and water use information

The table below provides a summary of the key information for the Boyne River and Tarong WSS.

Table 8. Summary of Boyne River and Tarong WSS

Details	***Boyne River and Tarong***
Business Centre	Bundaberg
Number of Customers	156
Uses of Water	
• Irrigation	Citrus and other crops.
• Industrial	Tarong Power Station, via the Tarong Pipeline.

Scope of services

Bulk water services are provided in relation to 44,074ML of WAE.

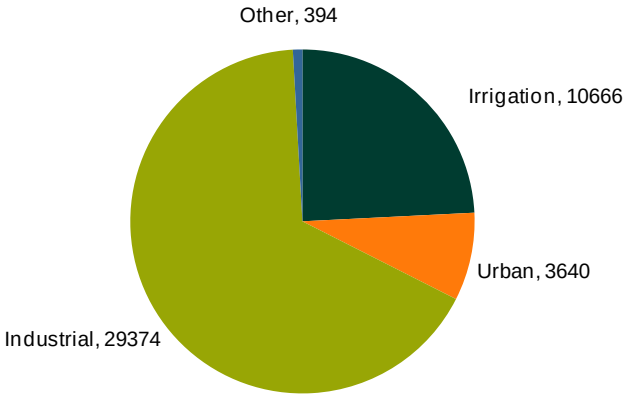
The Boyne River and Tarong WSS includes a network service, with the Tarong Pipeline pumping water from the Boondooma Dam to the Tarong Power Station using three pump stations.

Customer composition

There are 156 customers serviced by the scheme, comprising irrigators and the Tarong Power Station. There are also small users along this pipeline.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority), with the Tarong Power Station the major user.

Figure 19. Sectoral split - Boyne River and Tarong WSS (ML)

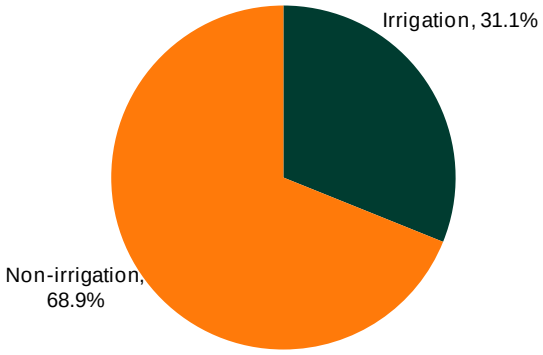


Source: SunWater Annual Report, 2008-09.

SunWater also holds 1,620ML as distribution loss WAE in relation to its Tarong Pipeline.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 20. Breakdown of lower bound cost recovery for the Boyne River and Tarong WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Boyne River and Tarong WSS, for medium priority WAE.

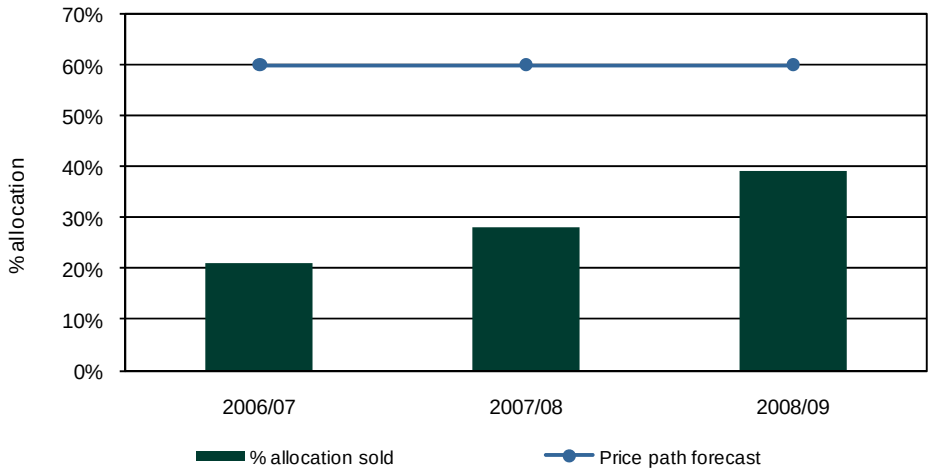
Table 9. Announced allocation for the Boyne River and Tarong WSS (medium priority)

Year	*Announced allocation %*
2006/07	0
2007/08	80
2008/09	53

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations may increase through the year.
Source: SunWater online.

The figure below shows historic use compared to the forecasts used for the current price paths for the Boyne River and Tarong tariff group. The percentage of water allocations sold has been well below the forecast allocation percentage of 60% on which the current price paths are based.

Figure 21. Forecast and actual sales for the Boyne River and Tarong tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Boondooma Dam is the sole water storage in the scheme. It has a total capacity of 204,200ML and was constructed in 1983.

The table below presents an overview of the bulk storage infrastructure in the Boyne River and Tarong WSS.

Table 10. Bulk water service infrastructure in the Boyne River and Tarong WSS

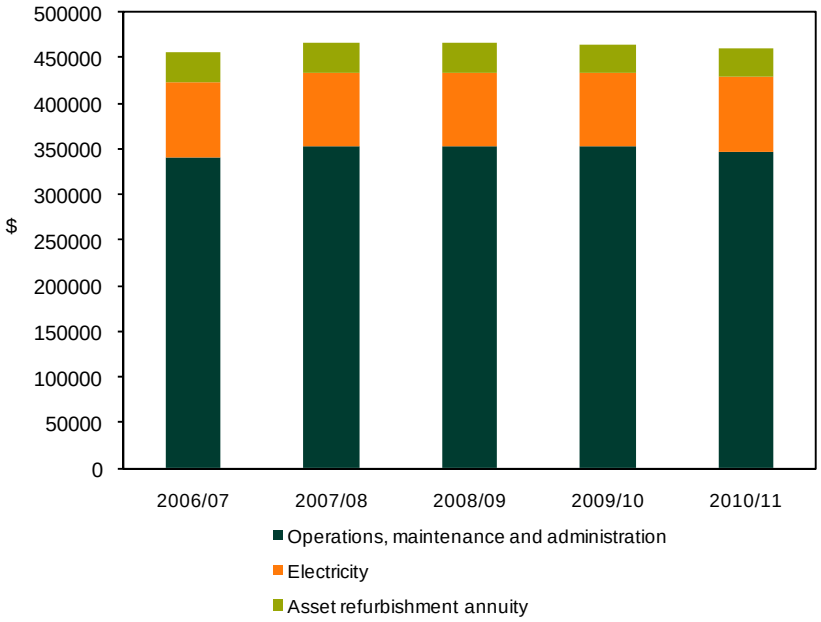
Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Boondooma Dam	204,200	27

Source: SunWater Annual Report, 2008-09.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Boyne River and Tarong WSS. Relative to the majority of the other schemes, electricity accounts for a significant proportion of lower bound costs in the Boyne River and Tarong WSS.

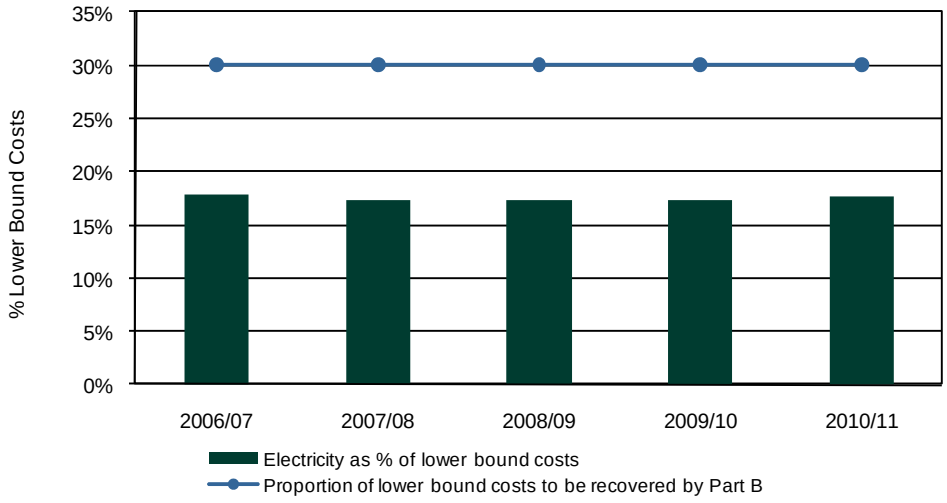
Figure 22. Lower bound costs for the Boyne River and Tarong WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006)..

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity.

Figure 23. Lower bound cost recovery and variable costs - Boyne River and Tarong WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.5 Scheme description – Bundaberg

Customer and water use information

The table below provides a summary of the key information for the Bundaberg WSS.

Table 11. Summary of Bundaberg WSS

Details	*Bundaberg*
Business Centre	Bundaberg
Number of Customers	1,101
Uses of Water	
• Irrigation	Irrigated crops include sugar cane, tomatoes, rockmelons, watermelons, capsicum, zucchini, beans, macadamia nuts and avocados.
• Urban Water Supplies	Supplies water to Bundaberg as well as communities in the Burnett, Kolan and Isis shires.
• Industrial	Sugar mills are the main industrial user.

Scope of services

Bulk water services are provided in relation to 208,717ML of WAE. This includes WAE held by customers from Paradise Dam, which were not included in the current price paths.

There is major network infrastructure, supplying around 150, 000ML of WAE.[15] however no drainage services are provided.

Customer composition

There are 1,101 customers serviced by the scheme, comprising irrigators, urban water suppliers and industrial customers such as sugar mills.

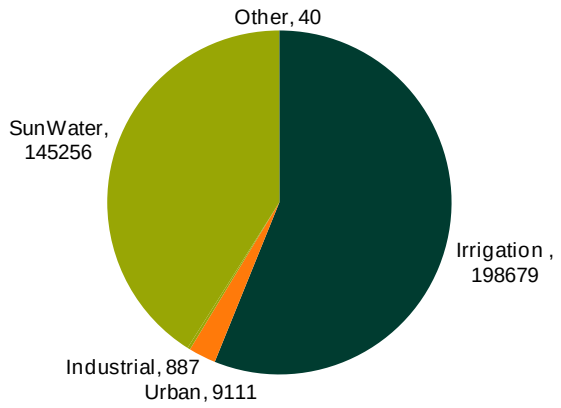
There are also 4,512ML of 'free' allocations in the scheme, which did not attract any cost allocation in the current water prices (refer later sections).

Burnett Water (SunWater subsidiary) also holds 18,755ML of high priority and 126,501ML of medium priority WAE from Paradise Dam.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority), including Paradise Dam WAE held by SunWater.

[15] Including streams supplemented by the channel network.

Figure 24. Sectoral split - Bundaberg WSS (ML), including Paradise Dam

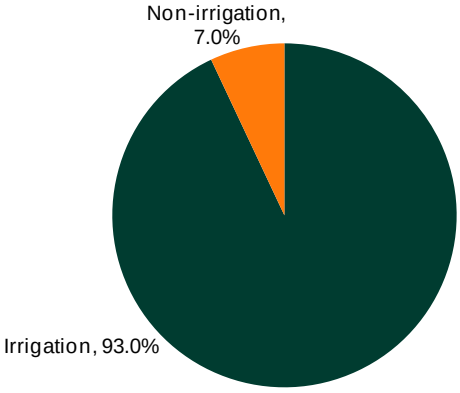


Source: SunWater Annual Report, 2008-09.

SunWater also holds 41,520ML as distribution loss WAE in relation to the channel networks.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered by the irrigation and non-irrigation sectors for the price paths (which excluded Paradise Dam).

Figure 25. Breakdown of lower bound cost recovery for the Bundaberg WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Bundaberg WSS, for medium priority WAE.

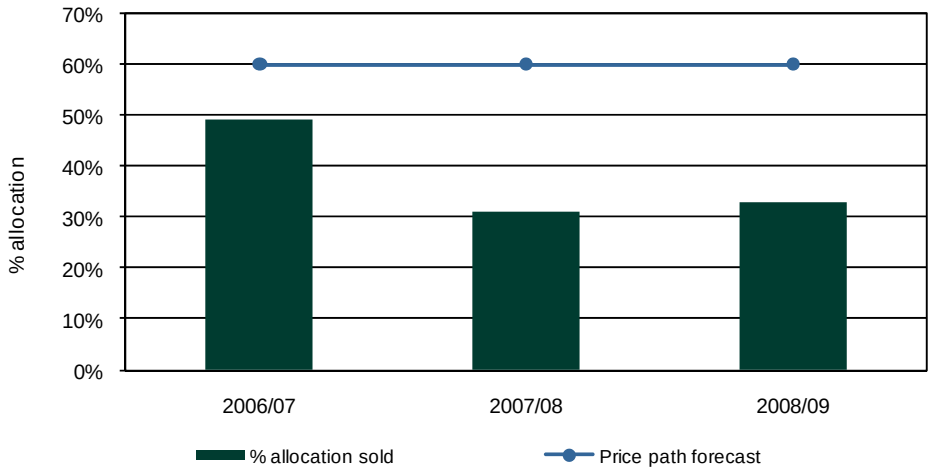
Table 12. Announced allocation for the Bundaberg WSS (medium priority)

Year	*Announced allocation %*	
	Kolan River	*Burnett River*
2006/07	46	46
2007/08	100	100
2008/09	85	50

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations may increase through the year.
Source: SunWater online.

The figure below shows historic use compared to the forecasts used for the current price paths for the Channel/Supply Watercourse tariff group. The figure demonstrates that the proportion of water allocations sold is well under the proportion that was assumed for the current price paths.

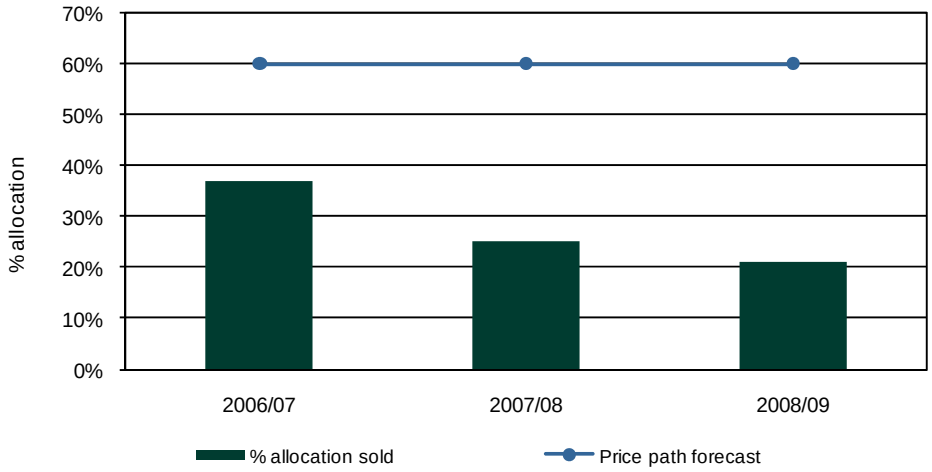
Figure 26. Forecast and actual sales for the Channel/Supply Watercourse tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

The figure below presents the same information and shows similar results for the River tariff group.

Figure 27. Forecast and actual sales for the Bundaberg River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Fred Haigh Dam (completed in 1975), is the principal bulk water storage in the Bundaberg WSS with a total capacity of 562,000ML. The scheme's other major storage is the Paradise Dam (completed in 2005), which is owned by Burnett Water Pty Ltd, a subsidiary of SunWater, The scheme's other bulk water supply storages consist of various barrages and weirs.

The table below presents an overview of the bulk storage infrastructure in the Bundaberg WSS.

Table 13. Bulk water service infrastructure in the Bundaberg WSS

Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Fred Haigh Dam	562,000	35
Paradise Dam (Burnett Water)	300,000	5
Ben Anderson Barrage	30,300	34
Ned Churchward Weir	29,500	12
Bucca Weir	11,600	23
Kolan Barrage	4,020	37

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government; Burnett Water Pty Ltd (2001). 'Burnett Catchment Water Infrastructure – Burnett River Dam.'; WorleyParsons (2008). 'Fishway Effectiveness for High Dams.' Queensland Water Infrastructure.

Network service infrastructure

The network service is largely used in conjunction with unsupplemented groundwater supplies, which are managed by DERM. There are two main networks in the scheme via the Kolan and

Burnett rivers, with interconnection between the two. There are several systems and sub-systems in the networks, which involve different degrees of pumping:[16]:

- Gooburrum Channel System;
- Abbotsford Channel System, ;
- Woongarra Channel System, which comprises the Upper Woongarra and Alloway sub-system, and Lower Woongarra sub-system;
- Gin Gin Channel System, which includes the McIlwraith Sub-System and Tirroan Pipeline;
- Bingera Channel System, which includes the lower Bingera Main Channel and Bucca sub-system; and
- Isis Channel System, including the following sub-systems: Childers and Cordalba; Dinner Hill; Farnsfield and Logging Creek; and North Gregory.

The table below compares the number of channel systems in the Bundaberg WSS to the number of channel tariff groups in the scheme..

Table 14. No. of channel systems and channel tariff groups in Bundaberg WSS

No. of channel systems and sub-systems	> 13
No. of channel tariff groups	1

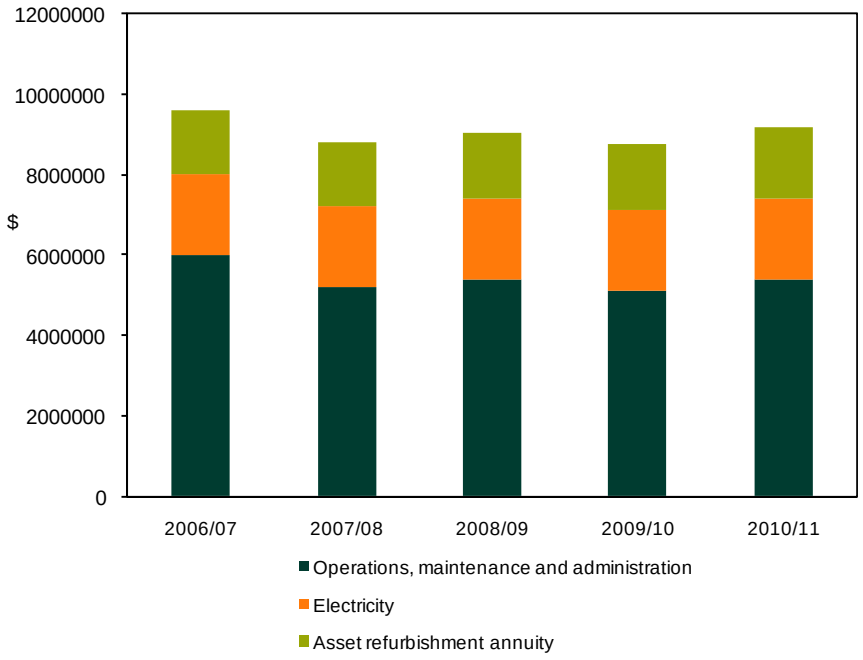
Sources: SunWater online; SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

[16] This has been sourced from Department of Natural Resources, SWP Distribution System Efficiency Review. Report on Bundaberg Irrigation Area (April 2001).

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Bundaberg WSS for the 2006/07 to 2010/11 period. Relative to the majority of the other schemes, electricity accounts for a significant proportion of the lower bound costs for the Bundaberg WSS.

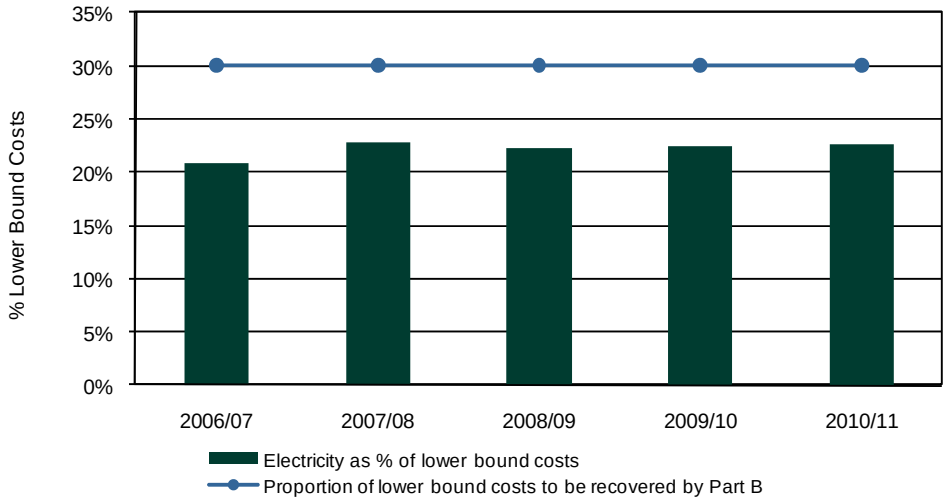
Figure 28. Lower bound costs for the Bundaberg WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity. On average, the proportion of costs accounted for by electricity is slightly lower than the proportion that is recovered through the variable tariff component. However, electricity costs vary greatly between different channel segments due to the differences in pumping required.[17]

Figure 29. Lower bound cost recovery and variable costs for the Bundaberg WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

[17] The break-up of electricity costs for each tariff group or segment was not published as part of the price path information.

3.6 Scheme description – Burdekin-Haughton

Customer and water use information

The table below provides a summary of the key information for the Burdekin-Haughton WSS.

Table 15. Summary of Burdekin-Haughton WSS

Details	***Burdekin-Haughton***
Business Centre	Ayr
Number of Customers	408
Uses of Water	
• Irrigation	Irrigated crops include sugarcane, mangoes, vegetables and fruit such as capsicums, eggplant, rockmelons, squash, pumpkins, watermelons and sweet corn.
• Urban Water Supplies	Supplies to small local townships, as well as to Townsville City Council.
• Water Boards	A significant quantity of the water from the Burdekin Falls Dam is released from Clare Weir and is directed to the North and South Burdekin water boards to supplement groundwater supplies.
• Industrial	A number of industrial users include quarries and sugar mills.

Scope of services

Bulk water services are provided in relation to 631,860ML of WAE.

There are a number of channel systems providing network services, supplying around 320,000ML of WAE.

Drainage services are also provided in the scheme.

SunWater also provides network services to mines in the Bowen Basin, via the Burdekin-Moranbah Pipeline. SunWater has committed 60,000ML of its WAE for the pipeline.

SunWater is also investigating a major project to transport water to Bowen from the Burdekin River (the Water for Bowen Project). Some 40,000ML has been set aside for this project.

Customer composition

There are 408 customers in the scheme, comprising irrigators, urban water suppliers, the North and South Burdekin water boards and a number of industrial users including quarries, sugar mills and mines.

Some 110,000ML was previously indicated as reserve allocation, which we understand was in relation to NQ Water (now Townsville City Council).

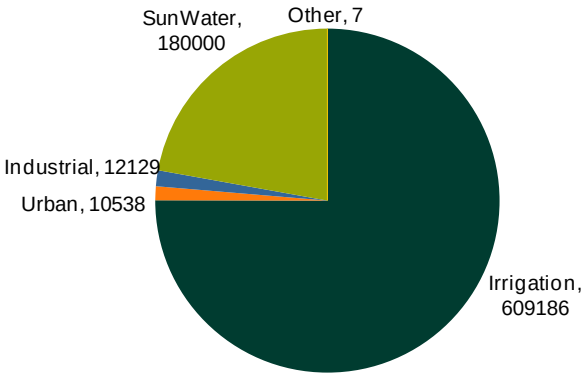
There is also 185,000ML of 'free' allocation in the scheme relating to the North and South Burdekin water boards. This allocation did not attract any cost allocation in the current water prices (refer later sections).

The Giru groundwater segment includes around 19,000ML of 'natural groundwater' yield, which does not attract lower bound costs.[18]

SunWater holds around 180,000ML of medium priority WAE that it holds and trades. The 60,000ML committed to the Burdekin-Moranbah Pipeline users is sourced from this entitlement.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority). Supply to water boards is included in the irrigation sector, although these boards are not captured by the price paths. Reserve allocation for Townsville City Councils is in addition to these amounts.

Figure 30. Sectoral split - Burdekin-Haughton WSS (ML)



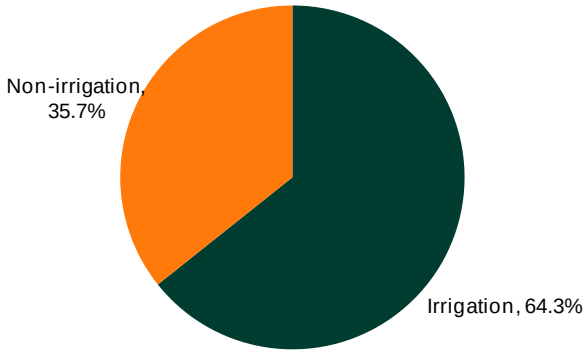
Note: Excludes the 110,000ML previously indicated as reserved for Townsville City Council. The 60,000ML committed for supply the Burdekin Moranbah Pipeline is included in SunWater's 180,000ML.
Source: SunWater Annual Report, 2008-09.

SunWater also holds 206,737ML as distribution loss WAE in relation to the channel networks.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

[18] A Giru Benefited Area (GBA) tariff is levied on customers that access these groundwater resources. The GBA tariff is currently half the Burdekin channel tariff and is applied to all allocations and associated water usage up to twice the assessed natural yield.

Figure 31. Breakdown of lower bound cost recovery for the Burdekin-Haughton WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Burdekin-Haughton WSS, for medium priority WAE. Channel irrigators have also had access to additional water via Channel Harvesting.

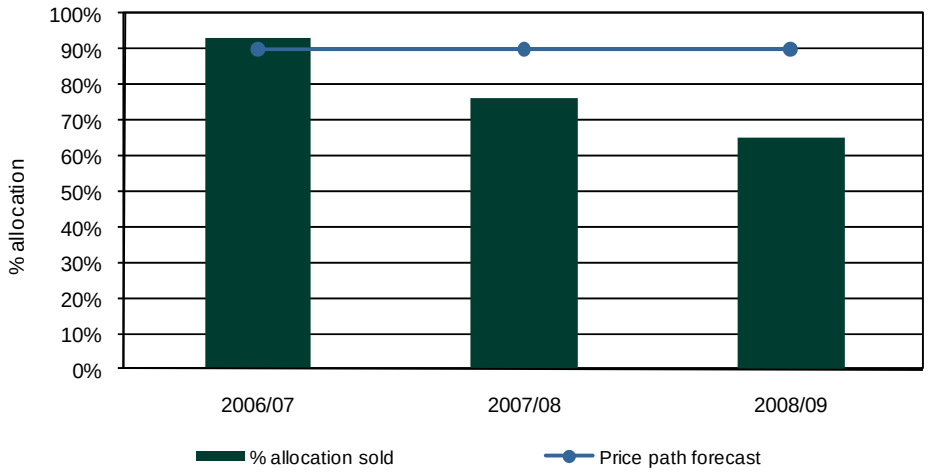
Table 16. Announced allocation - Burdekin-Haughton WSS

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

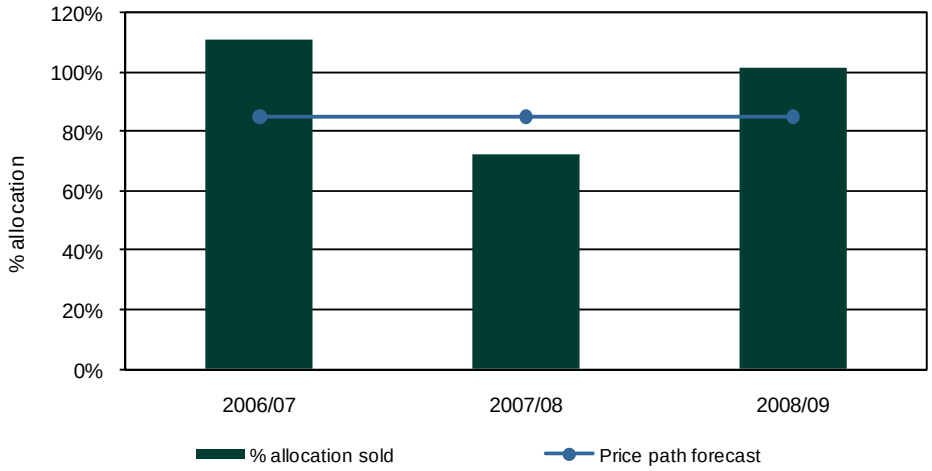
The figures below show historic use and the forecast use for the current price paths for the various tariff groups in the scheme. Sales have generally been below forecast.

Figure 32. Forecast and actual sales for the Burdekin-Haughton Channel tariff group (including channel harvesting)



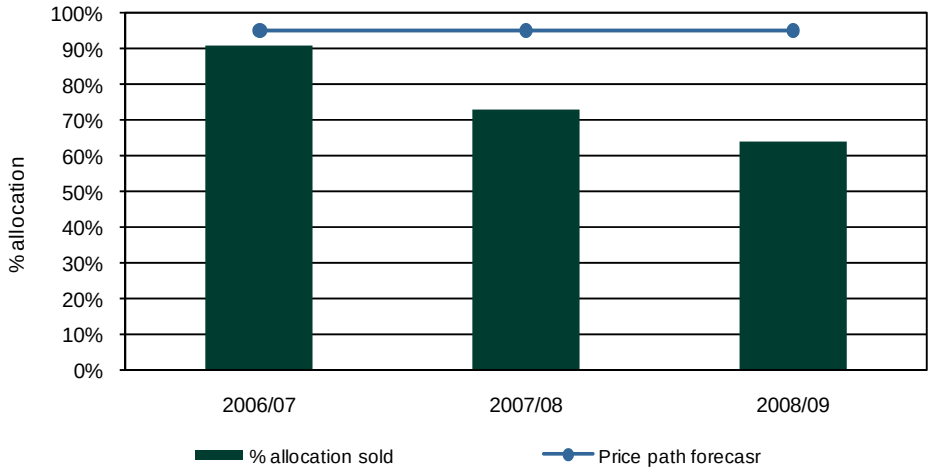
Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 33. Forecast and actual sales for the Burdekin-Haughton River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 34. Forecast and actual sales for the Giru Groundwater Area tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Burdekin Falls Dam is the principal source of bulk water supply in the Burdekin-Haughton WSS and is one of the largest bulk water storages in Queensland. Construction of the Burdekin Falls Dam was completed in 1987 with a total capacity of 1,860,000ML. The dam operates in conjunction with five weirs, the total capacities of which range from 12,675ML to 615ML.

The table below presents an overview of the bulk storage infrastructure in the Burdekin-Haughton WSS.

Table 17. Bulk water service infrastructure in the Burdekin-Haughton WSS

Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Burdekin Falls Dam	1,860,000	23
Gorge Weir	12,675	57
Clare Weir	8,250	32
Blue Valley Weir	3,820	48
Giru Weir	1,025	33
Val Bird Weir	615	27

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 1998-89.' Queensland Government; Department of Environment and Resource Management (2009). 'Burdekin Basin Resource Operation Plan.' Queensland Government; Natural Resources and Mines (2002). 'Burdekin Basin Draft Water Resource Plan.' Queensland Government.

The Haughton Main Channel also supplements the Haughton River and Giru groundwater area, and hence provides a dual network and bulk water function.

Network service infrastructure

The Burdekin Channel system services irrigation customers located between the Burdekin and Haughton Rivers via the Haughton and Barratta Main channels. .

The Leichardt Downs area is serviced by the Elliot Main Channel.

The table below compares the number of major channel systems in the Burdekin-Haughton WSS to the number of channel tariff groups in the scheme.. There is one channel tariff for all channels.

Table 18. No. of channel systems and channel tariff groups in Burdekin-Haughton WSS

No. of channel systems	3
No. of channel tariff groups	1

Sources: SunWater online; SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

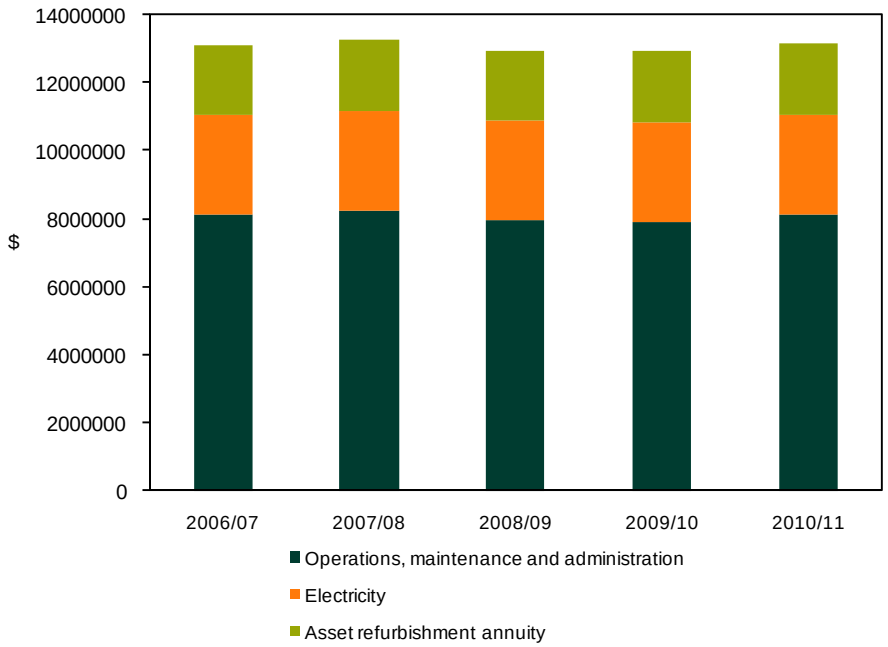
Drainage infrastructure

The Burdekin-Haughton WSS also includes a drainage service.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Burdekin-Haughton WSS for the 2006/07 to 2010/11 period. In comparison to the majority of the schemes, electricity accounts for a significant proportion of lower bound costs in the scheme.

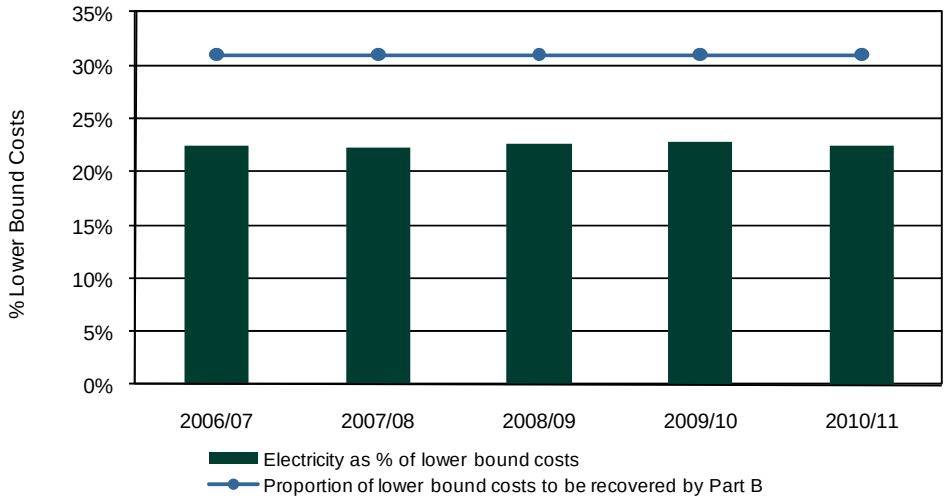
Figure 35. Lower bound costs for the Burdekin-Haughton WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity.

Figure 36. Lower bound cost recovery and variable costs for the Burdekin-Haughton WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.7 Scheme description – Callide Valley

Customer and water use information

The table below provides a summary of the key information for the Callide Valley WSS.

Table 19. Summary of Callide Valley WSS

Details	***Callide Valley***
Business Centre	Biloela
Number of Customers	141
Uses of Water	
• Irrigation	Irrigation includes, winter and summer cereal cropping and lucerne.
• Urban Water Supplies	Water is supplied from the Callide Dam for the township of Biloela.
• Industrial	There are a number of large industries supplied including the Callide Power Station and a meatworks.

Scope of services

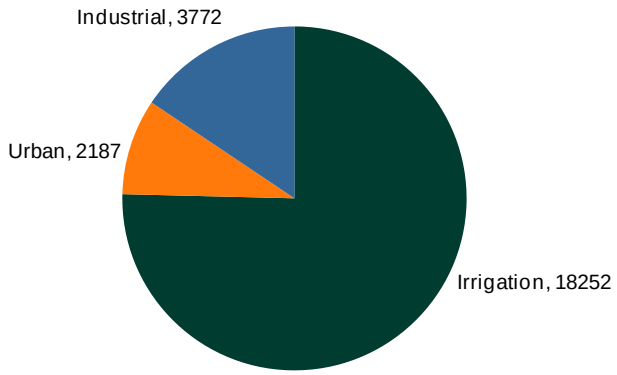
Bulk water services are provided in relation to 24,211ML of WAE, including surface water and groundwater entitlements.

Customer composition

There are 141 customers serviced by scheme, comprising irrigators, local governments and industrial customers including a meatworks and the Callide Power Station.

Most of the scheme services the irrigation sector. The figure below shows the proportion of WAE held by each sector (unadjusted for priority).

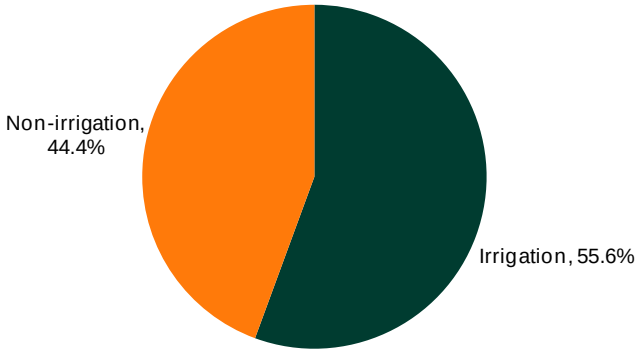
Figure 37. Sectoral split - Callide Valley WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 38. Breakdown of lower bound cost recovery for the Callide Valley WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Callide Valley WSS, for medium priority WAE.

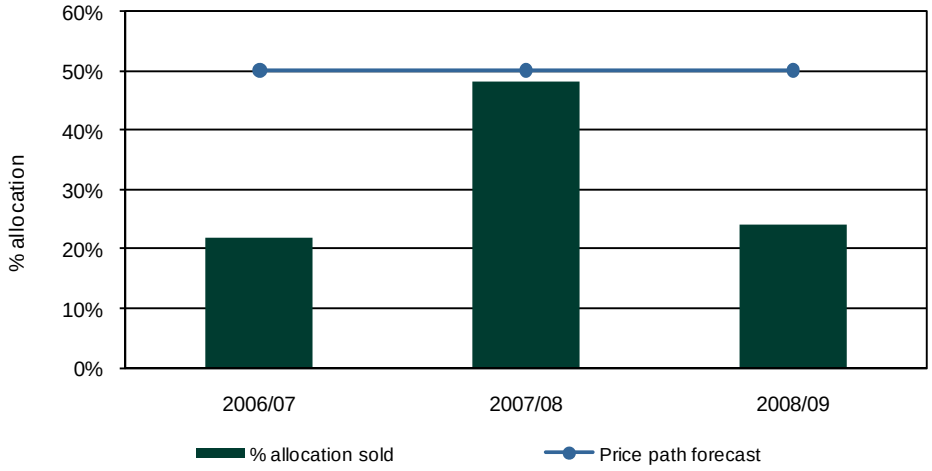
Table 20. Announced allocation for the Callide Valley WSS (medium priority)

Year	*Announced allocation %*
2006/07	69
2007/08	65
2008/09	55

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations may increase through the year.
Source: SunWater online.

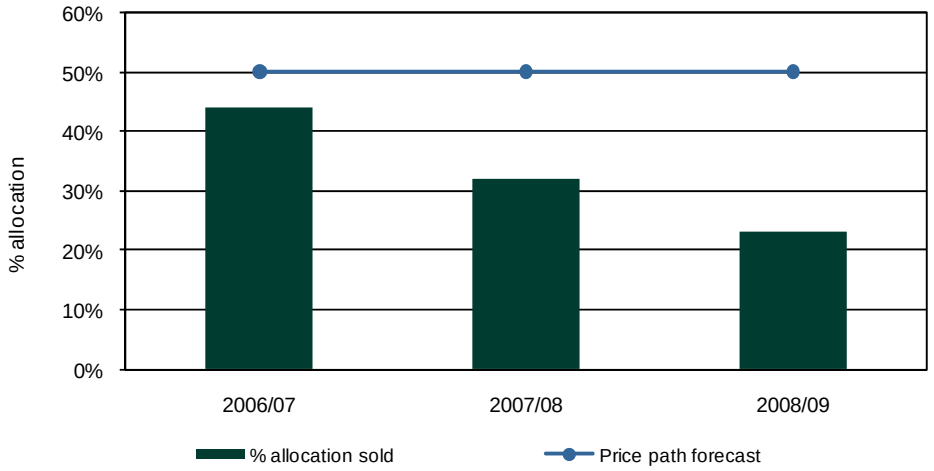
The figures below show the historic use compared to the forecast for the current price paths. Actual sales have been below this forecast for both of the tariff groups in the scheme.

Figure 39. Forecast and actual sales for the Callide Valley Surface Water tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 40. Forecast and actual sales for the Callide Valley Benefited Groundwater Area tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Callide Dam is the main source of bulk water supply in the Callide Valley WSS. The dam has a total storage capacity of 136,370ML and was constructed in two stages – the first of which was completed in 1965 and the second of which was completed in 1988. Supply from the Callide Dam is supplemented by the Kroombit Dam which was completed in 1992 and has a total capacity of 14,600ML, and the Callide Weir, which has a total capacity of 506ML.

The table below presents an overview of the bulk storage infrastructure in the Callide Valley WSS.

Table 21. Bulk water service infrastructure in the Callide Valley WSS

Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Callide Dam	136,370	45
Kroombit Dam	14,600	18
Callide Weir	506	20

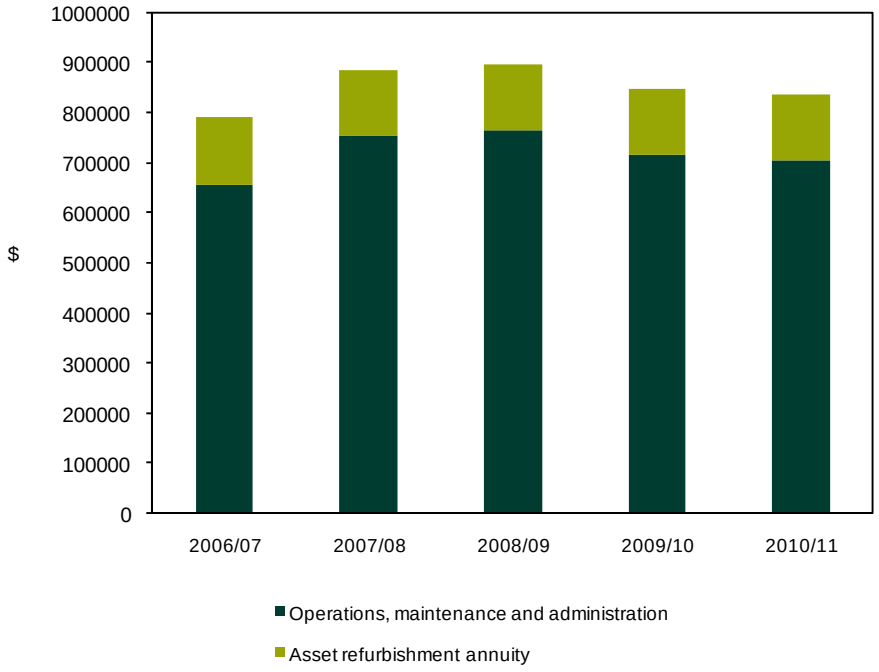
Sources: SunWater Annual Report, 2008-09; SunWater online; Natural Resources and Mines (2005). 'Interim Resource Operations Licence for Callide Valley Water Supply Scheme. Issued to SunWater.' Queensland Government.

The Callide Diversion Channel transports water from Callide Dam to Kroombit Creek and Kariboe Creek, for underground water recharge for medium priority (groundwater) entitlements. This channel, which consists of channel and pipeline assets, extends the area of groundwater supplementation and in turn the scope of regulated WAE and bulk water services.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Callide Valley WSS for the 2006/07 to 2010/11 period.

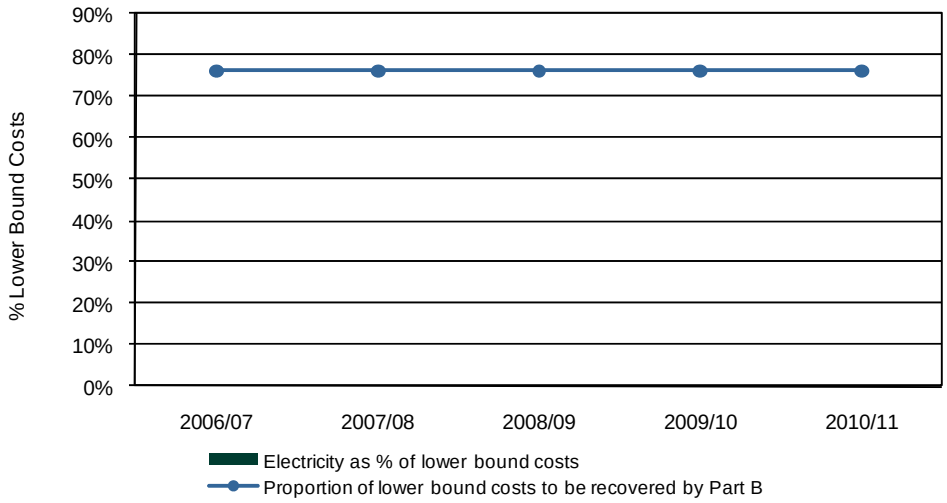
Figure 41. Lower bound costs for the Callide Valley WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity. The figure shows that there is no variable cost component in the lower bound costs for the Callide Valley WSS, and 80% of lower bound costs are recovered through the variable tariff component.

Figure 42. Lower bound cost recovery and variable costs for the Callide Valley WSS



Note: The proportion of the lower bound costs to be recovered by Part B was calculated by taking the average of the Part B tariff proportions levied over the 5 year period from 2006/07 to 2010/11.
Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.8 Scheme description – Chinchilla Weir

Customer and water use information

The table below provides a summary of the key information for the Chinchilla Weir WSS.

Table 22. Summary of Chinchilla Weir WSS

Details	*Chinchilla Weir*
Business Centre	Toowoomba
Number of Customers	34
Uses of Water	
• Irrigation	Water is supplied from Chinchilla Weir for the irrigation of cereal and melons as well as pasture and fodder crops.
• Urban Water Supplies	The scheme supplies the town of Chinchilla.

Scope of services

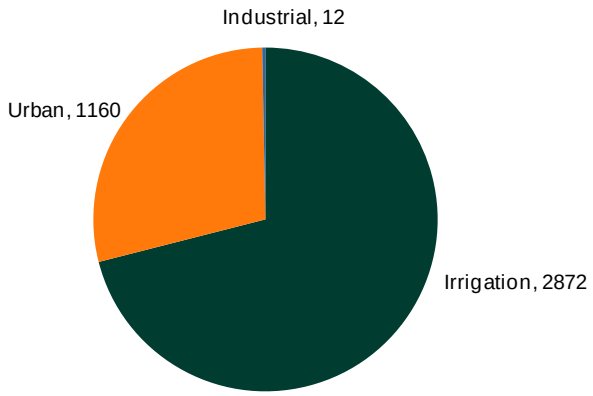
Bulk water services are provided in relation to 4,044ML of WAE.

Customer composition

There are 34 customers serviced by the Chinchilla Weir WSS, comprising irrigators and one local government. There is very minor industrial use.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority).

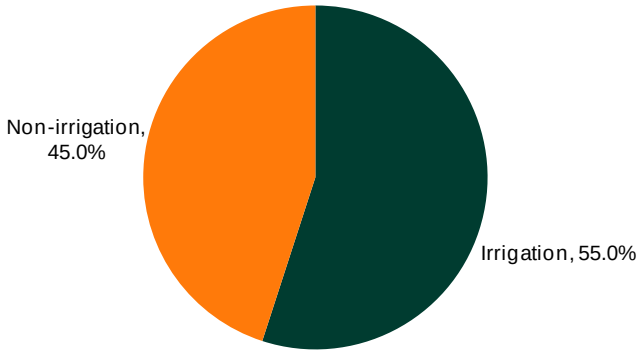
Figure 43. Sectoral split – Chinchilla Weir WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 44. Breakdown of lower bound cost recovery for the Chinchilla Weir WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Chinchilla Weir WSS, for medium priority WAE.

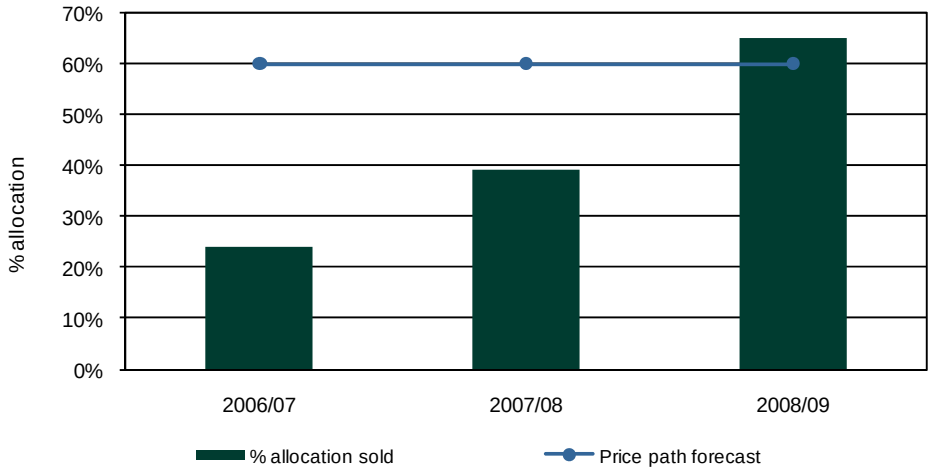
Table 23. Announced allocation for the Chinchilla Weir WSS (medium priority)

Year	*Announced allocation %*
2006/07	22
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations may increase through the year.
Source: SunWater online.

The figure below shows historic use compared to the forecasts used for the current price paths for the Chinchilla River tariff group. Sales have increased over the first three years, but are lower than forecast on average.

Figure 45. Forecast and actual sales for the Chinchilla Weir tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Chinchilla Weir was constructed in 1973 on the Condamine River for the purpose of providing a supply of irrigation water along the alluvial flats of the River in addition to augmenting water supply to the town of Chinchilla. It has a total capacity of 9,780ML and is the sole piece of infrastructure in the scheme.

The table below presents an overview of the details of the Chinchilla Weir.

Table 24. Bulk water service infrastructure in the Chinchilla Weir WSS

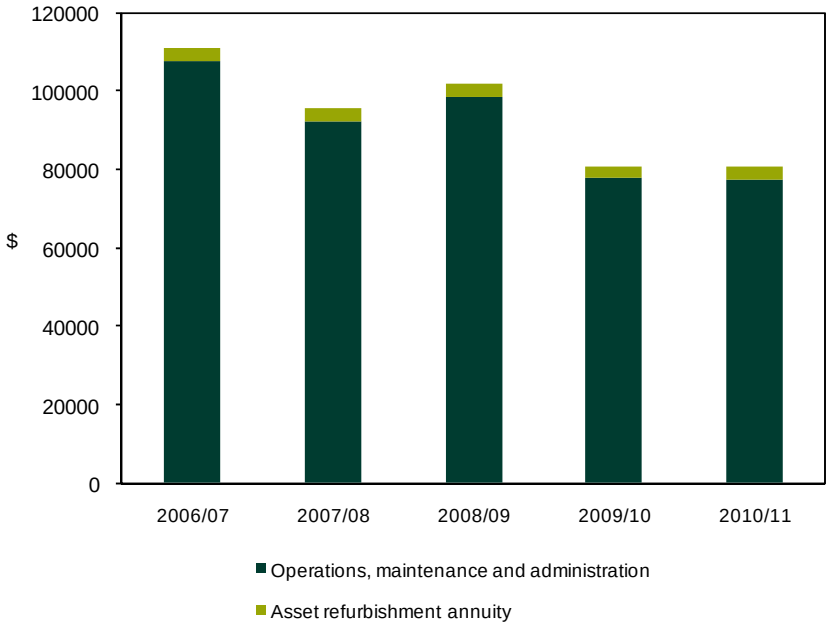
Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Chinchilla Weir	9,780	37

Sources: SunWater Annual Report, 2008-09; SunWater online.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Chinchilla Weir WSS for the 2006/07 to 2010/11 period.

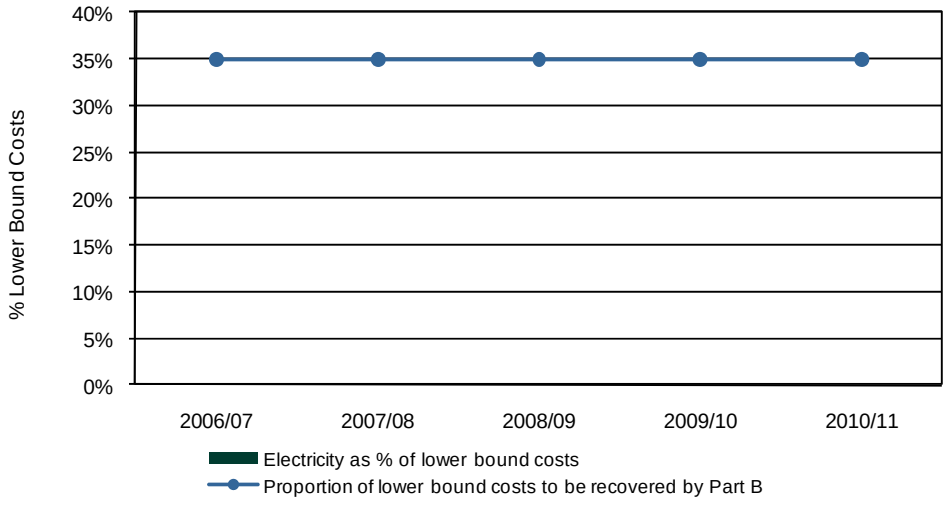
Figure 46. Lower bound costs for the Chinchilla Weir WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

There is no variable cost component in the lower bound costs for scheme. Some 35% of lower bound costs are recovered through the variable tariff component.

Figure 47. Lower bound cost recovery and variable costs for the Chinchilla Weir WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.9 Scheme description – Cunnamulla

Customer and water use information

The table below provides a summary of the key information for the Cunnamulla WSS.

Table 25. Summary of Cunnamulla WSS

Details	***Cunnamulla***
Business Centre	Toowoomba
Number of Customers	26
Uses of Water	
• Irrigation	Water is used for irrigation of crops such as grapes, citrus, cotton and a variety of fodder crops.
• Urban Water Supplies	The town of Cunnamulla accesses water supplies from the scheme

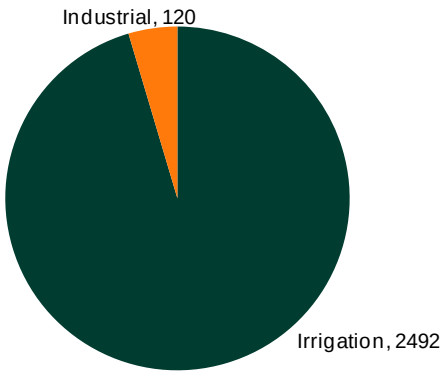
Scope of services

Bulk water services are provided in relation to 2,612ML of WAE.

Customer composition

There are 26 customers serviced by the Cunnamulla WSS, comprising irrigators and a local government. The figure below shows the proportion of WAE held by each of these sectors (unadjusted for priority).

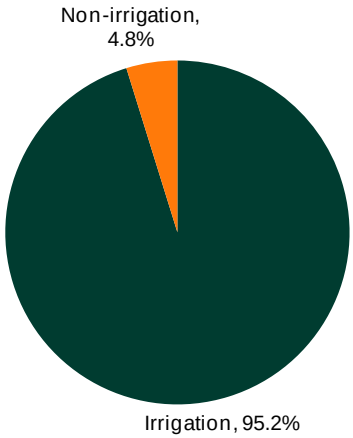
Figure 48. Sectoral split - Cunnamulla WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 49. Breakdown of lower bound cost recovery for the Cunnamulla WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the announced allocations since the commencement of the price paths for the Cunnamulla WSS, for medium priority WAE.

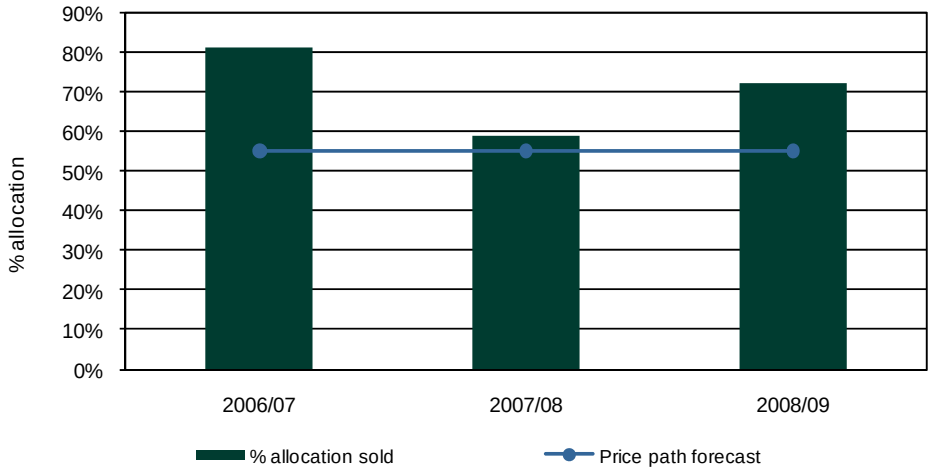
Table 26. Announced allocation for the Cunnamulla WSS (ML)

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	69

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations may increase through the year.
Source: SunWater online.

The figure below compares the price path forecast to actual use to date for the Cunnamulla River tariff group, and indicates sales have been above this forecast.

Figure 50. Forecast and actual sales for the Cunnamulla River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The table below presents an overview of the capacity and age of the Allan Tannock Weir, which provides the bulk water service for the Cunnamulla WSS.

Table 27. Bulk water service infrastructure in the Cunnamulla WSS

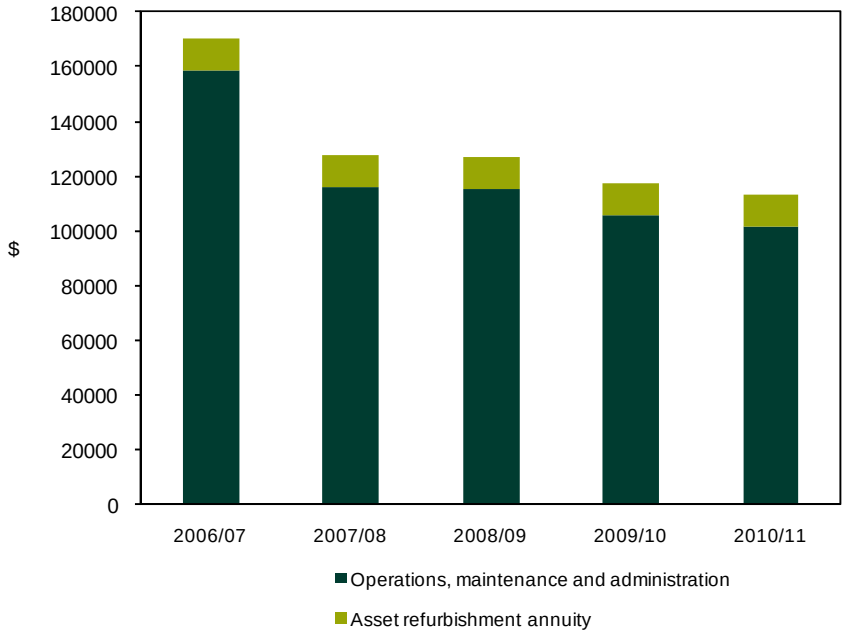
Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Allan Tannock Weir	4,770	19

Sources: SunWater Annual Report, 2008-09; SunWater online.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Cunnamulla WSS for the 2006/07 to 2010/11 period.

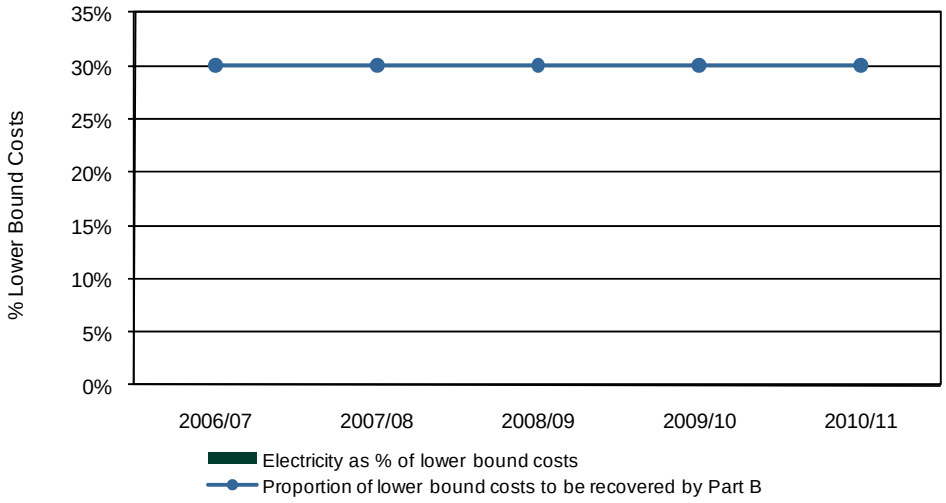
Figure 51. Lower bound costs for the Cunnamulla WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

There is no variable cost component in the lower bound costs for the Cunnamulla WSS. Some 30% of lower bound costs are recovered through the variable tariff component.

Figure 52. Lower bound cost recovery and variable costs for the Cunnamulla WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.10 Scheme description – Dawson Valley

Customer and water use information

The table below provides a summary of the key information for the Dawson Valley WSS.

Table 28. Summary of Dawson Valley WSS

Details	*Dawson Valley*
Business Centre	Biloela
Number of Customers	156
Uses of Water	
• Irrigation	Crops grown in the scheme include cotton, fodder, cereal and horticultural crops such as wheat, barley, oats, maize, mung beans, soybeans, sunflowers, sorghum and peanuts.
• Urban Water Supplies	The scheme provides water for the towns of Theodore, Moura, Baralaba and Duaringa.
• Industrial	Coal mines and an ammonium nitrate plant in the Moura-Kianga area, and a gold mining venture at Cracow are also supplied from this scheme.

Scope of services

Bulk water services are provided in relation to 57,764ML of WAE.

There is also a network service comprising two channel systems and pumping stations, as well as a drainage service. The network service supplies around 16,000ML of WAE to customers.

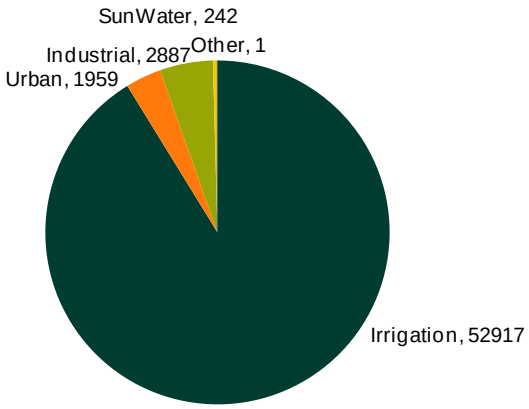
Customer composition

There are 156 customers serviced by the scheme, comprising irrigators, local government and industrial customers including coal mines, an ammonium nitrate plant and a gold mining operation.

SunWater holds 74ML of high priority WAE and 168ML of medium priority WAE that it trades itself.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority).

Figure 53. Sectoral split - Dawson Valley WSS (ML)

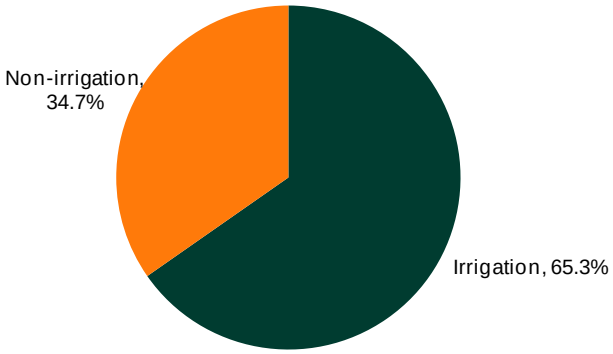


Source: SunWater Annual Report, 2008-09.

SunWater also holds 4,005ML for distribution losses in the channel network.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 54. Breakdown of lower bound cost recovery for the Dawson Valley WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Dawson Valley WSS, for medium priority WAE.

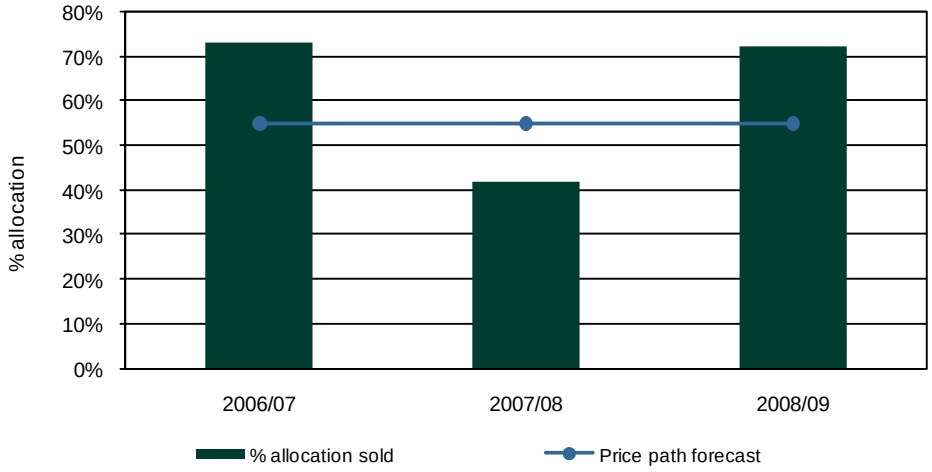
Table 29. Announced allocation for the Dawson Valley WSS (medium priority)

Year	*Announced allocation %*
2006/07	48
2007/08	48
2008/09	80

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations may increase through the year.
Source: SunWater online.

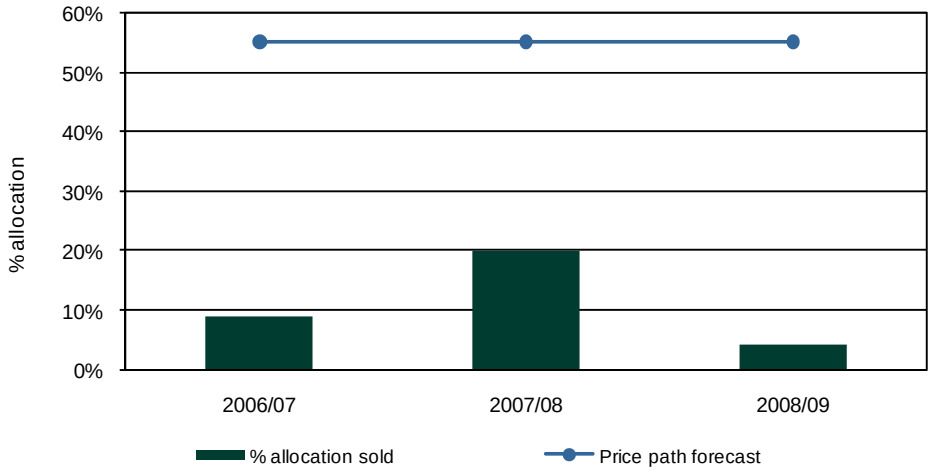
The figures below compare historic use to forecast use for each of the bulk water and network services. For the Dawson River and Dawson Valley Channel tariff groups, sales have fluctuated around the forecast level, while sales have been well below forecasts for the Glebe Weir tariff group.

Figure 55. Forecast and actual sales for the Dawson River tariff group



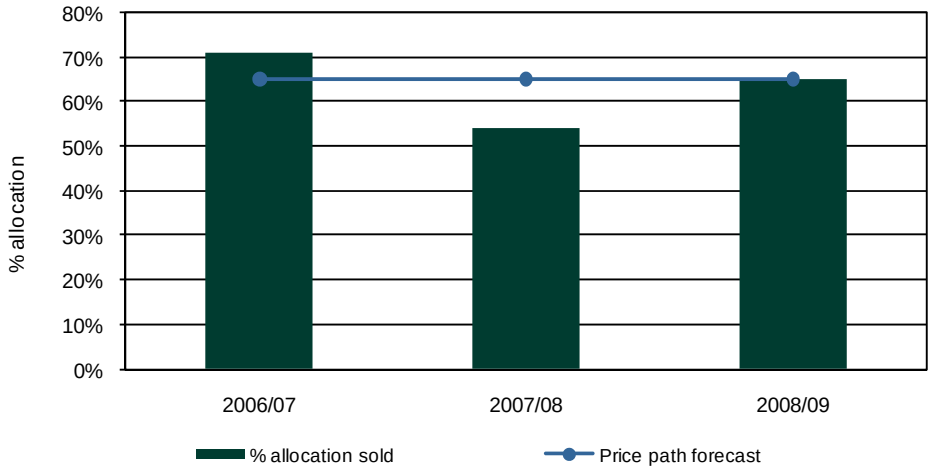
Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 56. Forecast and actual sales for the Dawson River at Glebe Weir tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 57. Forecast and actual sales for the Dawson Valley Channel tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Dawson Valley WSS involves six weirs that are located along the Dawson River, and the Moura Offstream Storage. The table below presents an overview of the bulk water infrastructure in the Dawson Valley WSS.

Table 30. Bulk water service infrastructure in the Dawson Valley WSS

Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Glebe Weir	17,700	39
Gyranda Weir	16,500	23
Neville Hewitt Weir	11,300	34
Moura Weir	7,700	64
Orange Creek Weir	6,140	78
Theodore Weir	4,760	80
Moura Offstream Storage	2,820	10

Sources: SunWater Annual Report, 2008-09; SunWater online.

Network service infrastructure

The Dawson Valley WSS contains two channel systems – Theodore and Gibber Gunyah.

While there are 2 channel systems in the scheme, there is only 1 channel tariff group (refer below).

Table 31. No. of channel systems and channel tariff groups in Dawson Valley WSS

No. of channel systems	2
No. of channel tariff groups	1

Sources: SunWater online; SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006)..

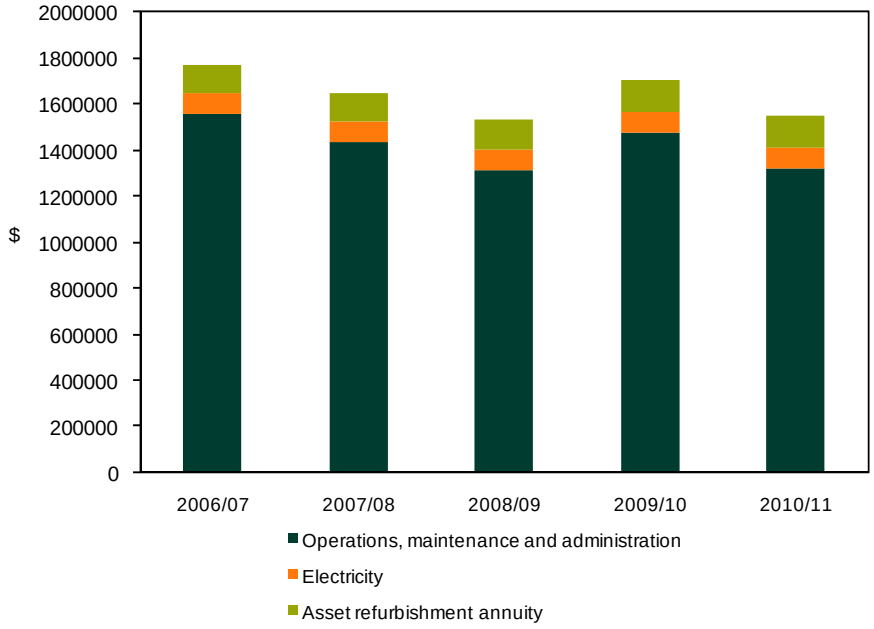
Drainage infrastructure

The Dawson Valley WSS includes drainage infrastructure, in the two channel systems.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Dawson Valley WSS (all services) for the 2006/07 to 2010/11 period.

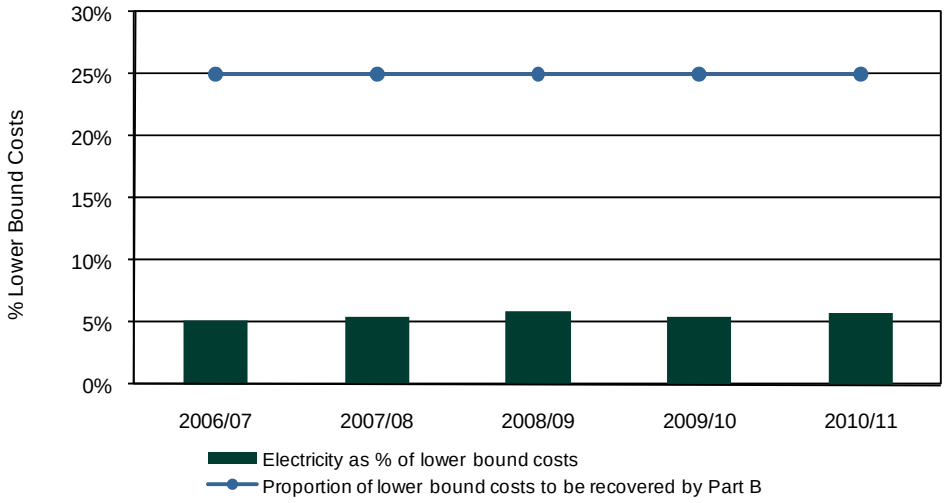
Figure 58. Lower bound costs for the Dawson Valley WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

There is a significant difference between the variable component of the lower bound costs and the proportion of the costs that are recovered through the variable tariff component (refer below).

Figure 59. Lower bound cost recovery and variable costs for the Dawson Valley WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.11 Scheme description – Eton

Customer and water use information

The table below provides a summary of the key information for the Eton WSS.

Table 32. Summary of Eton WSS

Details	*Eton*
Business Centre	Mackay
Number of Customers	303
Uses of Water	
• Irrigation	Water is predominately used for the irrigation of sugar cane.

Scope of services

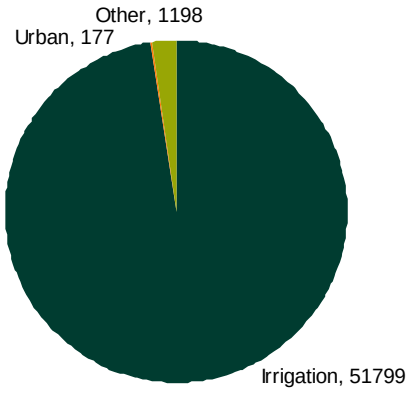
Bulk water services are provided in relation to 53,174ML of WAE.

All of this water is supplied through a channel system that distributes water from Kinchant Dam.

Customer composition

There are 303 customers serviced by the Eton WSS, comprising mostly of irrigators. The figure below shows the proportion of WAE held by each sector (unadjusted for priority).

Figure 60. Sectoral split - Eton WSS (ML)

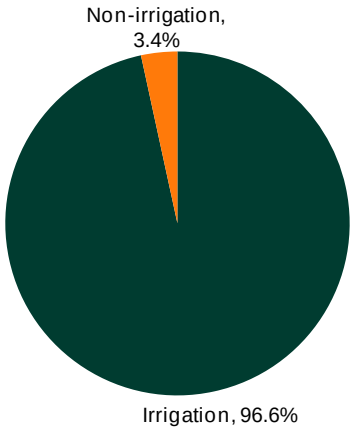


Source: SunWater Annual Report, 2008-09.

SunWater also holds 9,389ML for distribution losses in the network.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 61. Breakdown of lower bound cost recovery for the Eton WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The scheme has been at 100% announced allocation for the first three years of the current price path for the Eton WSS, as can be seen in the table below.

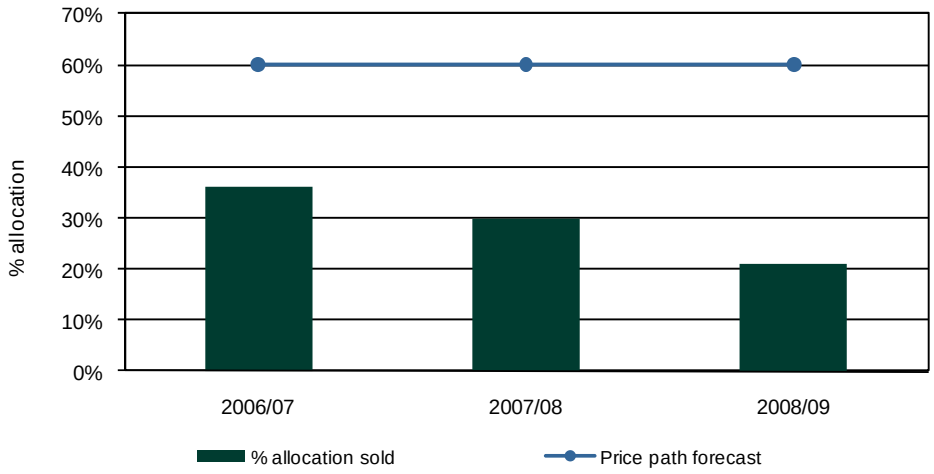
Table 33. Announced allocation for the Eton WSS (medium priority)

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

The figure below compares forecast and actual use to date, with sales well below that expected for setting the price paths.

Figure 62. Forecast and actual sales for the Eton Channel tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Kinchant Dam is the only bulk water storage in the Eton WSS. It was constructed in two phases. The first stage was completed in 1977 and the second stage in 1986, which increased the maximum storage capacity of the dam to 65,600ML.

The table below presents an overview of the details of the Kinchant Dam.

Table 34. Bulk water service infrastructure in the Eton WSS

Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Kinchant Dam	65,600	33

Sources: SunWater Annual Report, 2008-09; SunWater online.

Network service infrastructure

The channel system comprises a single main distribution channel from Kinchant Dam, servicing six sub-systems. OF these, four are pumped systems and two (Munbura and Marwood) are supplied under gravity.

The table shows that there is one tariff for channel users.

Table 35. No. of channel systems and channel tariff groups in Eton WSS

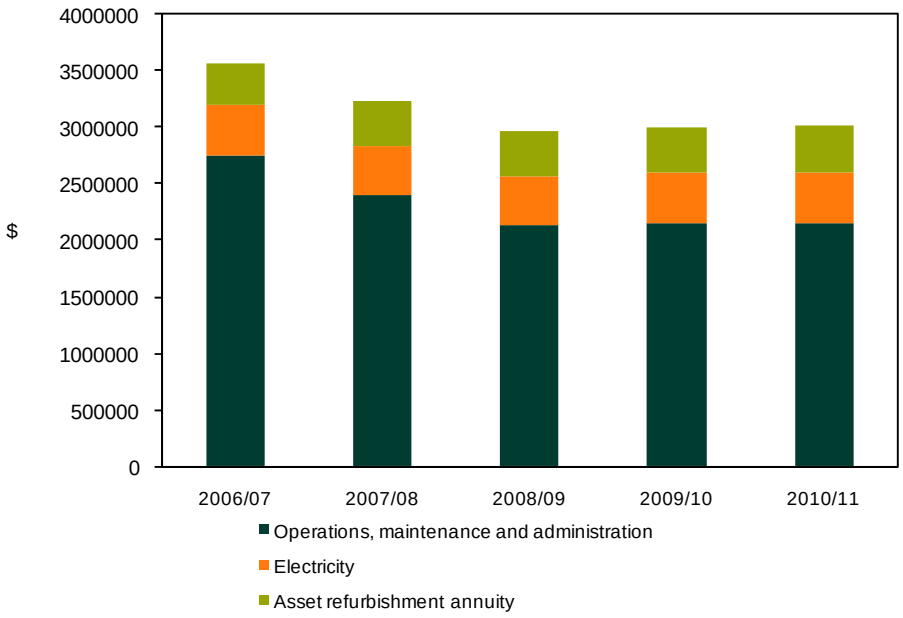
No. of channel systems and sub-systems	6
No. of channel tariff groups	1

Sources: SunWater online; SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Eton WSS for the 2006/07 to 2010/11 period (all services). Electricity accounts for a significant proportion of lower bound costs in the Eton WSS.

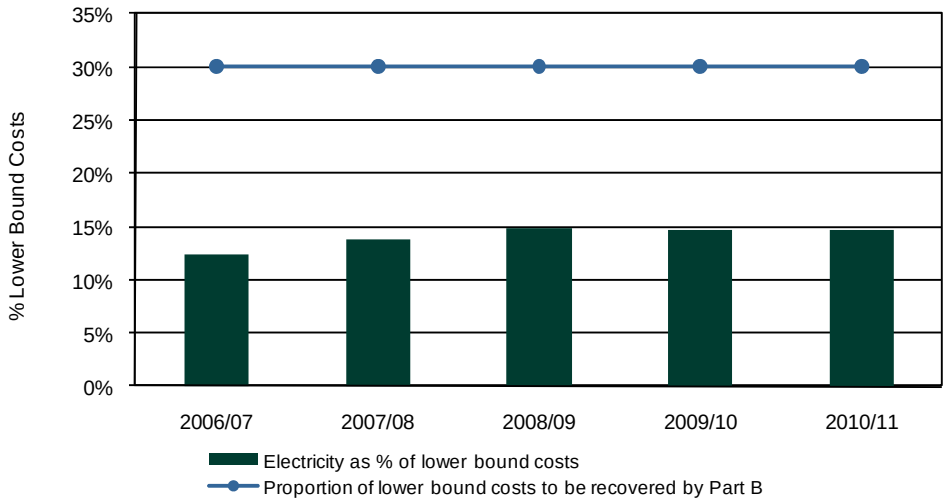
Figure 63. Lower bound costs for the Eton WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity. The electricity cost component of the lower bound costs is well below the proportion of costs that are recovered through the volumetric tariff.

Figure 64. Lower bound cost recovery and variable costs for the Eton WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.12 Scheme description – Lower Fitzroy

Customer and water use information

The table below provides a summary of the key information for the Lower Fitzroy WSS.

Table 36. Summary of Lower Fitzroy WSS

Details	***Lower Fitzroy***
Business Centre	Biloela
Number of Customers	24
Uses of Water	
• Irrigation	Water is used for irrigation of pasture and other crops.
• Industrial	The Stanwell Power Station draws water from the scheme.

Scope of services

Bulk water services are provided in relation to 27,218ML of WAE.

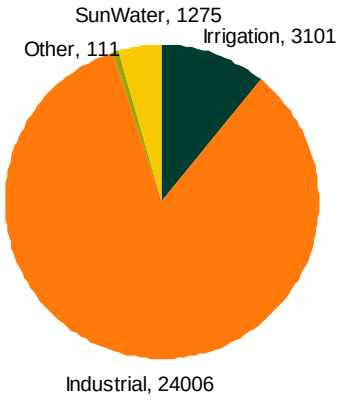
There is a network service in relation to the Stanwell Power Station, via SunWater's Stanwell Pipeline.

Customer composition

There are 24 customers serviced by the Lower Fitzroy WSS, comprising of irrigators and industrial users such as the Stanwell Power Station. SunWater holds 1,275ML of high priority WAE that it trades itself.

Most WAE in the scheme is for the Stanwell Power Station.

Figure 65. Sectoral split - Lower Fitzroy WSS (ML)

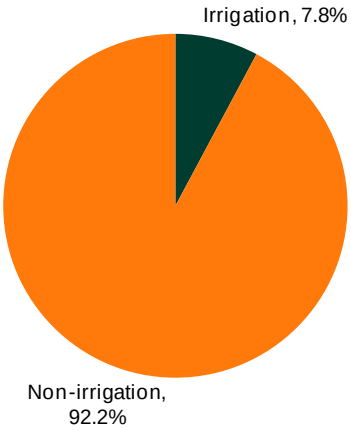


Source: SunWater Annual Report, 2008-09.

SunWater holds 1,275ML for distribution losses in the Stanwell Pipeline.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 66. Breakdown of lower bound cost recovery for the Lower Fitzroy WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the announced allocation for medium priority WAE in the Lower Fitzroy WSS.

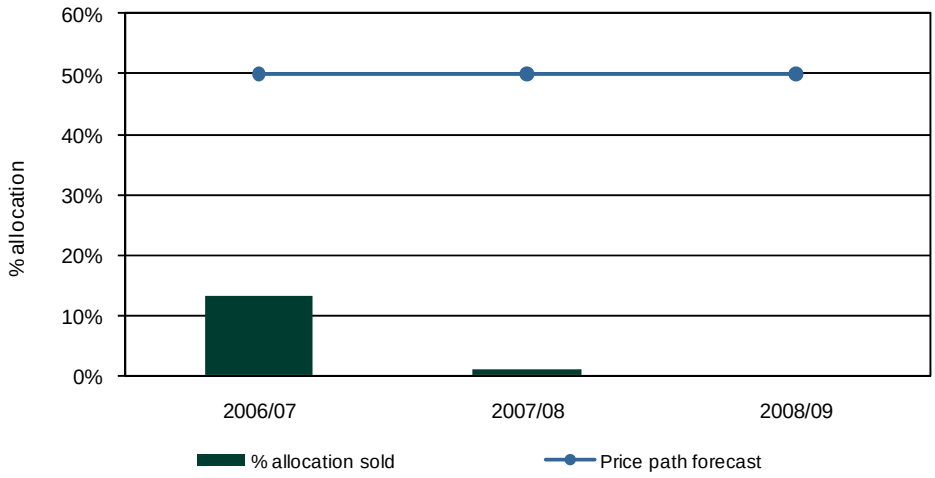
Table 37. Announced allocation for the Lower Fitzroy WSS (medium priority).

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

The figure below shows historic use compared to the forecasts used for the current price paths for the Lower Fitzroy River tariff group. Actual use has been well below the level forecast for the price paths.

Figure 67. Forecast and actual sales for the Lower Fitzroy River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Eden Bann Weir is the sole storage in the Lower Fitzroy WSS, with a total capacity of 35,900ML. The scheme is operated in conjunction with the Fitzroy Barrage WSS, which is based on the Fitzroy Barrage, and owned and operated by the Rockhampton City Council under a separate Resource Operations Licence. The table below presents an overview of the details of the Eden Bann Weir.

Table 38. Bulk water service infrastructure in the Lower Fitzroy WSS

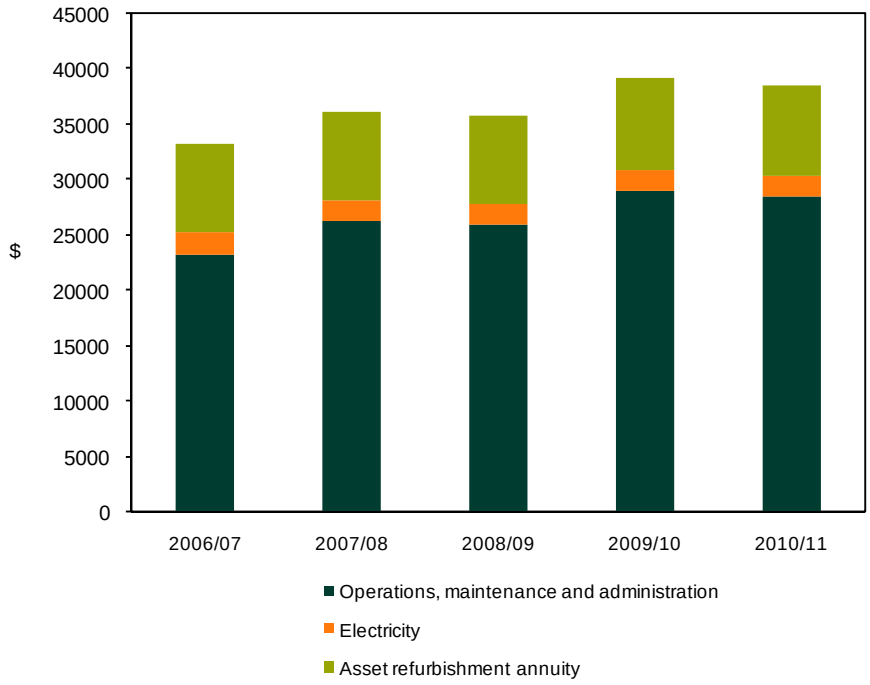
Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Eden Bann Weir	35,900	18

Sources: SunWater Annual Report, 2008-09; SunWater online.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Lower Fitzroy WSS for the 2006/07 to 2010/11 period.

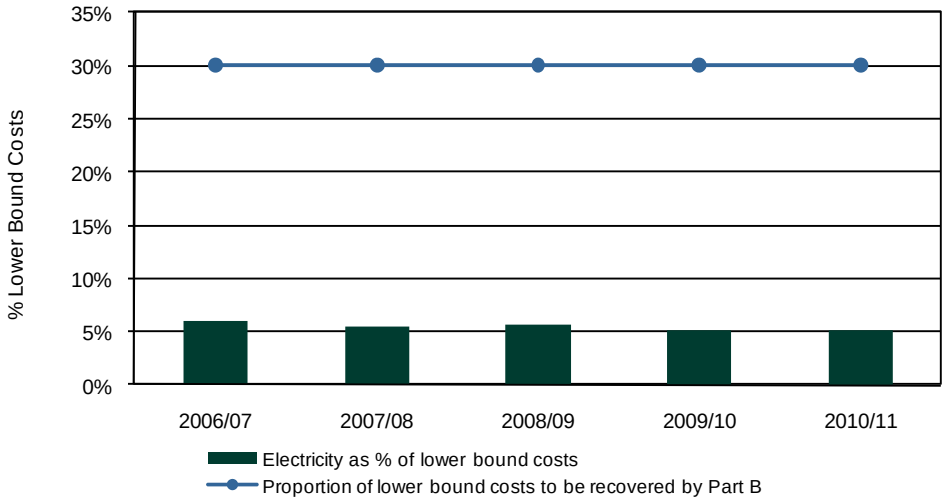
Figure 68. Lower bound costs for the Lower Fitzroy WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The electricity component of the lower bound costs is significantly less than the proportion of costs that are recovered through the Part B charge, as indicated below.

Figure 69. Lower bound cost recovery and variable costs for the Lower Fitzroy WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.13 Scheme description – Lower Mary

Customer and water use information

The table below provides a summary of the key information for the Lower Mary WSS.

Table 39. Summary of Lower Mary WSS

Details	*Lower Mary*
Business Centre	Bundaberg
Number of Customers	186
Uses of Water	
• Irrigation	Water is mainly used for the irrigation of fodder crops on dairy farms, improved pastures on grazing properties and for horticultural production. Tree crops such as macadamia nuts and citrus are also grown.
• Urban Water Supplies	There are supplies to small townships in the area.
• Industrial	Various industrial enterprises are supplied including manufacturing and processing.

Scope of services

Bulk water services are provided in relation to 23,208ML of WAE.

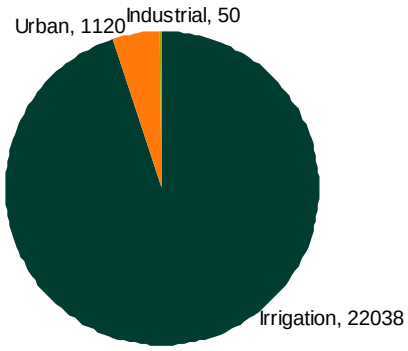
The Lower Mary WSS also includes a network service, supplying around 8,000ML of WAE (2005/06).

No drainage services are provided.

Customer composition

There are 186 customers serviced by the Lower Mary WSS, comprising of irrigators, local government and small industrial users. The figure below shows the proportion of WAE held by each sector (unadjusted for priority).

Figure 70. Sectoral split - Lower Mary WSS (ML)



Source: SunWater Annual Report, 2008-09.

The information required to compare the sectoral split to the proportion of costs recovered from the irrigation and non-irrigation sectors was not available in the various SunWater reports for the price paths.

Water availability and use for the irrigation sector

There has been 100% availability of customer WAE over the first three years of the price path as can be seen in the table below.

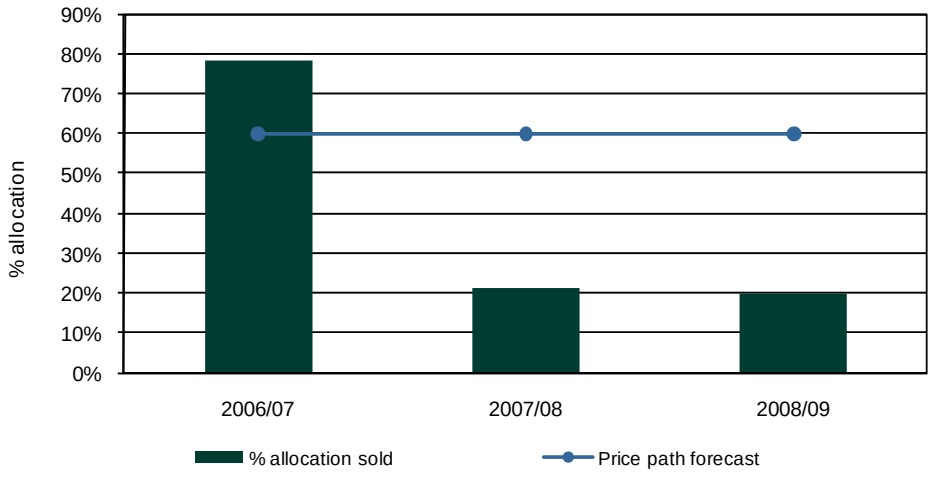
Table 40. Announced allocation for the Lower Mary WSS (medium priority)

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

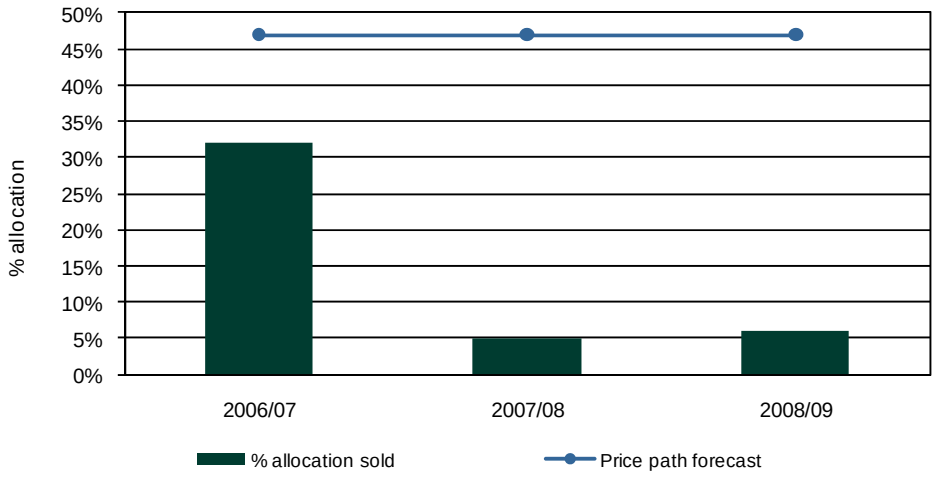
The figures below show the historic use and forecast use assumed for the price paths, for each tariff group in the scheme. Use has fallen significantly in the last two years across all of the tariff groups.

Figure 71. Forecast and actual sales for the Tinana Barrage and Teddington Weir tariff group



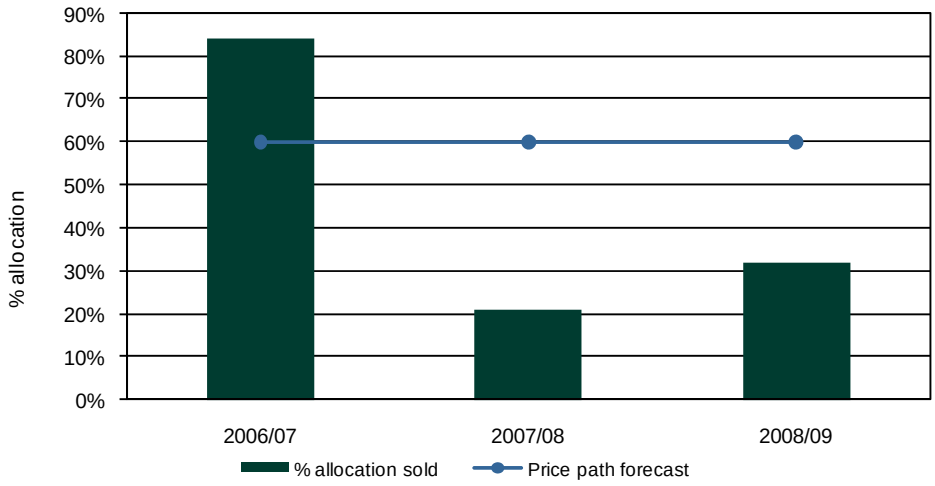
Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 72. Forecast and actual sales for the Mary Barrage tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 73. Forecast and actual sales for the Lower Mary Channel tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

Two tidal barrages account for the bulk water supply infrastructure in the Lower Mary WSS – the Mary Barrage and the Tinana Barrage, which were completed in 1983 and 1980 respectively.

The table below presents an overview of the bulk water service infrastructure in the Lower Mary WSS.

Table 41. Bulk water service infrastructure in the Lower Mary WSS

Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Mary Barrage	12,000	27
Tinana Barrage	4,700	30

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government.

Network service infrastructure

The Lower Mary WSS network service consists of three systems – Owanyilla, Copenhagen Bend and Main Road. There is also some supplementation from the network to Teddington Weir (owned by Frazer Coast Regional Council).

The table below compares the number of channel systems in the Lower Mary WSS to the number of channel tariff groups in the scheme.

Table 42. No. of channel systems and channel tariff groups in Lower Mary WSS

No. of channel systems	3
No. of channel tariff groups	1

Sources: SunWater online; SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Cost structure

There is no discrete information available on the cost structure of the Lower Mary WSS from the various documents prepared for the price paths, as this scheme's costs were reported inclusive of the Upper Mary, which has since been transferred to Seqwater.

3.14 Scheme description – Macintyre Brook

Customer and water use information

The table below provides a summary of the key information for the Macintyre Brook WSS.

Table 43. Summary of Macintyre Brook WSS

Details	***Macintyre Brook***
Business Centre	Toowoomba
Number of Customers	98
Uses of Water	
• Irrigation	Water is supplied for the irrigation of lucerne, citrus, stone fruit, vines, olives and cereal.
• Urban Water Supplies	The town of Inglewood, bowls and golf clubs are supplied by the scheme.
• Industrial	Stock intensive industries such as feedlots and chicken production companies take water from the scheme.

Scope of services

Bulk water services are provided in relation to 24,389ML of WAE.

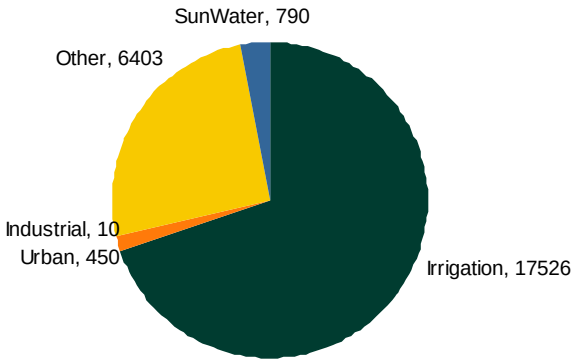
Customer composition

There are 98 customers serviced by the Macintyre Brook WSS, comprising irrigators, urban water suppliers and small industrial enterprises including feedlots and chicken production companies.

SunWater holds 790ML of medium priority WAE which it trades itself.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority). The figure indicates that the customer base for the Macintyre Brook WSS is dominated by irrigators.

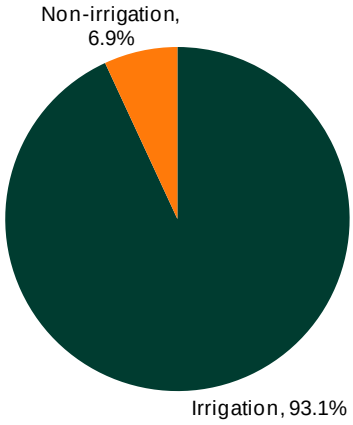
Figure 74. Sectoral split - Macintyre Brook WSS (ML)



Note: the irrigation price paths were based on 23,715ML of WAE for irrigation, which approximates the sum of the irrigation and other WAE above.
Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 75. Breakdown of lower bound cost recovery for the Macintyre Brook WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Macintyre Brook WSS, for medium priority WAE.

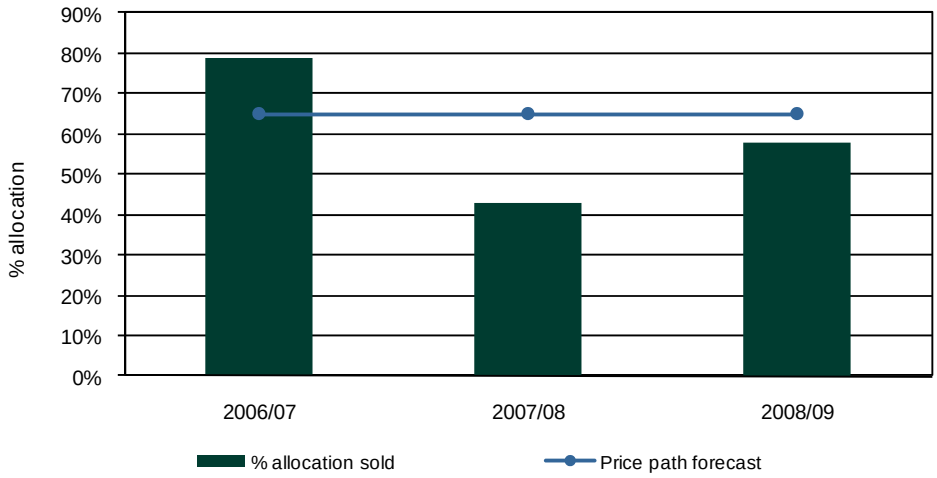
Table 44. Announced allocation for the Macintyre Brook WSS (medium priority)

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	72

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations can increase during the water year.
Source: SunWater online.

The figure below shows historic use compared to the forecasts used for the current price paths for the Macintyre Brook tariff group. The figure indicates that water use has fluctuated around the forecast used for the price paths.

Figure 76. Forecast and actual sales for the Macintyre Brook tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Coolmunda Dam is the primary storage in the scheme and was constructed in 1968. It operates in conjunction with the Ben Dor Weir, the Whetstone Weir, and the Greenup Weir, which were constructed in 1954, 1951, and 1958 respectively.

The table below presents an overview of the bulk storage infrastructure in the Macintyre Brook WSS.

Table 45. Bulk water service infrastructure in the Macintyre Brook WSS

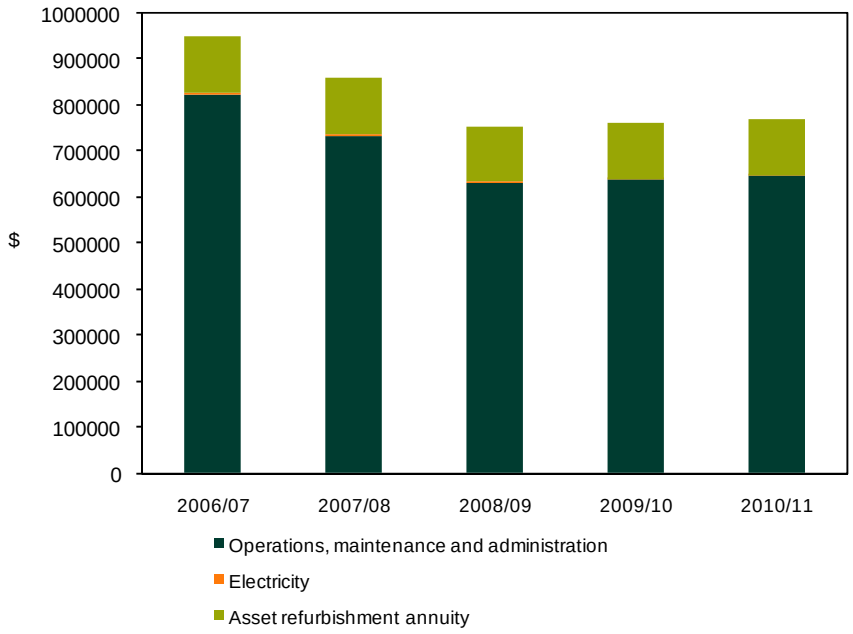
Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Coolmunda Dam	69,000	42
Ben Dor Weir	700	56
Whetstone Weir	506	59
Greenup Weir	370	52

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government; Natural Resources and Water (2008). 'Border Rivers Resource Operations Plan.' Queensland Government.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Macintyre Brook WSS for the 2006/07 to 2010/11 period.

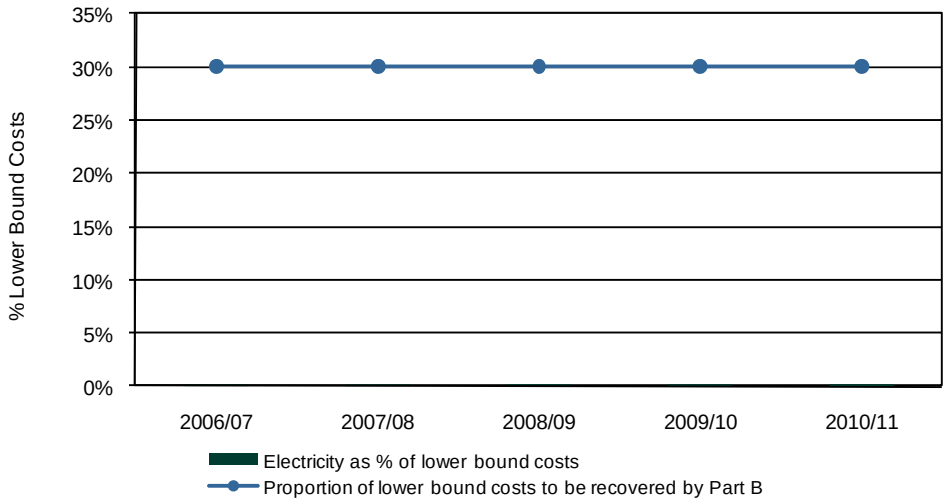
Figure 77. Lower bound costs for the Macintyre Brook WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The Part B charge was set to recover 30% of lower bound costs. Electricity costs represent a very small proportion of the lower bound costs (0.1%).

Figure 78. Lower bound cost recovery and variable costs for the Macintyre Brook WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.15 Scheme description – Maranoa River

Customer and water use information

The table below provides a summary of the key information for the Maranoa River WSS.

Table 46. Summary of Maranoa River WSS

Details	*Maranoa River*
Business Centre	Toowoomba
Number of Customers	4
Uses of Water	
• Irrigation	Not available.

Scope of services

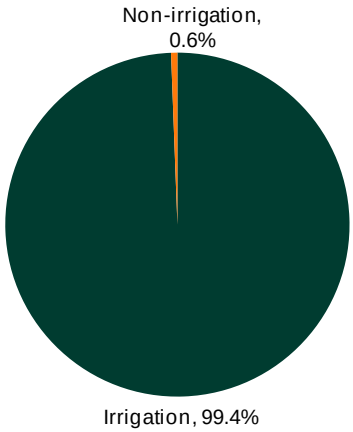
Bulk water services are provided in relation to 800ML of WAE.

Customer composition

There are 4 customers serviced by the Maranoa River WSS. All of these customers are irrigators.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors. As is to be expected based on the customer composition, over 99% of the lower bound costs are recovered from the irrigation sector.[19]

Figure 79. Breakdown of lower bound cost recovery for the Maranoa River WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

[19] It is not clear from available information why 100% was not allocated to the sector.

Water availability and use for the irrigation sector

There is no available information on announced allocations for the Maranoa River scheme.

The prices for Maranoa River were set on the basis of a 100% fixed (Part A) charge. As there are no volumetric charges, forecasts were not relevant for this scheme. Recent use has been less than 15% of WAE.

Infrastructure

Bulk water service infrastructure

Customers in the Maranoa River WSS are supplied directly from the Neil Turner Weir, which was constructed in 1985. The table below presents an overview of the details of the Neil Turner Weir.

Table 47. Bulk water service infrastructure in the Maranoa River WSS

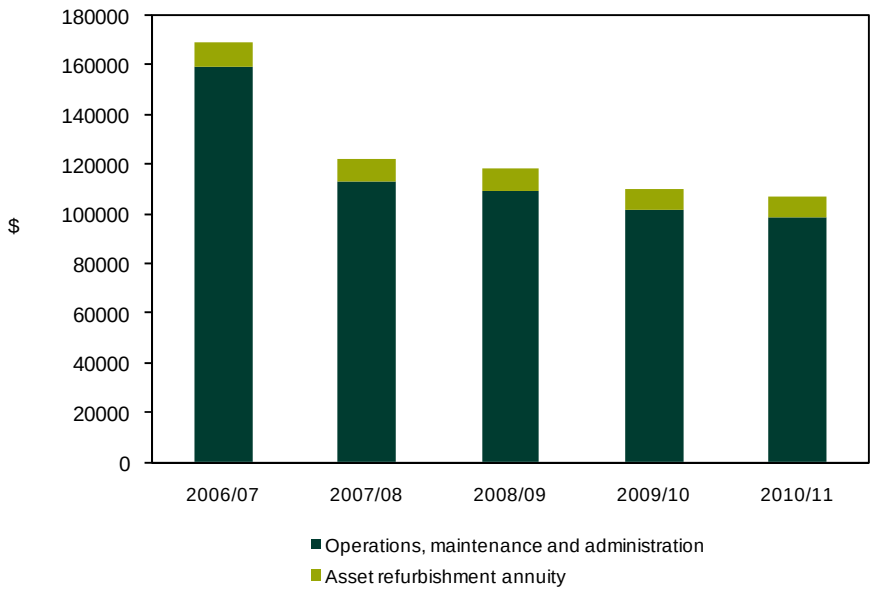
Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Neil Turner Weir	1,470	25

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Maranoa River WSS for the 2006/07 to 2010/11 period.

Figure 80. Lower bound costs for the Maranoa River WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

As indicated above, there are no electricity costs forecasts for the lower bound cost calculation. There is no Part B charge.

3.16 Scheme description – Mareeba-Dimbulah

Customer and water use information

The table below provides a summary of the key information for the Mareeba-Dimbulah WSS.

Table 48. Summary of Mareeba-Dimbulah WSS

Details	*Mareeba-Dimbulah*
Business Centre	Mareeba
Number of Customers	1,140
Uses of Water	
• Irrigation	Water is supplied for irrigation of a range of crops including sugarcane, mangoes, bananas, pawpaws, citrus fruits, avocados, other horticulture, and coffee.
• Urban Water Supplies	A number of towns and townships are served by the scheme including Tinaroo, Walkamin, Mareeba, Kuranda, Mutchilba, Dimbulah and Yungaburra.
• Hydro Power Generation	The Tinaroo Falls Dam releases water to the Barron Gorge Hydroelectric Power Station at Kuranda.

Scope of services

Bulk water services are provided in relation to 159,418ML of WAE. This includes around 28,000ML for supplemented streams and the Walsh River, which are partially serviced by the channel network.

There is also an extensive channel system providing network services to around 120,000ML of WAE, including around 8,000ML for the re-lift segment of the network (2005/06).

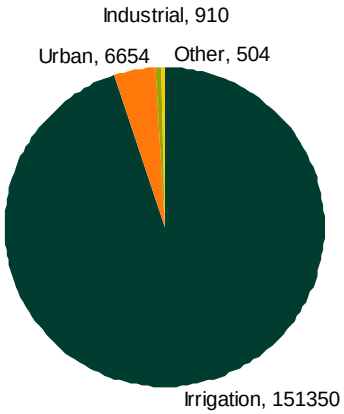
Drainage services are also provided.

Customer composition

There are 1,140 customers serviced by the Mareeba-Dimbulah WSS comprising irrigators, local government and the Barron Gorge Hydroelectric Power Station at Kuranda (Stanwell Corporation).

The figure below shows the proportion of WAE held by each sector (unadjusted for priority). This excludes the power station supplies which accesses water through a separate regime in the Resource Operations Plan.

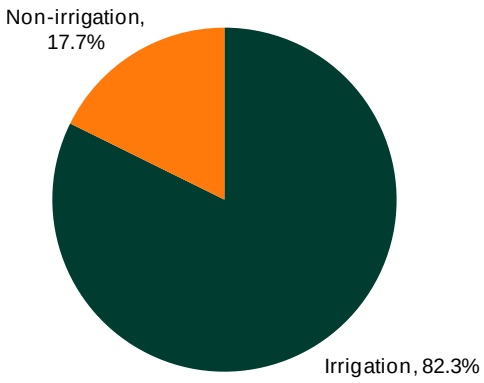
Figure 81. Sectoral Split – Mareeba-Dimbulah WSS (ML)



Note: Excludes supplies to the Barron Gorge Hydroelectric Station
Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 82. Breakdown of lower bound cost recovery for the Mareeba-Dimbulah WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocations since the commencement of the price paths for the Mareeba-Dimbulah WSS for medium priority WAE.

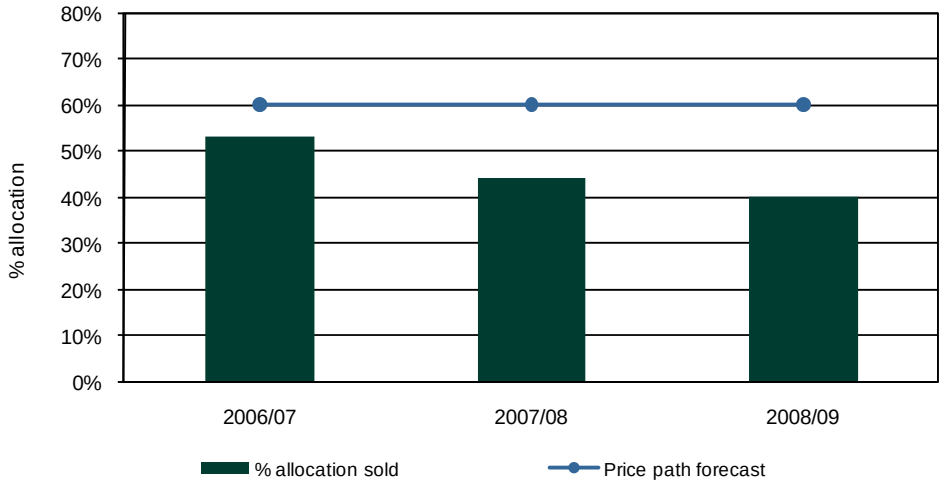
Table 49. Announced allocation for the Mareeba-Dimbulah WSS (medium priority)

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	89

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations can increase during the water year.
Source: SunWater online.

The figures below show historic use compared to the forecasts used for the current price paths for the tariff groups within the Mareeba-Dimbulah WSS. For the Mareeba-Dimbulah River (Supplemented Streams and Walsh River) tariff group, use levels have been below the forecast level and have been declining over the three years to date.

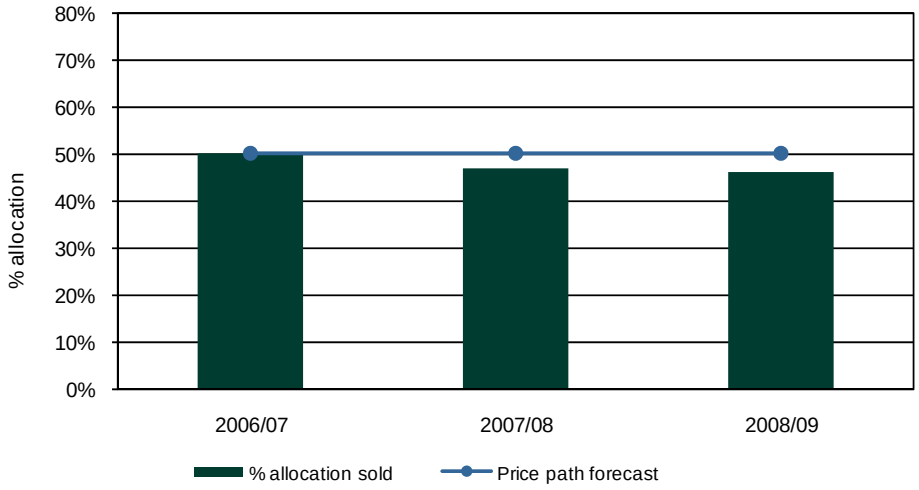
Figure 83. Forecast and actual sales for the River (Supplemented Streams & Walsh River) tariff group



Sources: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006); SunWater data.

Use levels in the Mareeba-Dimbulah River (Tinaroo/Barron) tariff group have been very similar to the forecast used for the current price paths.

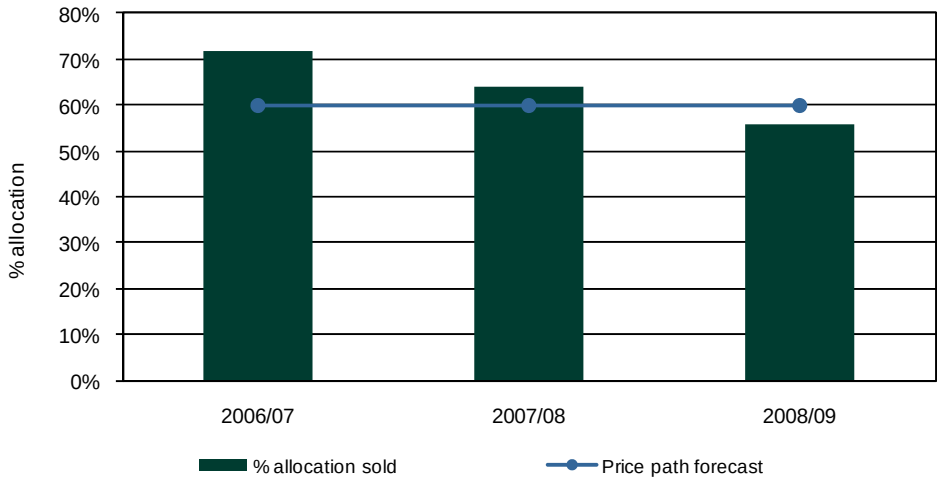
Figure 84. Forecast and actual sales for the River (Tinaroo/Barron) tariff group



Sources: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006); SunWater data.

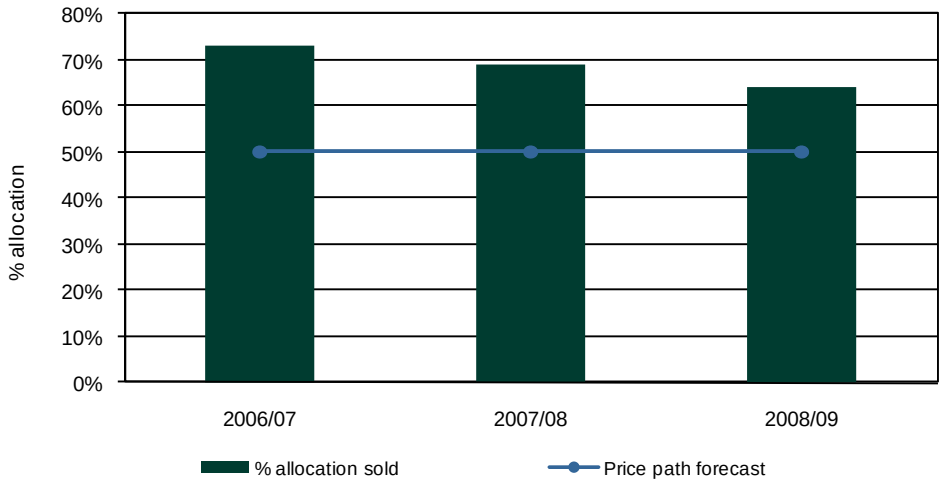
On average, the use levels for the two channel tariff groups in the Mareeba-Dimbulah WSS over the three year period have been above the forecast levels used for the current price paths, as is shown in the following figures.

Figure 85. Forecast and actual sales for the Channel (Outside Re-lift) tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 86. Forecast and actual sales for the Channel (Re-lift) tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Tinaroo Falls Dam was constructed in 1958 and is the sole source of bulk water supply for the Mareeba-Dimbulah WSS. The dam also provides water to the Barron Gorge Hydroelectric Power Station. The dam is supplemented by supply from six small weirs located in the scheme. These weirs range in capacity from 970ML to 244ML.

The table below presents an overview of the bulk storage infrastructure in the Mareeba-Dimbulah WSS.

Table 50. Bulk water service infrastructure in the Mareeba-Dimbulah WSS

Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Tinaroo Falls Dam	438,920	52
Bruce Weir	970	61
Collins Weir	600	57
Solanum Weir	345	59
Dulbil Weir	271	60
Leafgold Weir	260	58
Granite Creek Weir	244	62

Sources: SunWater Annual Report, 2008-09; SunWater online; Natural Resources and Mines (2005). 'Barron Resource Operations Plan.' Queensland Government; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government.

Supplemented streams and the Walsh River are supplied via the channel network, which serve a dual purpose in also providing network services.

Network service infrastructure

The Mareeba-Dimbulah WSS includes a network service drawing water from the Barron River (directly from Tinaroo Falls Dam) and the Walsh River. This network system, which involves some 176km of main channel, is largely interconnected, although there are a number of sub-systems. Of these sub-systems, Paddy's Green and Price Creek require pumping (ie re-lift), as well as the WB Channel 10 system. The table below compares the number of channel systems in the Mareeba-Dimbulah WSS to the number of channel tariff groups in the scheme.

Table 51. No. of channel systems and channel tariff groups in Mareeba-Dimbulah WSS

No. of channel systems	1 system involving several sub-systems (gravity and pumped)
No. of channel tariff groups	2 (gravity & re-lift)

Sources: SunWater online; SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

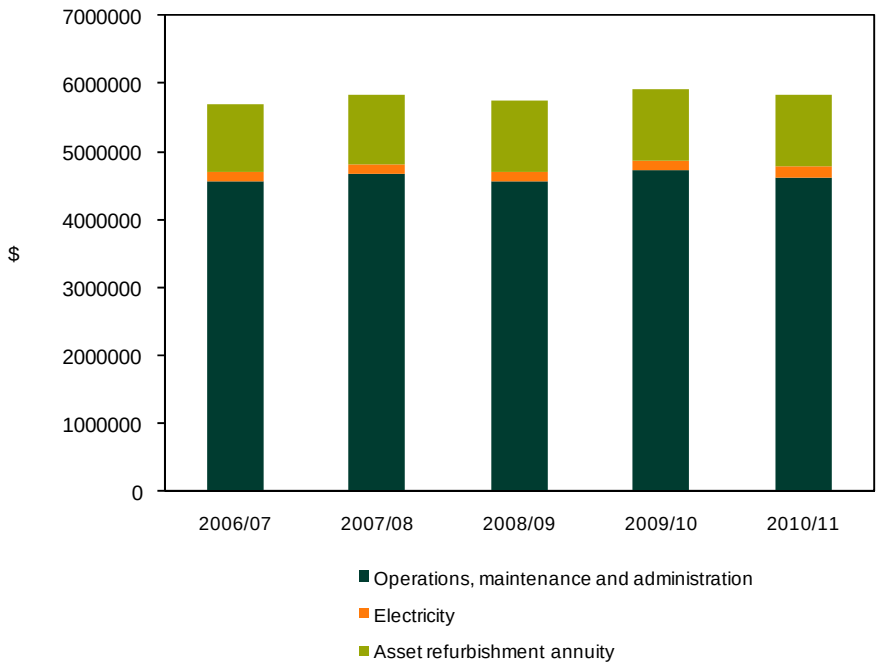
Drainage infrastructure

The Mareeba-Dimbulah WSS also includes a drainage service, although costs are recovered through network service tariffs.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Mareeba-Dimbulah WSS (as a whole) for the 2006/07 to 2010/11 period.

Figure 87. Lower bound costs for the Mareeba-Dimbulah WSS

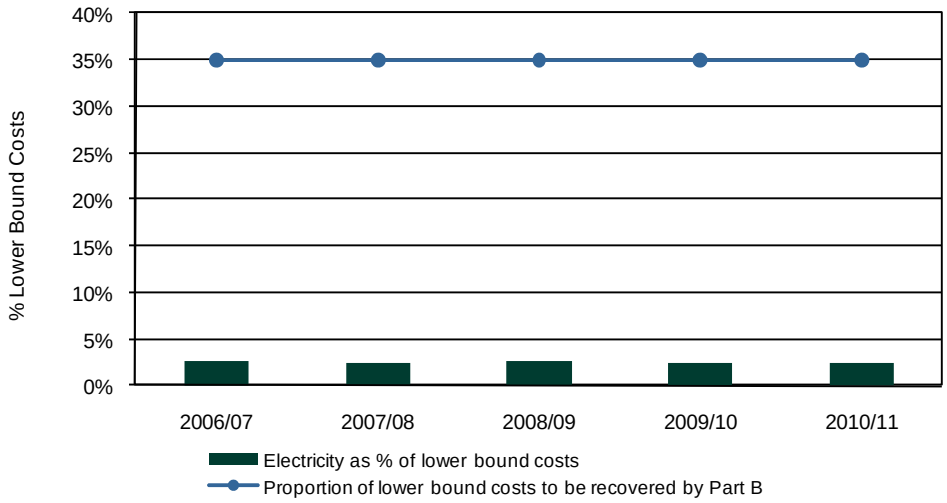


Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006)

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity. The variable component of the lower bound costs is significantly less than the proportion of costs that are recovered by the variable component tariff, however this is distorted by the amalgamation of costs from gravity and pumped sections of the network, as well as the bulk water costs.

The actual relationship between the Part B charge for channel re-lift and electricity costs could not be discerned from the published price path information.

Figure 88. Lower bound cost recovery and variable costs for the Mareeba-Dimbulah WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.17 Scheme description – Nogoa-Mackenzie

Customer and water use information

The table below provides a summary of the key information for the Nogoa-Mackenzie WSS.

Table 52. Summary of Nogoa-Mackenzie WSS

Details	*Nogoa-Mackenzie*
Business Centre	Biloela
Number of Customers	366
Uses of Water	
• Irrigation	The main crops irrigated are cotton, citrus (mandarins, oranges and lemons) and grapes. Other crops irrigated include wheat, pulse crops, sorghum, maize, lucerne, oats, barley and sunflowers.
• Urban Water Supplies	Water is supplied to various towns and townships, including Emerald and Blackwater.
• Industrial	Water demand from the coal mining sector is significant. Some coal mines also supply small townships directly.

Scope of services

Bulk water services are provided in relation to 202,601ML of WAE.

The Nogoa-Mackenzie WSS includes a network service which consists of two channel systems, supplying around 95,000ML of WAE (2005/06). Drainage services are also provided.

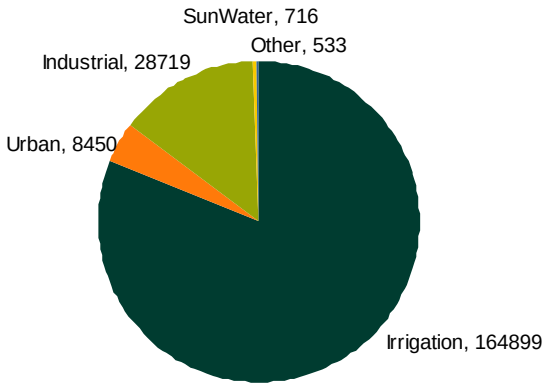
The Blackwater Pipeline also supplies water to various mines, and the town of Blackwater. Stockwater is also supplied from industrial pipelines.

Customer composition

There are 366 customers serviced by the Nogoa-Mackenzie WSS comprising irrigators, local government and coal mining operations. SunWater holds 616ML of high priority WAE and 100ML of medium priority WAE which it trades itself.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority).

Figure 89. Sectoral split - Nogoa-Mackenzie WSS (ML)



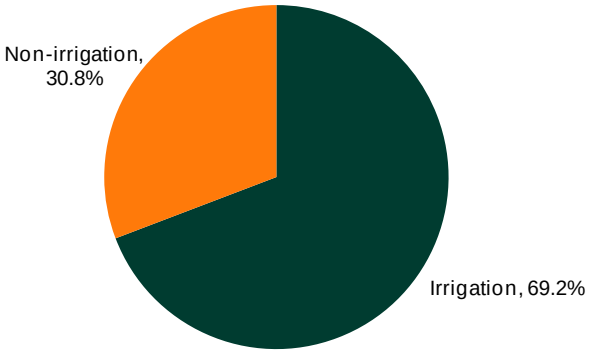
Source: SunWater Annual Report, 2008-09.

While irrigators mostly hold medium priority WAE, a small amount (1,368ML) of high priority WAE is held by irrigators.

SunWater also holds around 31,901ML for distribution losses in the channel system and for the Blackwater Pipeline.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 90. Breakdown of lower bound cost recovery for the Nogoa-Mackenzie WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages for medium priority WAE in the Nogoa-Mackenzie WSS. High priority allocations have been at 100% throughout this period.

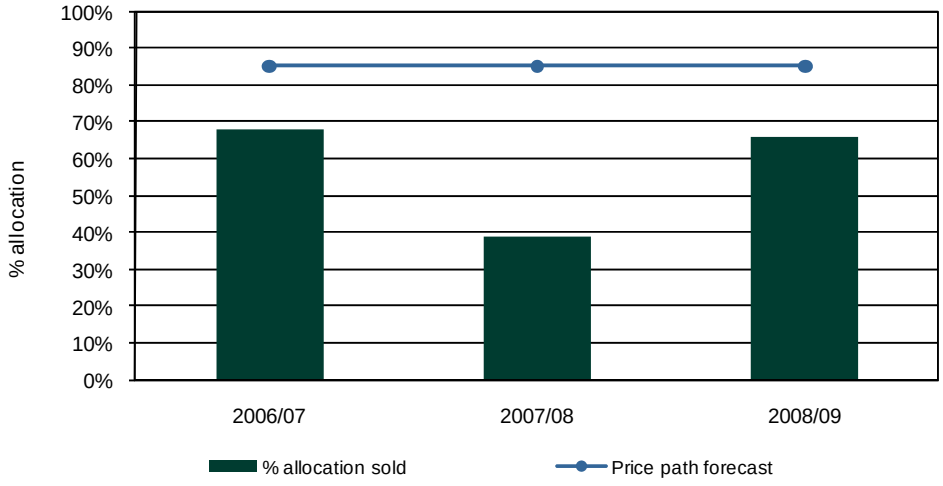
Table 53. Announced allocation for the Nogoa-Mackenzie WSS (medium priority)

Year	*Announced allocation %*
2006/07	80
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

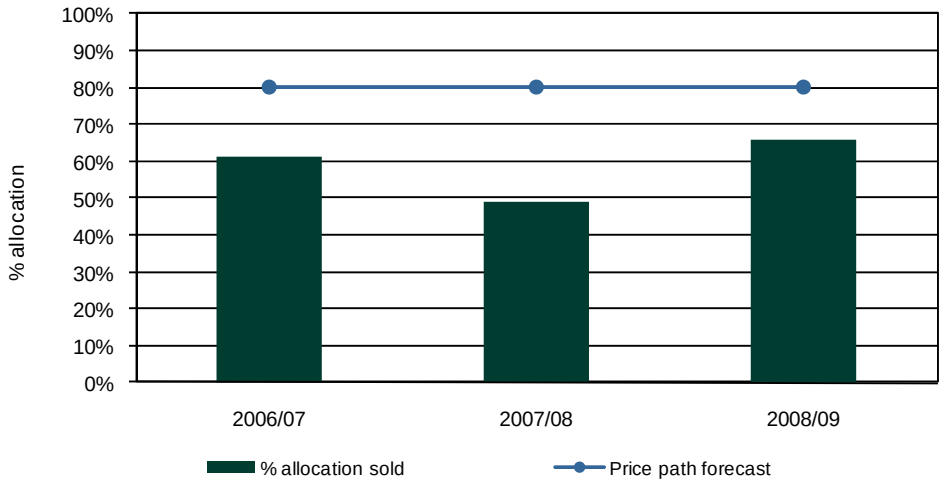
The figures below show historic use compared to the forecasts used for the current price paths for the Nogoa-Mackenzie River and Channel tariff groups. Actual water use to date has been less than the forecast assumed for each of the tariff groups.

Figure 91. Forecast and actual sales for the Nogoa-Mackenzie River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 92. Forecast and actual sales for the Nogoa-Mackenzie Channel tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Fairbairn Dam is the primary source of water supply in the Nogoa-Mackenzie WSS, releasing water to a series of downstream weirs. The construction of the dam was completed in 1972. The scheme is also serviced by four weirs. The table below presents an overview of the bulk storage infrastructure in the Nogoa-Mackenzie WSS.

Table 53. Bulk water service infrastructure in the Nogoa-Mackenzie WSS

Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Fairbairn Dam	1,301,000	38
Bedford Weir	22,900	42
Tartrus Weir	12,000	24
Bingegang Weir	8,060	34
Selma Weir	1,180	58

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government; Department of Environment and Resource Management (2009). 'Fitzroy Basin Resource Operations Plan.' Queensland Government.

Network service infrastructure

The Nogoa-Mackenzie WSS includes a network service, with water being diverted from the Fairbairn Dam to two channel systems which deliver water to the customers throughout the Nogoa-Mackenzie WSS. The Selma Channel System supplies water to customers to the left bank, west and north of Emerald through the 47km long main channel and 26km of subsidiary channels. The Weemah Channel System supplies water to customers to the right bank irrigation area east of Emerald through a 53km long channel.

One tariff applies to both channel systems, as set out below.

Table 54. No. of channel systems and channel tariff groups in Nogoa-Mackenzie WSS

No. of channel systems	2
No. of channel tariff groups	1

Sources: SunWater online; SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

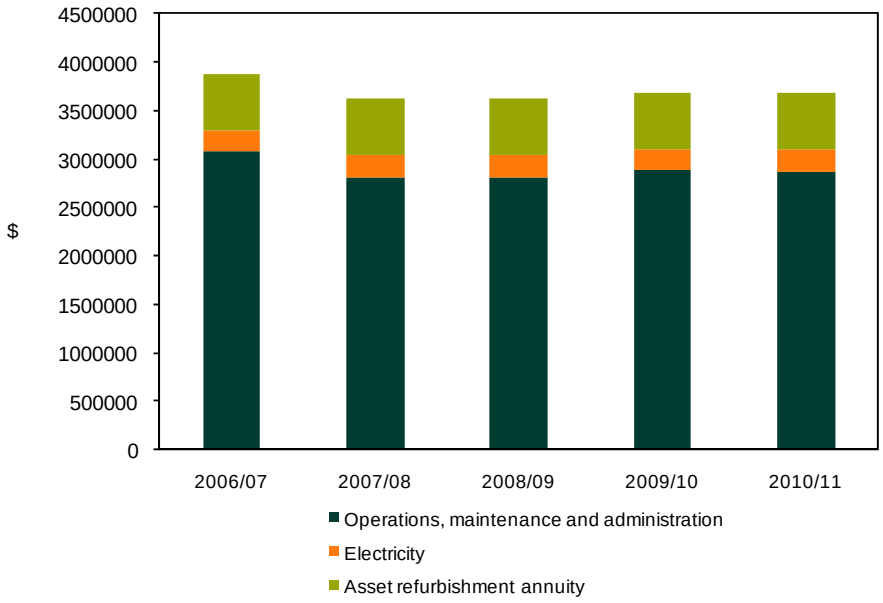
Drainage infrastructure

The scheme also includes a drainage service, with 204km of surface drainage systems providing services to customers in both channel systems.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the whole Nogoa-Mackenzie WSS for the 2006/07 to 2010/11 period.

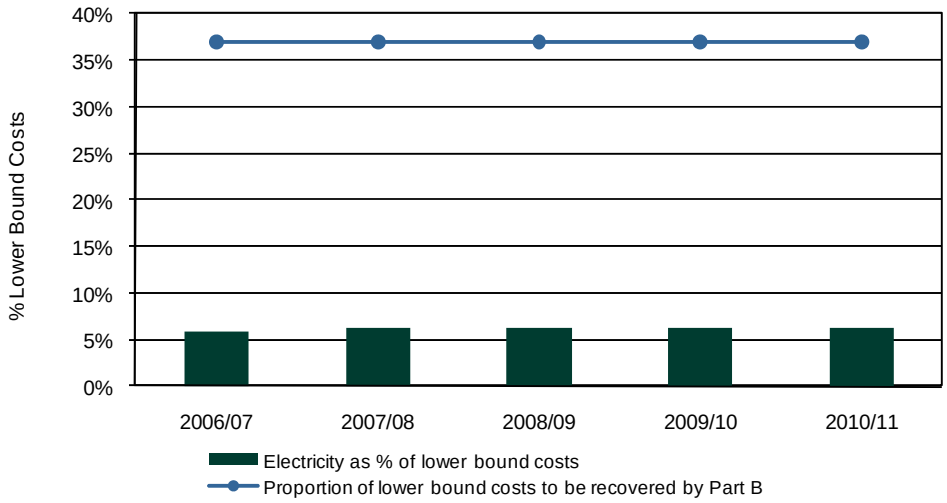
Figure 93. Lower bound costs for the Nogoa-Mackenzie WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity.

Figure 94. Lower bound cost recovery and variable costs for the Nogoa-Mackenzie WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.18 Scheme description – Pioneer River

Customer and water use information

The table below provides a summary of the key information for the Pioneer River WSS.

Table 55. Summary of Pioneer River WSS

Details	***Pioneer River***
Business Centre	Mackay
Number of Customers	23
Uses of Water	
• Irrigation	Water is supplied to irrigators via the Pioneer Valley Water Board. Sugar cane is the predominant crop grown.
• Urban	Water is supplied to Mackay City and other towns.
• Industrial	There are a number of industrial users supplied in the scheme.

Scope of services

Bulk water services are provided in relation to 65,830ML of WAE.

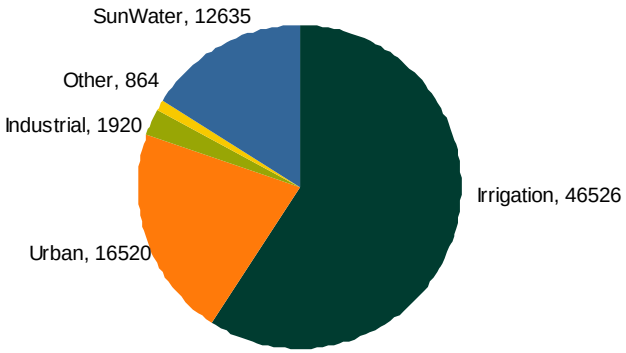
Customer composition

There are 23 customers serviced by the Pioneer River WSS. Irrigators are supplied via the Pioneer Valley Water Board, and are considered a single customer.

SunWater holds 12,635ML of high priority WAE which it holds and trades itself.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority). Irrigation and urban users account for the majority of entitlements.

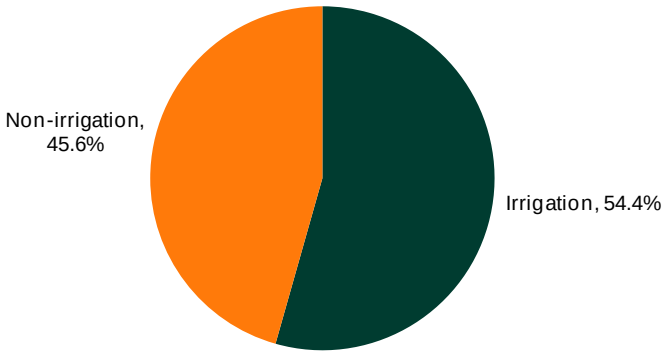
Figure 95. Sectoral split - Pioneer River WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 96. Breakdown of lower bound cost recovery for the Pioneer River WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

Medium priority WAE have received 100% announced allocation over the price path period to date, as can be seen in the table below.

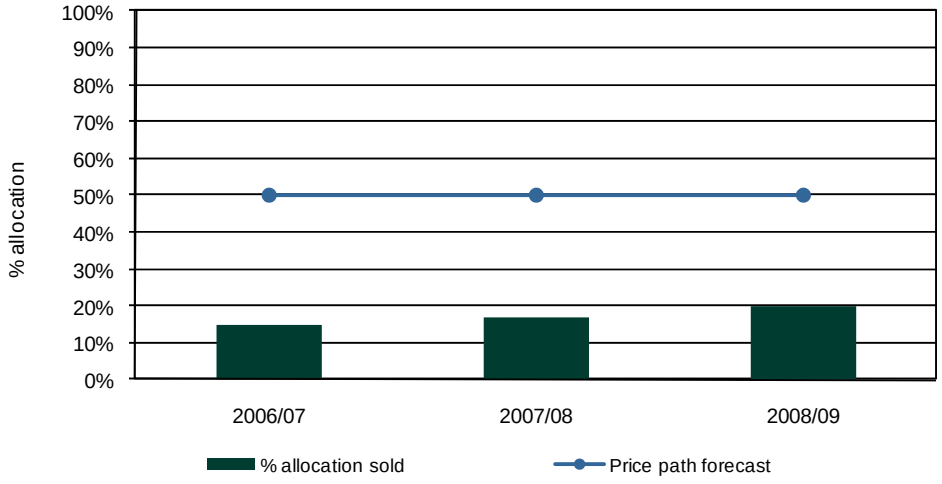
Table 56. Announced allocation for the Pioneer River WSS (medium priority)

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

The figure below shows historic use compared to the forecasts used for the current price paths for the Pioneer Valley Water Board tariff group. Actual water use to date has been less than the forecast assumed.

Figure 97. Forecast and actual sales for the Pioneer Valley Water Board tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Teemburra Dam is the main source of bulk water supply in the Pioneer River WSS. It was constructed in 1996. The scheme's three weirs – Dumbleton, Mirani and Marian - were constructed in 1983, 1987 and 1952 respectively.

The table below presents an overview of the bulk storage infrastructure in the Pioneer River WSS.

Table 57. Bulk water service infrastructure in the Pioneer River WSS

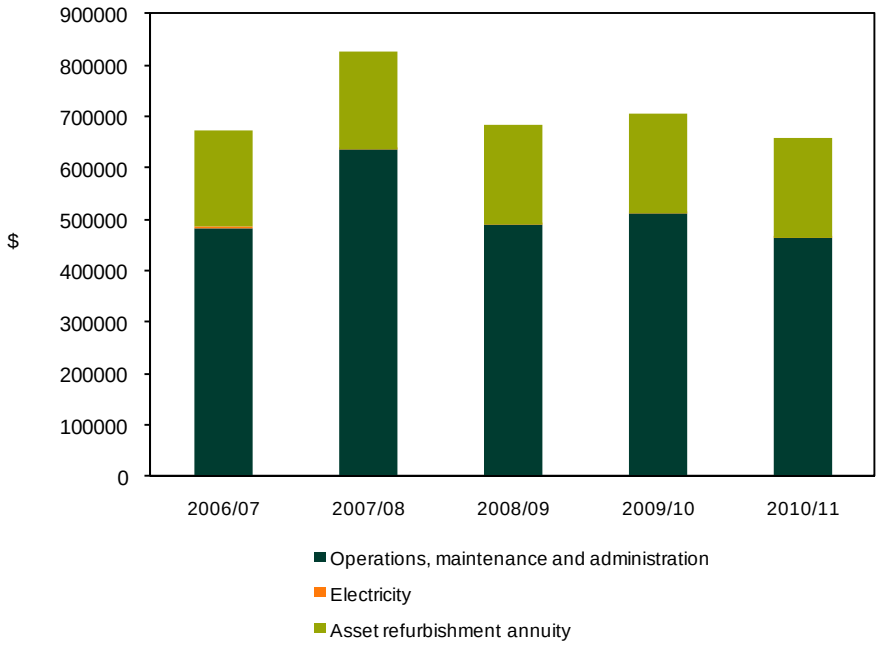
Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Teemburra Dam	147,500	14
Dumbleton Weir	8,840	27
Mirani Weir	4,660	23
Marian Weir	3,980	58

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government; 'Chapter 2: The Mackay Setting.' K. Granger & T. Jones. DOA: 20/01/10. <http://www.ga.gov.au/image_cache/GA4179.pdf>

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Pioneer River WSS for the 2006/07 to 2010/11 period.

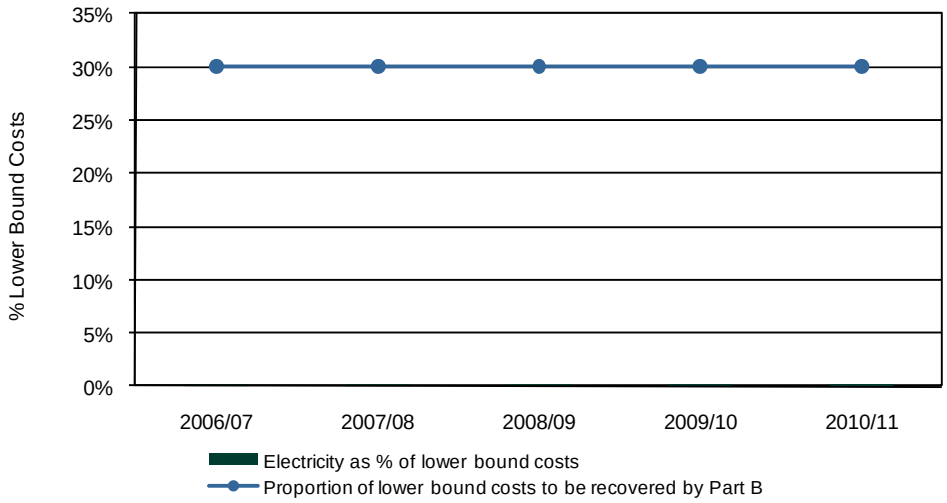
Figure 98. Lower bound costs for the Pioneer River WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

There are no electricity costs for the scheme. Part B charges were set to recover 30% of lower bound costs (refer below).

Figure 99. Lower bound cost recovery and variable costs for the Pioneer River WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.19 Scheme description – Proserpine River

Customer and water use information

The table below provides a summary of the key information for the Proserpine River WSS.

Table 58. Summary of Proserpine River WSS

Details	*Proserpine River*
Business Centre	Ayr
Number of Customers	91
Uses of Water	
• Irrigation	Sugar cane is the dominant crop in the scheme.
• Urban Water Supplies	Water is supplied to the towns of Bowen, Proserpine, Airlie Beach and Midge Point.
• Industrial	Water is supplied for sugar milling.

Scope of services

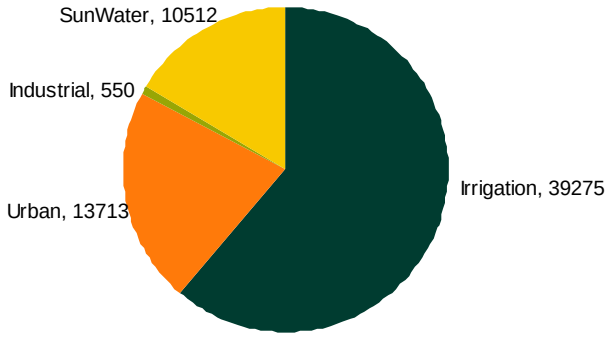
Bulk water services are provided in relation to 53,538ML of WAE.

Customer composition

There are 91 customers serviced by the scheme comprising irrigation, local government and sugar mills. SunWater holds 10,512ML of high priority WAE which it trades itself. The Kelsey Creek Water Board and Six Mile Creek Water Boards also take water from the scheme.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority), and highlights the significance of irrigation and urban supplies in the scheme.

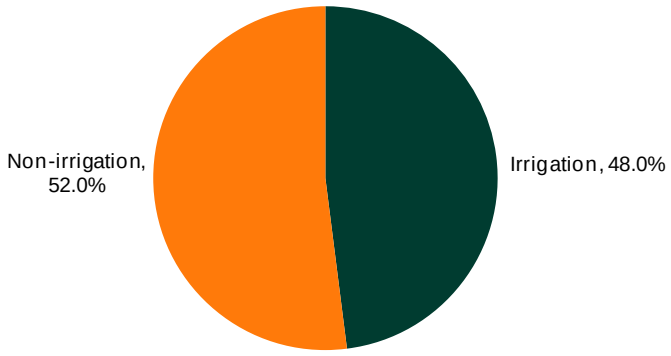
Figure 100. Sectoral split - Proserpine River WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 101. Breakdown of lower bound cost recovery for the Proserpine River WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

Announced allocations have been at 100% throughout the price path period to date, as can be seen in the table below.

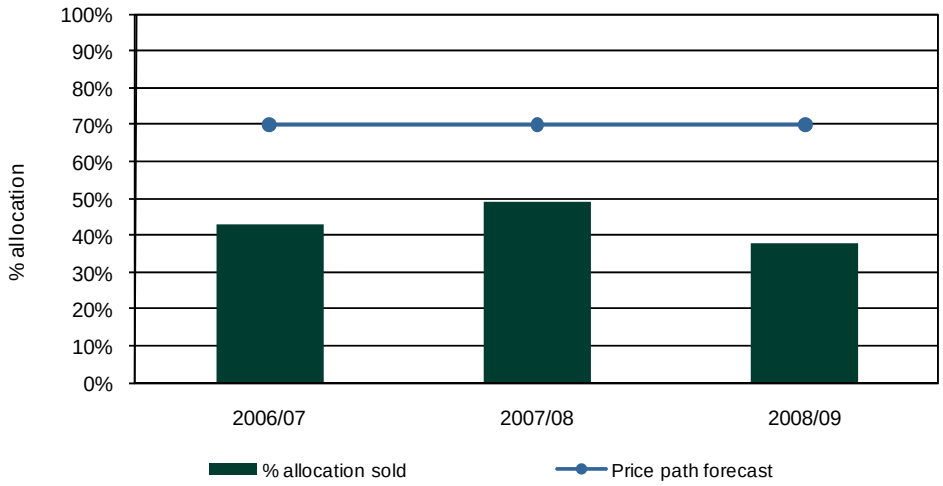
Table 59. Announced allocation for the Proserpine River WSS (medium priority)

Year	*Announced allocation %*
2006/07	100
2007/08	100
2008/09	100

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

The figure below shows historic use compared to the forecasts used for the current price paths for the Proserpine River tariff group. Actual water use has been well below that assumed for the price paths.

Figure 102. Forecast and actual sales for the Proserpine River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water service infrastructure

The Peter Faust Dam is the only storage in the scheme, and was completed in 1990. The table below provides an overview of the information for the Peter Faust Dam.

Table 60. Bulk water service infrastructure in the Proserpine River WSS

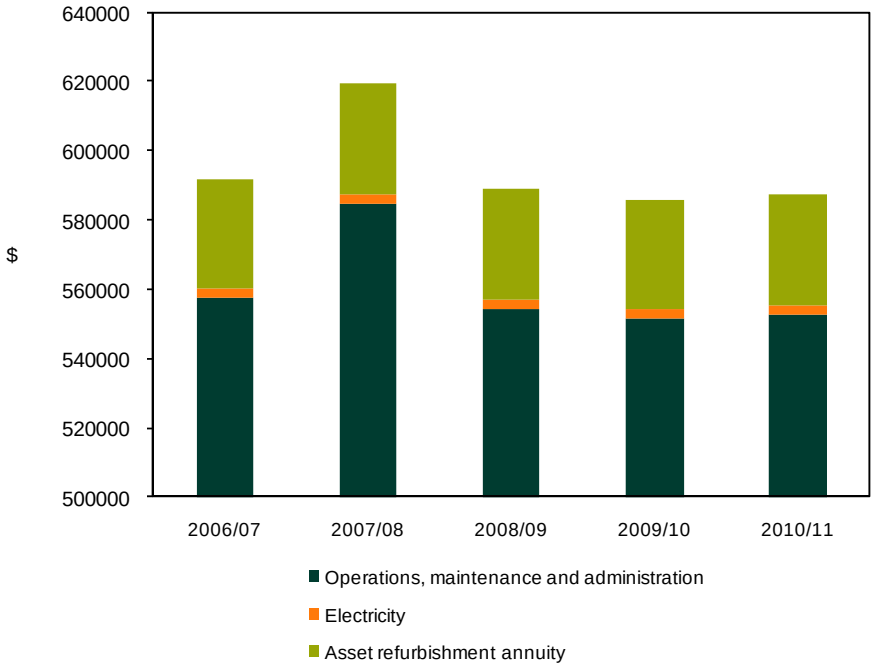
Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Peter Faust Dam	491,400	20

Sources: SunWater Annual Report, 2008-09; SunWater online.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Proserpine River WSS for the 2006/07 to 2010/11 period.

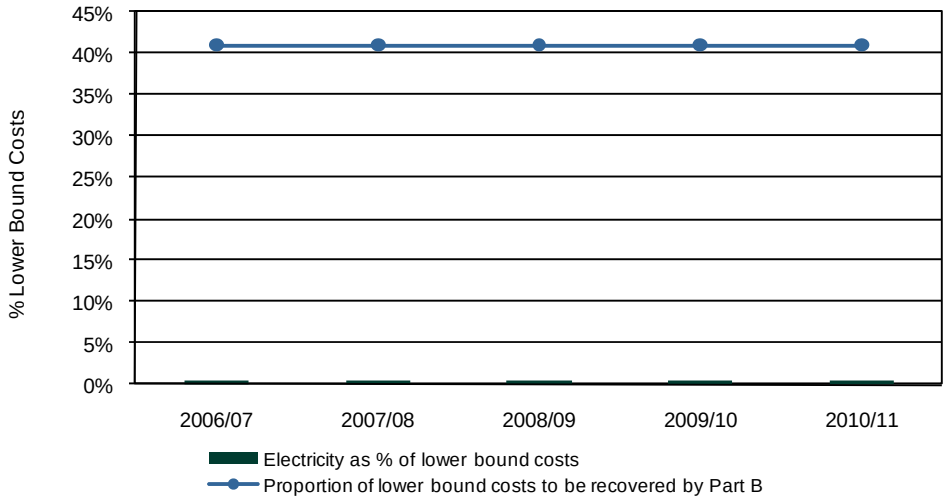
Figure 103. Lower bound costs for the Proserpine River WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity. Electricity costs account for a very small proportion of lower bound costs.

Figure 104. Lower bound cost recovery and variable costs for the Proserpine River WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.20 Scheme description – St George

Customer and water use information

The table below provides a summary of the key information for the St George WSS.

Table 61. Summary of St George WSS

Details	*St George*
Business Centre	Toowoomba
Number of Customers	163
Uses of Water	
• Irrigation	Water is supplied for the irrigation of cotton, wheat, grapes, melons, peanuts and small crops.
• Urban Water Supplies	The town of St George is supplied from the scheme.
• Industrial	Industrial users include an abattoir and tourist accommodation.

Scope of services

Bulk water services are provided in relation to 73,763ML of WAE.

The St George WSS includes a network service via a channel system supplied from the E J Beardmore Dam. Around 51,000ML of WAE are supplied from the channel system (2005/06).

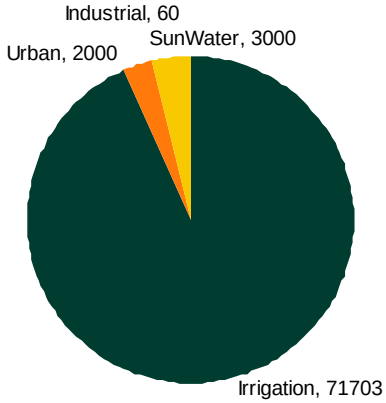
Drainage services are also provided.

Customer composition

There are 163 customers serviced by the St George WSS comprising irrigation, urban water suppliers and small industrial users. SunWater holds 3,000ML of high priority WAE which is offered on the temporary transfer market. This amount is notionally reserved for Balonne Shire Council, but not required by them.

The figure below shows the proportion of WAE held by each sector (unadjusted for priority), with irrigation dominating the customer base of the scheme.

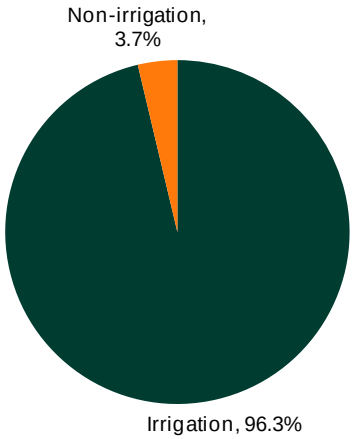
Figure 105. Sectoral split – St George WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 106. Breakdown of lower bound cost recovery for the St George WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

Most irrigators operate under a capacity sharing regime, rather than announced allocation. It is not possible to summarise the water available to irrigators under this regime, as this will be user specific. The table below sets out the historic announced allocation percentages as an indication of water availability to irrigators.

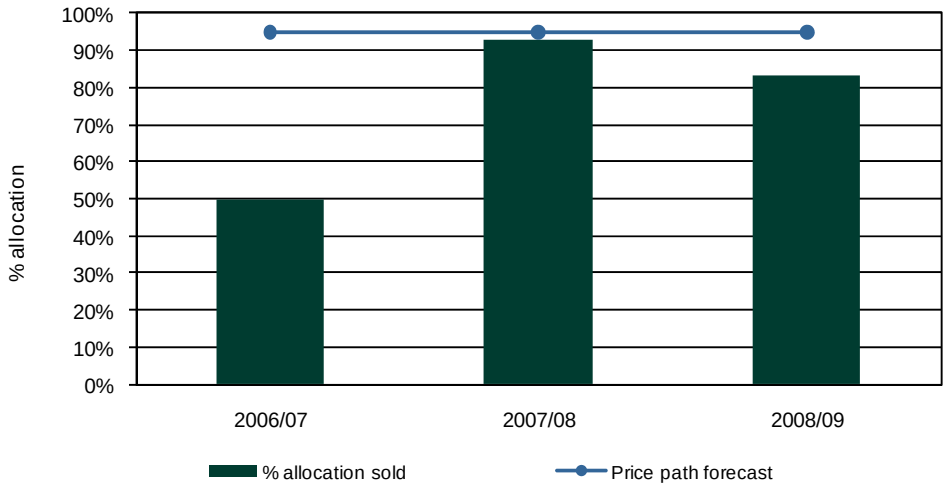
Table 62. Announced allocation for St George WSS (medium priority)

Year	*Announced allocation %*
2006/07	89
2007/08	96
2008/09	47

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

The figures below show historic use compared to the forecasts used for the current price paths for the three tariff groups included in the scheme. In the St George Channel tariff group, usage levels were below the forecast for all three years, however the difference was minimal in 2007/08 due to 12,923ML of water being channel harvested.

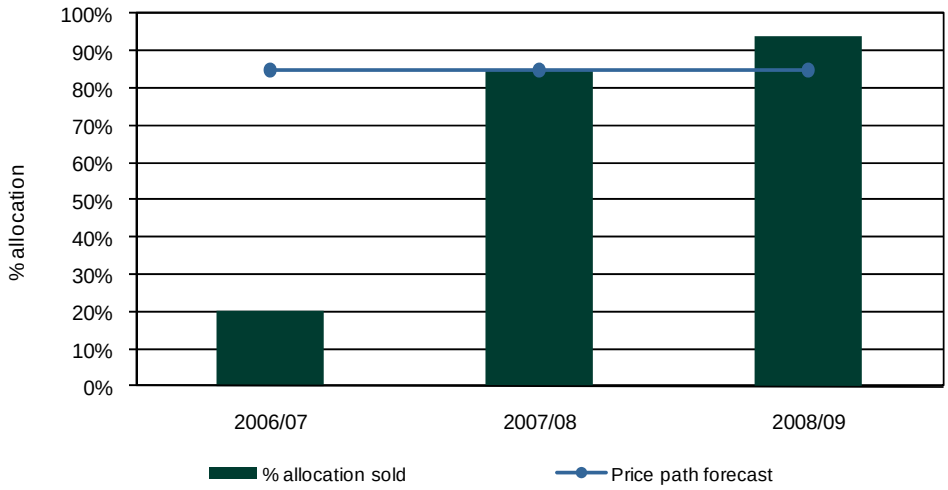
Figure 107. Forecast and actual sales for the St George Channel tariff group (including channel harvesting)



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

For the Regulated (Beardmore Dam/Balonne River) tariff group, usage has increased from well below the forecast level in 2006/07 to exceed the forecast in 2008/09.

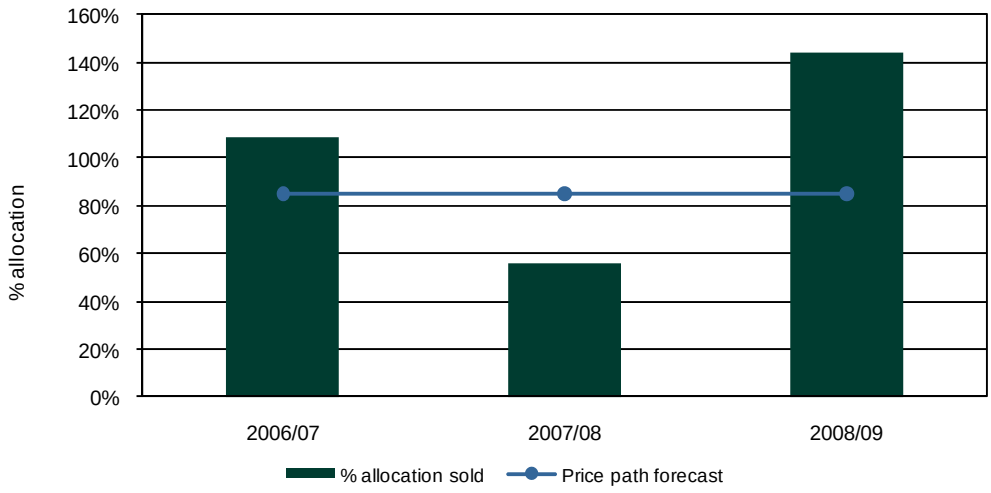
Figure 108. Forecast and actual sales for the Regulated (Beardmore Dam/Balonne River) tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

For the Regulated (Thuraggi Watercourse) tariff group, use levels were below the forecast in 2007/08 (which included 732ML of channel harvested water) and above the forecast level in 2006/07 and 2008/09.

Figure 109. Forecast and actual sales for the Thuraggi Watercourse tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water supply infrastructure

The E J Beardmore Dam is the main storage in the scheme, and was completed in 1972. There are also three weirs –Jack Taylor Weir, Buckinbah Weir and Moolabah Weir – which were constructed in 1953, 1968 and 1969 respectively.[20]

The table below presents an overview of the bulk storage infrastructure in the St George WSS.

Table 63. Bulk water service infrastructure in the St George WSS

Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
E J Beardmore Dam	81,700	38
Jack Taylor Weir	10,100	57
Buckinbah Weir	5,120	42
Moolabah Weir	2,580	41

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government.

Network service infrastructure

The St George WSS includes a network service, which comprises to main channels (St George and Buckinbah main channels) drawing water from Jack Taylor Weir and Buckinbah Weir respectively. There is some interconnection between these systems. .

The table below compares the number of channel systems in the St George WSS to the number of channel tariff groups in the scheme.

Table 64. No. of channel systems and channel tariff groups in St George WSS

No. of channel systems	1
No. of channel tariff groups	1

Sources: SunWater online; SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006)..

Drainage infrastructure

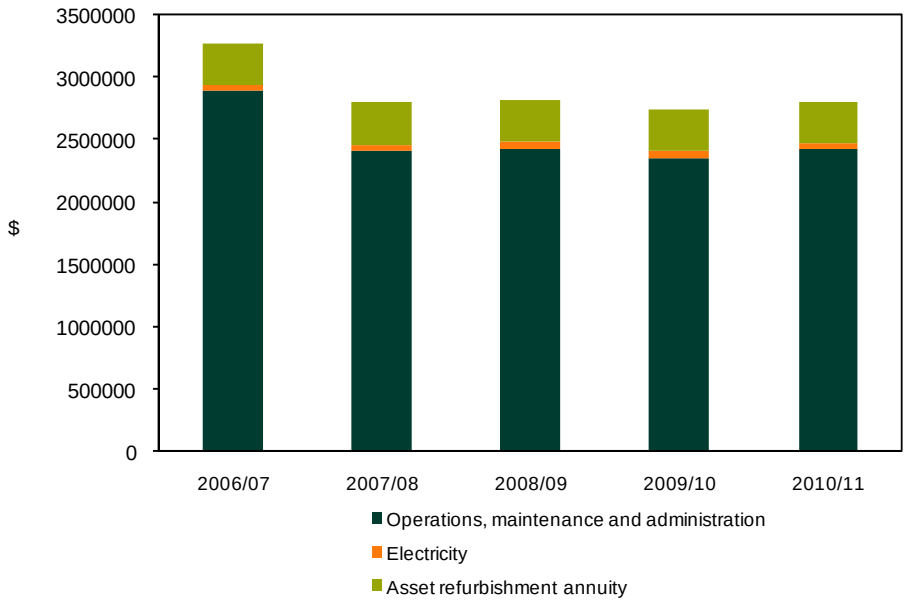
The St George WSS also includes a drainage service, with a network of channels and drains servicing the land on the left bank of the Balonne River, extending 32km south-east of St George.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the St George WSS for the 2006/07 to 2010/11 period.

[20] The Jack Taylor Weir was constructed over two stages, the first of which was completed in 1953 and the second of which was completed in 1959.

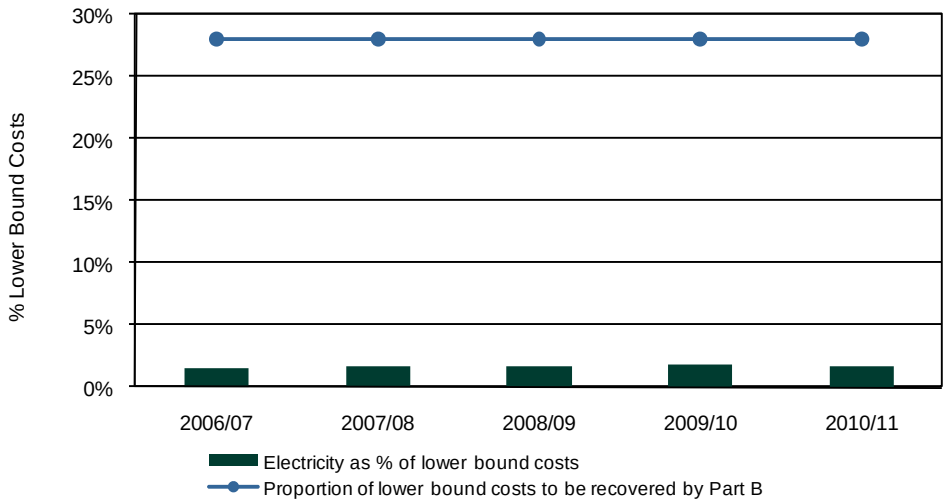
Figure 110. Lower bound costs for the St George WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity.

Figure 111. Lower bound cost recovery and variable costs for the St George WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.21 Scheme description – Three Moon Creek

Customer and water use information

The table below provides a summary of the key information for the Three Moon Creek WSS.

Table 65. Summary of Three Moon Creek WSS

Details	***Three Moon Creek***
Business Centre	Biloela
Number of Customers	92
Uses of Water	
• Irrigation	Water is supplied from groundwater reserves in the scheme to irrigated agriculture including dairy, piggeries, winter and summer cereal cropping and lucerne.
• Urban Water Supplies	Water supplies the towns of Monto and Mulgildie.

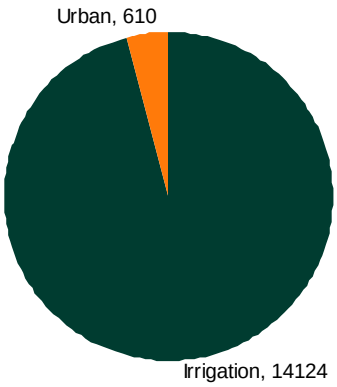
Scope of services

Bulk water services are provided in relation to 14,734ML of WAE. Water is taken via bores (groundwater WAE) and river pumps (surface water WAE).

Customer composition

There are 92 customers serviced by the Three Moon Creek WSS comprising a local government and irrigators. Only a small portion of WAE is held for urban uses. This is shown in the diagram below.

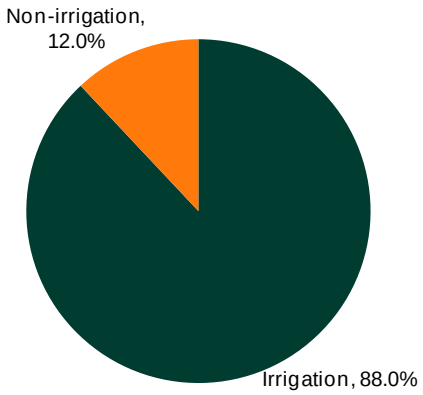
Figure 112. Sectoral Split - Three Moon Creek WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors.

Figure 113. Breakdown of lower bound cost recovery for the Three Moon Creek WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

The table below sets out the historic announced allocation percentages since the commencement of the price paths for the Three Moon Creek WSS, for medium priority WAE.

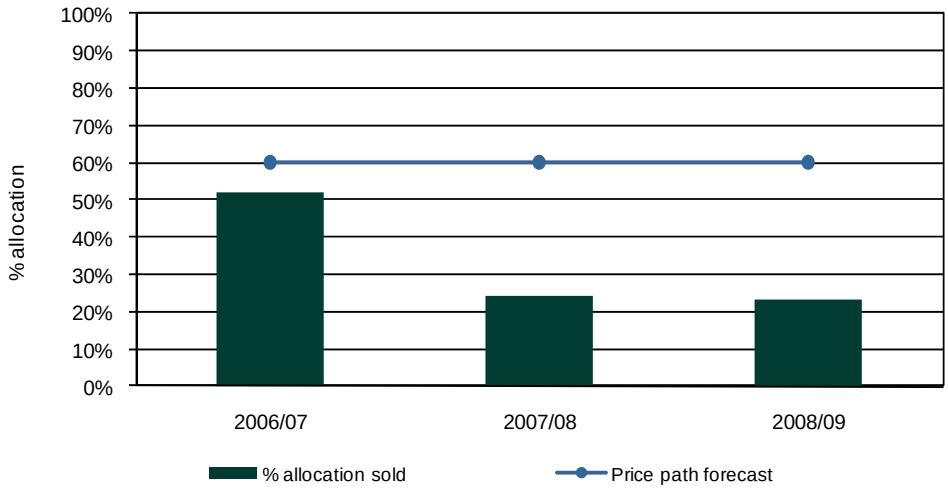
Table 66. Announced allocation for the Three Moon Creek WSS (medium priority)

Year	*Announced allocation %*
2006/07	55
2007/08	30
2008/09	29

Note: The announcement date for the data contained in this table is 1 July for the relevant year.
Source: SunWater online.

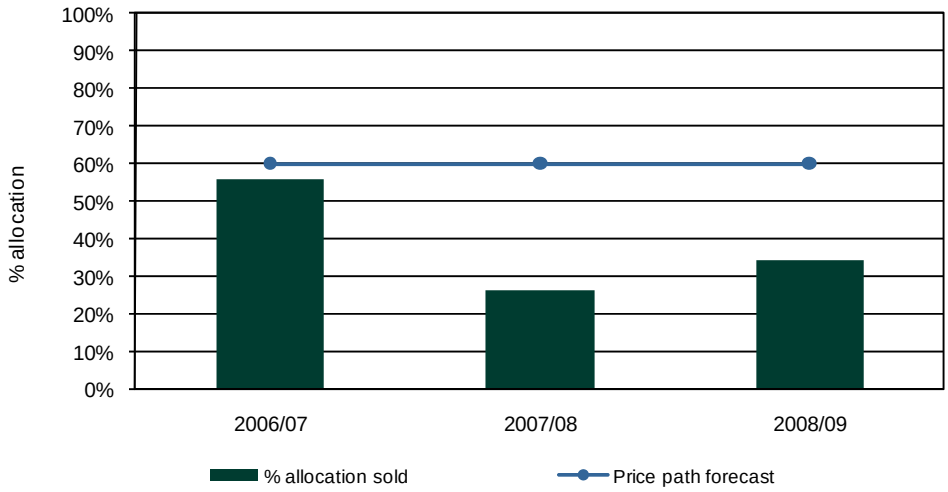
The figures below show historic use compared to the forecasts used for the current price paths for the Three Moon Creek Groundwater and River tariff groups. Water use to date has been lower than the forecast used for the price paths for ground and surface water supplies.

Figure 114. Forecast and actual sales for the Three Moon Creek Groundwater tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 115. Forecast and actual sales for the Three Moon Creek River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water supply infrastructure

The Cania Dam is the major storage in the scheme. The construction of the dam was completed in 1982. Releases are made from the dam to recharge groundwater reserves in the region which supply the majority of customers in the scheme. The scheme is also supplied by five small weirs, which range in capacity from 330ML to 27ML.

One of these small weirs is the Youlambie Weir. Water is diverted from the Youlambie Weir into a channel system to enhance groundwater recharge in the scheme for groundwater WAE.

The table below presents an overview of the bulk storage infrastructure in the Three Moon Creek WSS.

Table 67. Bulk water service infrastructure in the Three Moon Creek WSS

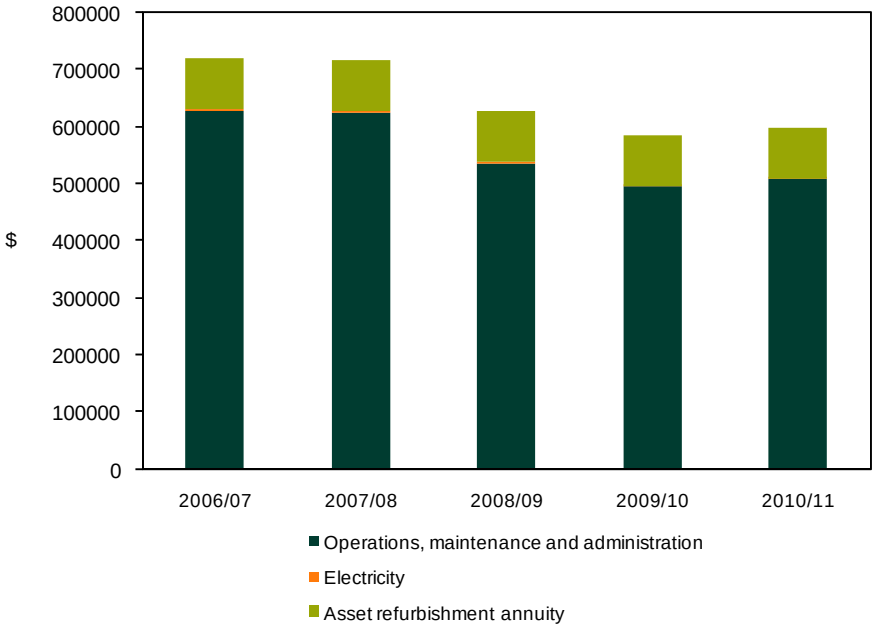
Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Cania Dam	88,500	18
Mulgildie Weir	330	58
Avis Weir	250	Not available
Youlambie Weir	143	36
Bazley Weir	75	Not available
Monto Weir	27	38

Sources: SunWater Annual Report, 2008-09; SunWater online; Natural Resources and Water (2008). 'Interim Resource Operations Licence for Three Moon Creek Water Supply Scheme. Issued to SunWater.' Queensland Government; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Three Moon Creek WSS for the 2006/07 to 2010/11 period.

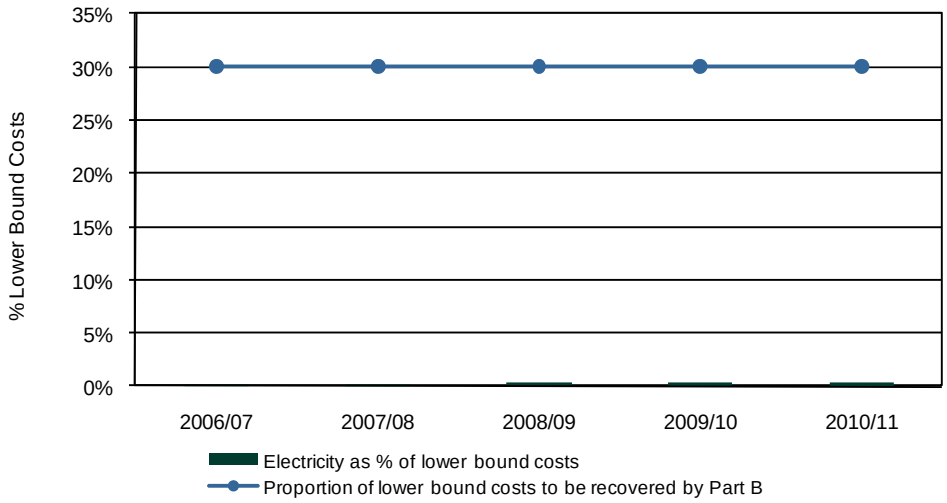
Figure 116. Lower bound costs for the Three Moon Creek WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Electricity costs are minimal in the scheme. Part B charges are set to recover 30% of lower bound costs.

Figure 117. Lower bound cost recovery and variable costs for the Three Moon Creek WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.22 Scheme description – Upper Burnett

Customer and water use information

The table below provides a summary of the key information for the Upper Burnett WSS.

Table 68. Summary of Upper Burnett WSS

Details	*Upper Burnett*
Business Centre	Bundaberg
Number of Customers	158
Uses of Water	
• Irrigation	The scheme supplies water for the irrigation of citrus, small crops and dairy farming.
• Urban Water Supplies	The towns of Eidsvold, Mundubbera, and Gayndah are supplied from the scheme.

Scope of services

Bulk water services are provided in relation to 30,681ML of WAE (including from Kirar Weir, which is owned by Burnett Water).

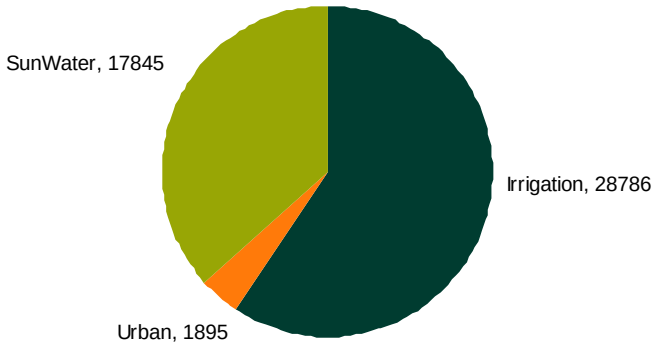
Customer composition

There are 158 customers serviced by the Upper Burnett WSS comprising irrigation and urban water suppliers. SunWater (via its subsidiary Burnett Water) holds 17,845ML of medium priority WAE which it trades itself.

There are also 210ML of 'free' allocations in the scheme, which did not attract any cost allocation in the current water prices (refer later sections).

The figure below shows the proportion of WAE held by each sector (unadjusted for priority), including WAE held by SunWater (via Burnett Water) from Kirar Weir.

Figure 118. Sectoral Split - Upper Burnett WSS (ML), including Kirar Weir

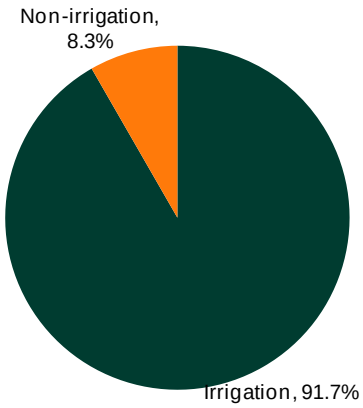


Source: SunWater Annual Report, 2008-09.

There is 210ML of 'free' allocation in the scheme.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors, and excludes Kirar Weir costs.

Figure 119. Breakdown of lower bound cost recovery for the Upper Burnett WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006)..

Water availability and use for the irrigation sector

There has been limited water available from the scheme over the price path period to date, as set out below.

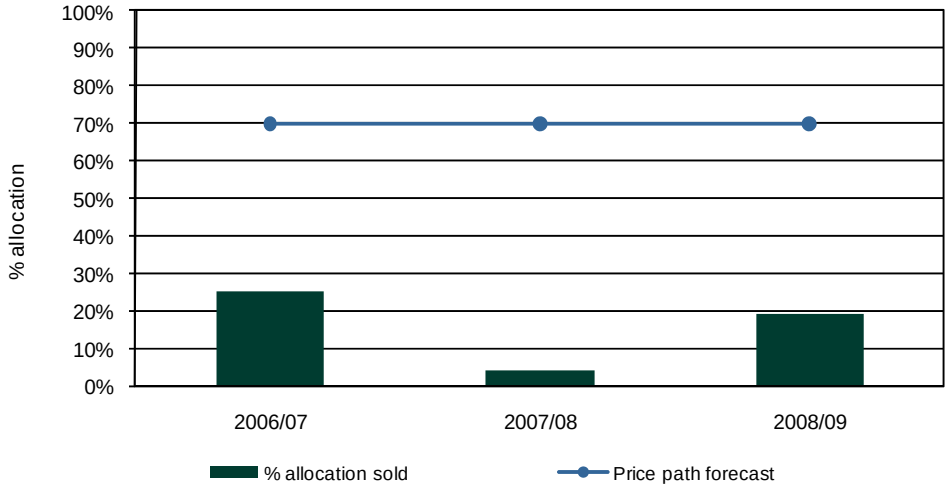
Table 69. Announced allocation for the Upper Burnett WSS (medium priority)

Year	*Announced allocation %*
2006/07	0
2007/08	64
2008/09	28

Note: The announcement date for the data contained in this table is 1 July for the relevant year. Announced allocations can increase during a water year.
Source: SunWater online.

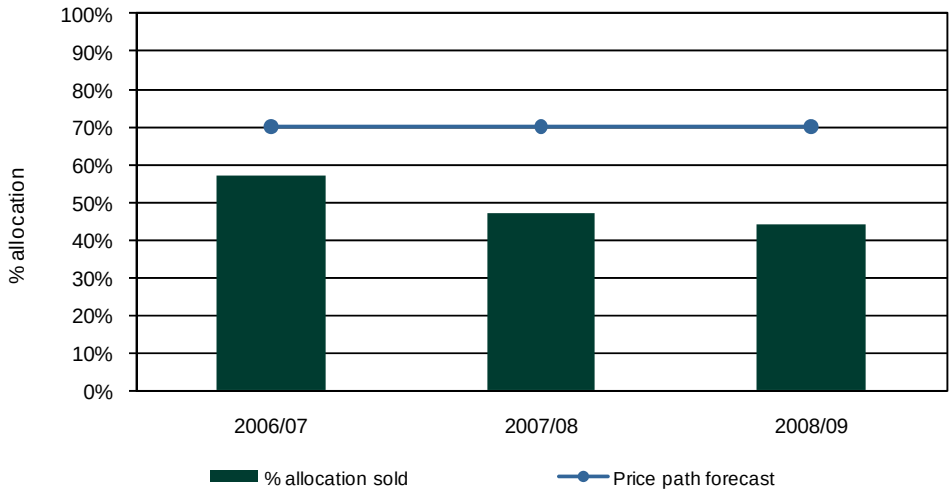
The figures below show historic use compared to the forecasts used for the current price paths for the Upper Burnett John Goleby Weir and Regulated tariff groups. Water use has been well below the forecast for the two scheme price paths. This does not include water allocations from Kirar Weir, which were excluded from the price path.

Figure 120. Forecast and actual sales for the John Goleby Weir tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Figure 121. Forecast and actual sales for the Nogo/Burnett River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water supply infrastructure

The Wuruma Dam is the primary storage, and was constructed in 1968.

The district also consists of four weirs. The first storage, Jones Weir, was constructed to provide irrigation water to the citrus and dairy industries in 1951. The other weirs in the scheme include Claude Wharton Weir, Kirar Weir, and the John Goleby Weir. These weirs were constructed in 1987, 2005 and 1986 respectively.

The table below presents an overview of the bulk storage infrastructure in the Upper Burnett WSS.

Table 70. Bulk water service infrastructure in the Upper Burnett WSS

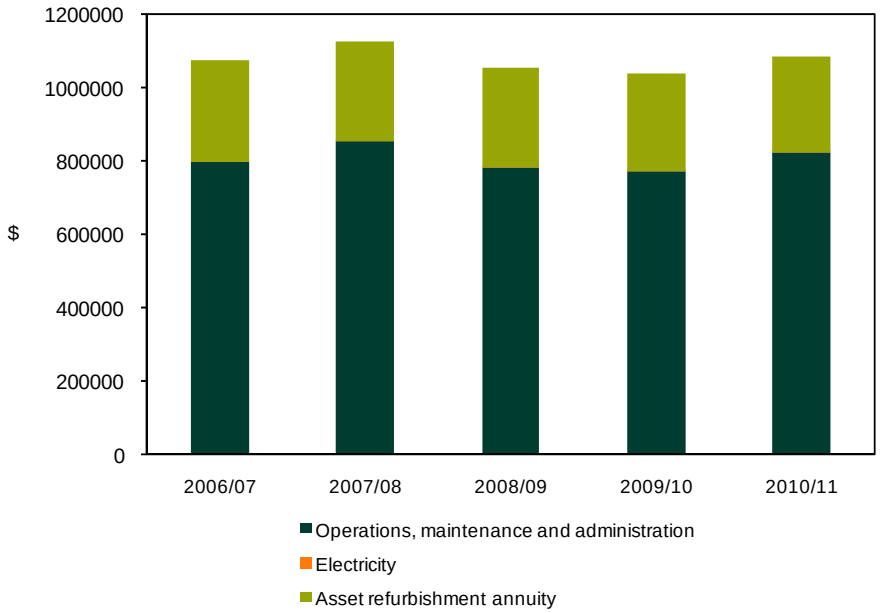
Storage infrastructure	***Capacity (ML)***	***Age (yrs)***
Wuruma Dam	165,400	32
Claude Wharton Weir	12,800	23
Kirar Weir (Burnett Water)	9,540	5
Jones Weir	3,720	49
John Goleby Weir	1,690	24

Sources: SunWater Annual Report, 2008-09; SunWater online; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government; 'Kirar Weir', SunWater. DOA: 20/01/10. <http://www.sunwater.com.au/burnettwater_kirarweir.htm>

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Upper Burnett WSS for the 2006/07 to 2010/11 period.

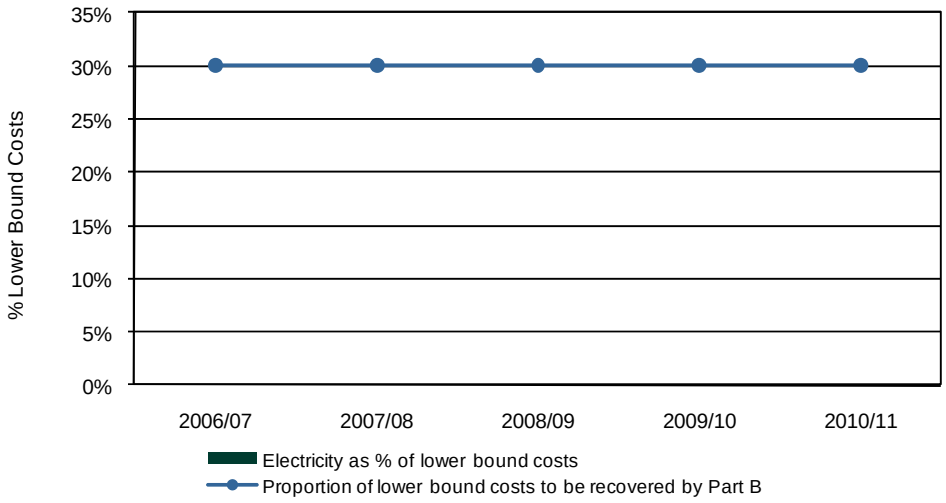
Figure 122. Lower bound costs for the Upper Burnett WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

There are no electricity costs for the scheme. Part B charges were set to recover 30% of lower bound costs (refer below).

Figure 123. Lower bound cost recovery and variable costs for the Upper Burnett WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

3.23 Scheme description – Upper Condamine

Customer and water use information

The table below provides a summary of the key information for the Upper Condamine WSS.

Table 71. Summary of Upper Condamine WSS

Details	***Upper Condamine***
Business Centre	Toowoomba
Number of Customers	104
Uses of Water	
• Irrigation	Crops irrigated include, cotton, sorghum, maize, soybean, sunflower, barley, oats, wheat, canary and lucerne.
• Urban Water Supplies	The scheme provides water to the towns of Warwick and Cecil Plains.

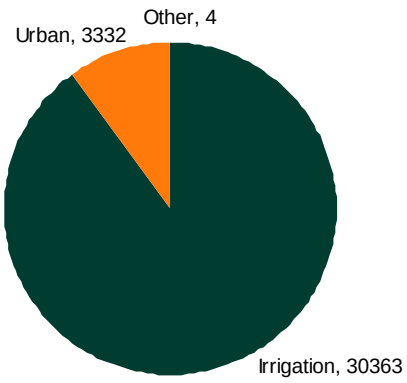
Scope of services

Bulk water services are provided in relation to 33,699ML of WAE. This includes around 14,000ML (including 7,000ML of Risk A WAE) supplied in the North Branch section of the scheme. Water is supplemented via diversions from the Yaramalong Pump Station and a pipeline. As such, this asset provides a bulk water service, rather than a network service, as it supplements supplies for WAE located at the North Branch part of the scheme.

Customer composition

There are 104 customers serviced by the Upper Condamine WSS comprising irrigation and local government. Most WAE are held by irrigators, as set out below.

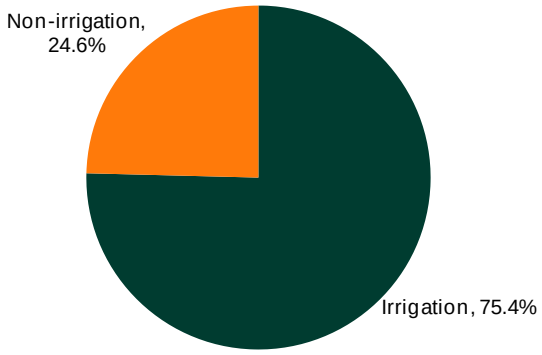
Figure 124. Sectoral split - Upper Condamine WSS (ML)



Source: SunWater Annual Report, 2008-09.

The figure below presents the breakdown of the proportions of lower bound costs that are recovered from the irrigation and non-irrigation sectors. The figure shows that the proportion of lower bound costs that is recovered from the irrigation sector is significantly less than the proportion of total ML that are supplied to irrigators in the scheme.

Figure 125. Breakdown of lower bound cost recovery for the Upper Condamine WSS



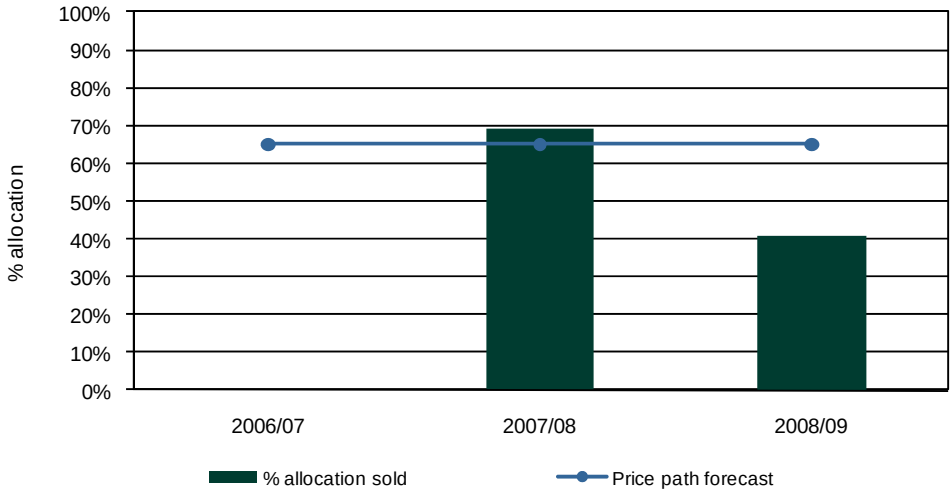
Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

Water availability and use for the irrigation sector

Irrigators hold a range of entitlements in the scheme. There has been limited water available for medium priority entitlements over recent years with 0% in 2006/07 and 2008/09, but 96% in 2007/08. More reliable entitlements (High A and High B) have been at between 60% and 100% over the same period. Water is also available through 'credit water' events.

The figures below show historic use compared to the forecasts used for the current price paths for the tariff groups included in the scheme. In the Sandy Creek/Condamine River section, water use has, on average, been below forecast.

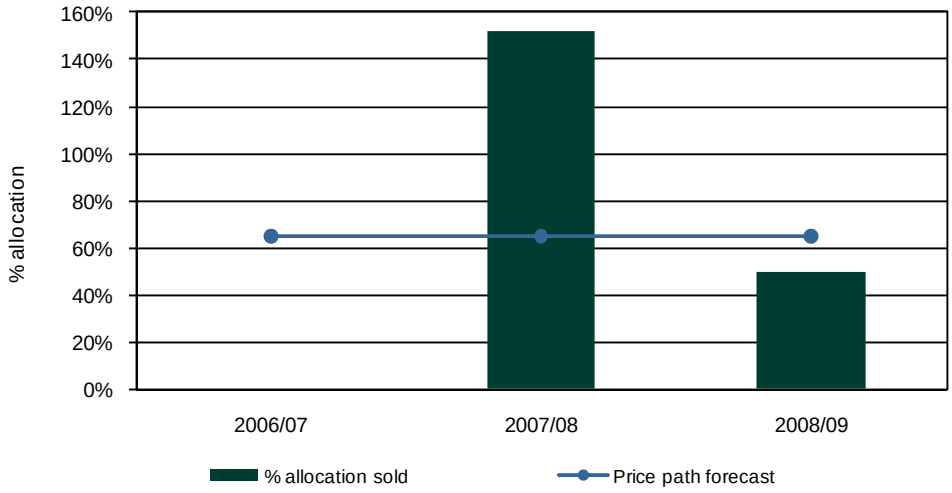
Figure 126. Forecast and actual sales for the Sandy Creek/Condamine River tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

For the North Branch, water use was well above the forecast level in 2007/08 before falling to below forecast in 2008/09.

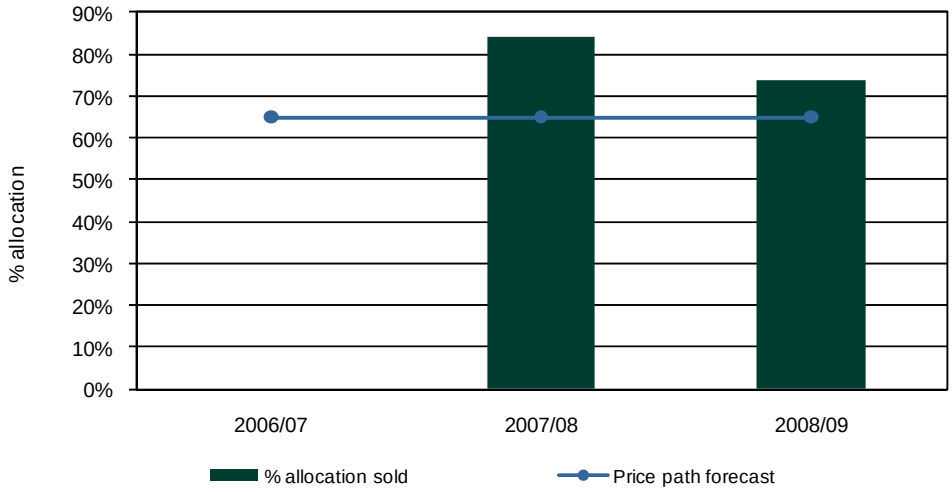
Figure 127. Forecast and actual sales for the North Branch tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

For the North Branch Risk A, water use has been above forecast in recent years.

Figure 128. Forecast and actual sales for the North Branch Risk A tariff group



Sources: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006); SunWater data.

Infrastructure

Bulk water supply infrastructure

The Leslie Dam is the major water storage in the scheme. The first stage of the dam's construction was completed in 1965. The second construction stage was commissioned

following dry summers in 1969 and 1970. This construction phase was completed in 1986 and doubled the storage capacity of the dam.

Supply from the Leslie Dam is supplemented by seven small weirs located throughout the scheme. The capacity of these weirs ranges from 700ML to 80ML.

The table below presents an overview of the bulk storage infrastructure in the Upper Condamine WSS.

Table 72. Bulk water service infrastructure in the Upper Condamine WSS

Storage infrastructure	*Capacity (ML)*	*Age (yrs)*
Leslie Dam	106,200	45
Cecil Plains Weir	700	63
Talgai Weir	640	29
Yarramalong Weir	390	21
Wando Weir	310	Not available
Lemon Tree Weir	300	31
Melrose Weir	160	Not available
Nangwee Weir	80	Not available

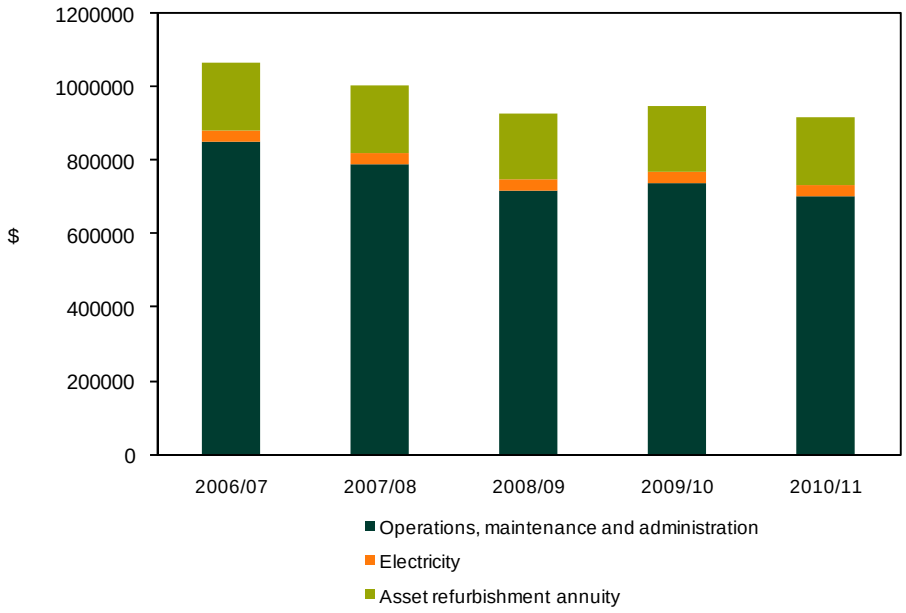
Sources: SunWater Annual Report, 2008-09; SunWater online; Natural Resources and Water (2008). 'Condamine and Balonne Resource Operations Plan.' Queensland Government; Water Resources Commission (1989). 'Annual Report 19898-89.' Queensland Government.

The Yarramalong pump station and pipeline is another bulk water asset, supplementing WAE on the North Branch part of the scheme.

Cost structure

The figure below presents a breakdown of the lower bound costs attributable to the Upper Condamine WSS for the 2006/07 to 2010/11 period.

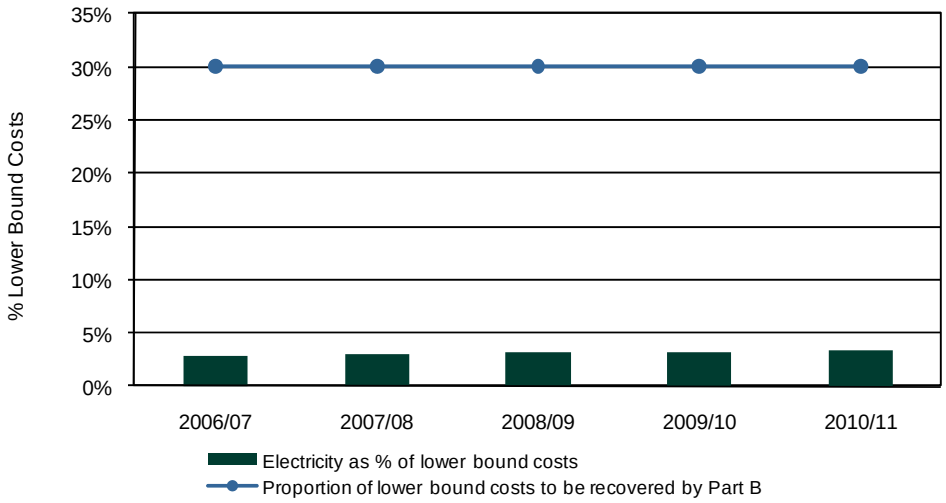
Figure 129. Lower bound costs for the Upper Condamine WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006).

The figure below compares the proportion of lower bound costs that are recovered by the Part B tariff to the proportion of lower bound costs that are accounted for by electricity. This data is at a whole of scheme level. Information was not available about the variable costs associated with supplying North Branch WAE from the Yaramalong pump station.

Figure 130. Lower bound cost recovery and variable costs for the Upper Condamine WSS



Source: SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006)..

4. STATUS OF WATER PLANNING ACTIVITIES

In general, the water planning process involves the following steps:

- Interim Resource Operations Licence (IROL) – which is a transitional instrument prior, setting out interim water management arrangements for the scheme;
- Water Resource Plan (WRP) – which proscribes the environmental requirements and consumptive pool for each catchment, and sets performance objectives for WAE;
- Resource Operations Plan (ROP) – which sets out management rules for the scheme to achieve the requirements of the Water Resource Plan; and
- Resource Operations Licence (ROL) – which is issued to the storage owner, requiring them to operate the storage and comply with other regulations in accordance with the Resource Operations Plan.

This chapter summarises the status of water planning activities for each scheme.

4.1 Current plans and licenses in place

Most schemes have completed the initial water planning process, with ROPs and ROLs already established. This means that WAE have been formalised in those schemes, and permanent trading of those entitlements can occur.

In five schemes, IROLs are still in place.

The table below provides an overview.

Table 73. Summary of water planning status by scheme

Scheme	*WRP Catchment*	*IROL*	*WRP*	*ROP*	*ROL*
Barker Barambah	Burnett Basin		✓	✓	✓
Bowen Broken Rivers	Burdekin		✓	✓	✓
Boyne River and Tarong	Burnett Basin		✓	✓	✓
Bundaberg	Burnett Basin		✓	✓	✓
Burdekin – Haughton	Burdekin		✓	✓	✓
Callide Valley	Fitzroy Basin	✓	✓		
Chinchilla Weir	Condamine		✓	✓	✓

Scheme	*WRP Catchment*	*IROL*	*WRP*	*ROP*	*ROL*
	Balonne				
Cunnamulla	Warrego / Paroo / Bulloo / Nebine		✓	✓	✓
Dawson Valley	Fitzroy Basin		✓	✓	✓
Eton	Pioneer		✓	✓	✓
Lower Mary	Mary	✓			
Lower Fitzroy	Fitzroy Basin		✓	✓	✓
Macintyre Brook	Border Rivers		✓	✓	✓
Maranoa River	Condamine Balonne		✓	✓	✓
Mareeba-Dimbulah	Barron		✓	✓	✓
Nogoa-Mackenzie	Fitzroy Basin		✓	✓	✓
Pioneer River	Pioneer		✓	✓	✓
Proserpine River	Whitsunday	✓			
St George	Condamine Balonne	✓	✓		
Three Moon Creek	Burnett Basin	✓	✓		
Upper Burnett	Burnett Basin		✓	✓	✓
Upper Condamine	Condamine Balonne		✓	✓	✓

Source: http://www.derm.qld.gov.au/wrp/timetable.html

4.2 Planning and review cycle

The tables below set out the historical development of water resource plans and ROPs, and the current status. WRPs are generally reviewed on a 10-year cycle. The Fitzroy Basin WRP and Burnett WRP are currently under review, and the initial Whitsunday WRP is also in

development. However others may be reviewed over the next 12 months or over the period of the next price paths.

In some cases amendments to the WRPs are also underway, however these are generally limited to unsupplemented WAE, which do not directly relate to SunWater's services.

The table below sets out the current activities related to each WRP, by scheme, and also shows the timing of release of each WRP as an indication of the timing for future reviews.

Table 74. Status of Water Resource Plans

Water supply scheme	*Plan area*	*WRP approved*	*ROP approved*	*Relevant amendment or review activities*
Mareeba Dimbulah	Barron	19 Dec 2002	16 Jun 2005	
Macintyre Brook	Border Rivers	4 Dec 2003	14 Mar 2008	
Burdekin Haughton Bowen Broken	Burdekin	2 Aug 2007	11 Dec 09	
Barker Barambah Boyne River and Tarong Bundaberg Three Moon Creek Upper Burnett	Burnett	14 Dec 2000	29 May 2003	Review underway
Chinchilla Weir Maranoa River Upper Condamine St George	Condamine-Balonne	5 Aug 2004	12 Dec 2008	Decisions about the Lower Balonne (St George WSS) deferred in current plans
Callide Dawson Valley Lower Fitzroy	Fitzroy	23 Dec 1999	9 Jan 2004	Review underway

Water supply scheme	*Plan area*	*WRP approved*	*ROP approved*	*Relevant amendment or review activities*
Nogoa Mackenzie				
Lower Mary	Mary	28 Jul 2006	-	
Eton Pioneer	Pioneer	20 Dec 2002	16 June 2005	
Cunnamulla	Warrego/ Paroo/ Bulloo/ Nebine	4 Dec 2003	20 Jan 2006	
Proserpine	Whitsunday	-	-	

Source: http://www.derm.qld.gov.au/wrp/timetable.html

5. SCHEME SERVICE STANDARDS

This chapter examines the types of services provided by SunWater in relation to the price paths, and the standards for those services.

5.1 Service framework

SunWater operates under a 'decentralised' service regime, whereby customers hold their own WAE and manage supply risks accordingly (eg through trading). SunWater's role under this regime is to supply the owner of that WAE with water, in accordance with the conditions of that WAE and other contractual terms. This means that customers bear the risks of water availability and risks associated with conditions for their WAE generally.

A similar regime applies for network services, where SunWater provides services in accordance with each customer's access rights, expressed as a flow rate or roster or a combination of both.

This contrasts to a 'centralised' regime where the water supplier takes responsibility for managing the demand-supply balance in its area of operations. This includes taking measures to respond to supply-side events, including droughts, and planning augmentations to meet demand growth. This centralised regime typically applies in metropolitan / urban centres.[21] By their nature, centralised regimes require a 'bundled' service whereby the agency controls those aspects of the supply chain for which it has planning and supply responsibilities. This includes ownership of the underlying water entitlements used to supply customers.

Under a decentralised regime, SunWater does not have such a role although it can negotiate separate arrangements to source additional water for customers in times of drought or for expansion.[22]

This decentralised regime sets the framework for SunWater's bulk water, network and drainage services.

5.2 Bulk water service

The bulk water service is provided in all 22 schemes, and involves making water available to a customer's nominated diversion point, in accordance with their WAE. This can include delivery to:

- a customer's pump on a river/stream, via release from storage or diversion into a supplemented stream,
- a customer's pump in the ponded area of a dam;
- a bore in a regulated groundwater area; or
- a nominated pump owned by an entity other than the customer – for example a provider of network services. This can include SunWater itself (as owner of the irrigation district), or other service providers taking water on behalf of their customers.

This service is largely constrained by water management regulation, and in particular the ROP and SunWater's ROL. These regulations set, among other things:

21 The Gladstone Area Water Board is one example of a provider with a centralised water supply service.

22 Recent examples include the Gattonvale Offstream Storage (Bowen Broken WSS) and Burdekin-Moranbah Pipeline (Burdekin-Haughton WSS). These projects responded to drought events for industrial customers.

- the rules for water sharing, including determining annual allocations, and flexible water accounting arrangements such as the carryover of unused allocation from one year to the next;
- rules about minimum levels for weirs;
- rules about the diversion of water into offstream storages;
- conditions for making environmental releases and water quality monitoring;
- measuring and reporting water use against each WAE; and
- rules for temporary and permanent transfers.

The majority of the value generated by the service relates to the 'creation' of a regulated or supplemented WAE, through construction of water storage. These WAE have different characteristics, which are discussed below.

Water access entitlement characteristics

The water planning process, via WRPs and ROPs, leads to the establishment of environmental flow objectives for a catchment, and the consumptive pool available for extractions. Water access entitlements are established from this consumptive pool, and are assigned performance characteristics in terms of historic reliability. This process usually involves legacy entitlements which pre-dated the WRP, and are usually set out in scheme IROLs. As such, the number and type of WAE products are, to a large extent, already set.

This is important in so far as the WRP process does not look to develop the optimum suite of WAE products, such as the mix between medium and high priority, but rather is constrained by the (interim) entitlements that already exist.

This is relevant to understanding the relationship between different products and their equivalence in terms of assigning costs between product groups. This is discussed below.

Establishing WAE products and performance standards

The water resource planning process sets the performance standards for WAE in each scheme. The purpose of these standards, called water allocation security objectives (WASOs), is to ensure that subsequent water management decisions do not compromise the expected or actual performance of those entitlements. These decisions could include allowing changes to water entitlements such as moving a WAE from one river zone to another, or in setting conversion factors between priority products. Achieving environmental flows (which are also set in the WRP) is another threshold requirement for such decisions.

These WASOs are determined using statistics generated from hydrologic models, which typically adopt historic streamflow sequences.[23]

Within each WSS, there are usually a number of different classes (or products) of WAE. The most common classes are high priority and medium priority, and in general, irrigators hold medium priority WAE. The water sharing rules under each ROP determine the relative access to water for each priority.

[23] These WASOs are not a 'guarantee' about actual, future performance as streamflows in the future will be different to those in the past. WAE holders bear the risk of the actual performance (water availability) of their WAE.

In essence, high priority WAE holders get priority access when there is insufficient water in storage to supply all entitlements. Furthermore, the water sharing rules might require a reserve to be held for future years for high priority WAE,[24] before any water is available to lower priority entitlements. Importantly, these rules do not differentiate based on the use of water, but rather the priority of the entitlement.

This might result in medium priority WAE receiving a percent of their nominal entitlement, which is called the announced allocation. These announced allocation percentages for each scheme were set out in Chapter 3.

The water sharing rules may also require or set critical water sharing arrangements, to apply in times of severe shortage. These critical water sharing rules might differentiate access in terms of water use – for example giving priority access in such times for essential services such as urban supplies or power generation.

The WASOs for each scheme provide an indication of the relative performance or standard between medium and high priority WAE. These are expressed in terms of the percent of months or years where the full (100%) nominal entitlement could not be met, using the hydrologic model. The table below provides a summary of these WASOs, where they have been set. Notably, very few WASOs for high priority are set at 100%.

Table 75. WASOs for water supply schemes

Scheme	***Water Resource Plan***	***High priority***		***Medium priority***	
		Annual	*Monthly*	*Annual*	*Monthly*
Barker Barambah	Burnett Basin	95% (monthly/annual not stated)		85% (monthly/annual not stated)	
Bowen Broken Rivers	Burdekin Basin	95%/90%[a]	98%	65%	85%
Boyne River and Tarong	Burnett Basin	95% (monthly/annual not stated)		73% (monthly/annual not stated)	
Bundaberg	Burnett Basin	95% (monthly/annual not stated)		90% (monthly/annual not stated)	
Burdekin – Haughton	Burdekin Basin	100%	-	90%	95%
Callide Valley	Fitzroy Basin	95-100% [b]		82-88% [b]	
Chinchilla Weir	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]
Cunnamulla	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]
Dawson Valley	Fitzroy Basin	95-100% [b]		82-88%[c] [b]	
Eton	Pioneer Valley	-	95%	-	85%
Lower Mary	Mary Basin	-	95%	-	88%
Lower Fitzroy	Fitzroy Basin	95-100% [b]		82-88% [b]	
Macintyre Brook	Border Rivers	Note[e]	Note[e]	Note[e]	Note[e]

[24] Incorporating storage and transmission losses.

Scheme	Water Resource Plan	High priority		Medium priority	
		Annual	Monthly	Annual	Monthly
Maranoa River	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]
Mareeba-Dimbulah	Barron	95%	95%	75%	90%
Nogoa-Mackenzie	Fitzroy Basin	95-100% [b]		82-88% [b]	
Pioneer River	Pioneer Valley	-	95%	-	85%
Proserpine River	Whitsunday (draft)	99% - 100%	97%-100%	65% - 70%[e]	75% - 80%[e]
St George	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]
Three Moon Creek	Burnett Basin	95% (monthly/annual not stated)		Not specified[d]	
Upper Burnett	Burnett Basin	95% (monthly/annual not stated)		90% (monthly/annual not stated)	
Upper Condamine	Condamine Balonne	Note[e]	Note[e]	Note[e]	Note[e]

a For water allocations in the high A1 priority group in the Bowen Broken Water Supply Scheme, the annual supplemented water sharing index must be at least 95%, while for allocations in the high A2 priority group, the annual supplemented water sharing index must be at least 90%.

b The 'water allocation security performance indicator' for schemes within the Fitzroy Basin region are defined as the median of the simulated monthly reliabilities for water allocations of a particular priority group.

c For as 'Medium A reliability' WAE. A different WASO applies for Medium B WAE.

d Whilst the Water Resource Plan for the Burnett Basin specified a percentage relating to medium priority allocations for the Three Moon Creek water project area below which allocation losses should be minimised, no minimum security level was specified for medium priority allocations in this region.

e The water resource plan does not specify the WASO as a percentage, but instead refers to it as needing to be not less than the percentage immediately before any decision is made in relation to the ROP or amendment/change of a WAE under the ROP.

f Lower WASOs apply to WAE held by the Kelsey Creek and Six Mile Creek water boards.

Measuring equivalence between different priority products

As set out above, the development of each WRP and ROP does not explicitly consider the equivalence between different products, but rather adopts existing entitlements (eg as specified in IROLs) as a starting point, and formally assigning WASOs to those entitlements that are consistent with environmental flow objectives under the WRP

In recent years, conversion factors have been developed for three schemes that enable a WAE to be changed from one priority to another:

- Nogoa-Mackenzie WSS – where 3ML of medium priority WAE can be converted to 1ML of high priority (and vice versa);
- Lower Fitzroy WSS – where 1.5ML of medium priority WAE can be converted to 1ML of high priority; and
- Burdekin-Haughton WSS – where 1.77ML of medium priority WAE can be converted to 1ML of high priority (and vice versa).[25]

[25] The precise conversion factor in the ROP is 0.565ML of high priority for 1ML of medium priority.

However, these conversion factors are not without other constraints, in particular constraints about the minimum and maximum amount of high priority and medium priority WAE that can exist in various river zones or in the scheme as whole. These constraints, which occur in most (if not all) ROPs, are designed to manage the impact on changes in the location of entitlements on other WAE holders and environmental flows.[26]

Hence, these conversion factors may provide an indication of equivalence between the two products, but should not be interpreted as being definitive across the whole scheme.

This compares to the approach we understand was taken for conversion factors for the current price paths, where hydrologic modelling to establish an equivalent yield for each entitlement (high and medium priority). An illustration is set out below:

- Medium Priority monthly reliability– 80%
- High Priority monthly reliability – 95%
- Equivalent yield (total allocations) at 80% reliability – 5,000ML
- Equivalent Yield (total allocations) at 99% reliability – 1,000ML

Costs would then be allocated in accordance with each entitlement based on its 'equivalent' yield. For example, if irrigators held 2,500ML of medium priority allocation, they would be allocated 50% of the costs (ie 2500 / 5000). If the non-irrigation sector held 100ML of high priority entitlements, they would be allocated 10% of the costs (100/1000).

Bulk water service characteristics and standards

As set out above, the water reliability aspect of the bulk water service is determined through the water planning process, and in applying water sharing rules in each ROP. As such, this is not an aspect of service that is within the control of SunWater, nor consistent with a decentralised service regime. Indeed other aspects that might normally be considered part of a water supply service, such as water quality, are also normally beyond the direct scope of this service. [27] Rather, the bulk water service is focussed on delivering water to a customer in accordance with their WAE, with the key service characteristic relating to the timing and continuity of supply. This is summarised in the table below.

[26] For example, if high priority WAE become clustered in one zone (eg weir or dam storage), this may affect transmission losses or water sharing rules that in turn will affect other entitlements and environmental flows.

[27] Water quality can be influenced through catchment management and storage management measures. However, bulk water services do not involve the treatment of water. There may be regulatory requirements for drinking water service providers.

Table 76. Generic service aspects and responsibilities – bulk water service

Service Aspect	*Service Provider*	*Customer*	*Comment*
Water availability		✓	Customers hold WAE, and bear the risk of availability.
Water quality		✓	Water is typically provided in its raw state.
Supply continuity	✓		Service providers are typically responsible for scheduling releases of water to meet demands. This often relies on a water ordering regime.
Pump access		✓	Customers own the pump works and are responsible for pump location, repair etc.
Diversion rate		✓	A customer's diversion rate is subject to planning and development approvals for their works.
River transmission losses	NA	NA	These are factored into water plans and water sharing rules.

Bulk water services also incorporate facilitation of water trading. For example, SunWater has obligations under various ROLs to administer temporary trades between customers.

5.3 Network service

SunWater provides network services in eight major irrigation districts, as well as industrial pipelines.

The network service involves diverting water available to a customer under their WAE, and transporting that water to their offtake, via a physical connection to SunWater's infrastructure. SunWater is required to manage distribution losses in that network, and holds a specific WAE for this purpose. This means that a customer's WAE is effectively measured at their network offtake, with SunWater managing losses from the point of river diversion.

Other key aspects to the network service are summarised in the table below.

Table 77. Generic service aspects and responsibilities – network service

Risk / Service Aspect	*Service Provider*	*Customer*	*Comment*
Water availability		✓	Customers hold WAE, and bear the risk of availability.
Water quality	NA	NA	Water is provided 'as is' at the point of diversion, although the service provider may have obligations in relation to chemical treatments for weeds.
Supply continuity	✓		Service providers have responsibilities in terms of the timing and period of shutdowns for weed control, maintenance etc.
Flow rate	✓		Service providers may be expected to supply in accordance with a defined flow rate or roster during times of peak demand.
Frequency and duration of peak demand periods		✓	The incidence of peak demand periods will often depend on crop diversity, weather etc.
Channel distribution losses	✓		Service providers typically hold a water entitlement to cover these losses in the network.

Channel harvesting

SunWater makes additional water available to customers in irrigation districts in the Burdekin-Haughton and St George schemes under its waterharvesting (unsupplemented) entitlements. This product is termed channel harvesting, and is over and above the water available to a customer under their WAE.

Water sales under this product are significant, and have totalled around 25,000ML in the Burdekin-Haughton and 13,000ML in St George.

Despite being a separate entitlement to the WAE held by customers, channel harvesting sales have been applied towards recovery of lower bound costs in those schemes. The price for channel harvesting has been set at the same consumption (Part B) charge as for the price paths.

Service differentials – irrigation and non-irrigation

There is no differentiation in service between irrigation and non-irrigation users. Rather, the service provided to all users is largely determined through their WAE.

Typically, irrigators hold medium priority WAE, while others hold high priority WAE. This has occurred as part of the codification of past rights under transitional provisions of the *Water Act 2000*. However, an irrigator can hold a high priority WAE (eg though conversion or trade), just as a non-irrigator can hold a medium priority WAE. Furthermore, subsidised prices to irrigators have been differentiated based on their use of water (irrigation) rather than the priority of their water entitlements. For example, irrigators holding high priority WAE in the Nogoa-Mackenzie WSS pay charges in accordance with the Rural Water Pricing Policy (albeit at a higher rate than for medium priority).

SunWater's published customer service standards do not differentiate between user types.

5.4 Drainage

The drainage service involves removal of water from serviced providers and disposal via a drainage network. This network is normally designed to remove flows from rainfall events. There are not normally requirements about the quality of water accepted (unlike, for example, trade waste).

5.5 Service standards

SunWater has set service standards for 21 of the 22 schemes.[28] These standards largely relate to supply interruptions, and are set under provisions in standard supply contracts.[29] Standards are set for each of the bulk water and network service, and relate to:

- timing and duration of planned and unplanned shutdowns;
- length of notice given to customers for planned and unplanned shutdowns;
- time to repair meters causing restrictions to supply;
- number of interruptions to supply; and
- response time to customer complaints.

SunWater reports performance against these standards in its annual report.[30]

SunWater has also set standards for processing temporary trades, for 90% of applications to be completed in five business days.[31]

SunWater's standards for drainage are described separately for each scheme.

Service standards were considered for the current price paths, but the Tier 1 reference group considered the issues were better dealt with in subsequent reviews. Tier 1 also considered the likely quantum of any price-service trade-off as immaterial, and there should be majority customer support for any change.[32]

28 There are no standards published for Pioneer Valley WSS.
29 These can be found at http://www.sunwater.com.au/water_schemes_rules-targets.htm.
30 For example, page 31 of the 2008-09 Annual Report.
31 These can be found at http://www.sunwater.com.au/watertrading.htm.
32 Statewide Irrigation Pricing Working Group. *Tier 1 Report* (April 2006). p62.

> *Tier 1 has considered the issue of customer service standards and has determined that any changes that would be likely to materially reduce lower bound costs would involve significant time to analyse, plan and implement. Tier 1 has therefore agreed that if a Tier 2 group requests a significant change to customer service standards this will not be implemented until the subsequent price path commencing on 1 July, 2011. Tier 1 considers that any minor variations to customer service standards would be unlikely to reduce the lower bound costs in any material way.*
>
> *Tier 1 has resolved that each Tier 2 group can decide on how other customers are consulted on the more significant issues, but any changes to customer service standards will need to be supported by a majority of the customers in the scheme.*

No changes were recommended over the course of the Tier 2 discussions with scheme-level representatives, although the group for the Eton WSS noted there were ongoing issues for discussion with SunWater (such as pump station outages, full supply level at Kinchant Dam, weed control management and consultation on shutdowns).[33]

[33] SunWater. Irrigation Price Paths. 2006/07 – 2010/11. Final. Report (September 2006). p10 & p47.

6. PRICES

The current price paths span from 2006/07 to 2010/11. Prices are set in $2005/06, and are indexed annually at CPI.

Prices were set following a two-stage process of consultation and negotiation with customers:

- Stage 1 – which involved setting the high level principles leading to scheme lower bound costs and reference tariffs. Customers were represented via the Tier 1 reference group of irrigators; and

- Stage 2 – which involved setting precise tariffs for each scheme and determining scheme-specific options such as revenue or price caps, tariff mix and drought tariffs. Demand forecasts were also set at this stage. Customers were represented at a scheme level by a series of Tier 2 reference groups.

The outcomes are documented in various reports on SunWater's website.[34]

6.1 Government's rural irrigation pricing policy

The price paths for bulk water, network and drainage services were set in accordance with State Government policy parameters. The key requirements were:

- continued movement to lower bound cost recovery;

- no price decreases, with all prices above lower bound to remain and subject to an annual CPI adjustment; and

- deferral of decisions about movement to upper bound pricing until issues of asset valuation and rates of return can be considered as part of a more consistent, national approach.

The policy also excluded intensive livestock operations (eg piggeries, feedlots and aquaculture) from rural water prices, as there was uncertainty about the application to these uses in the original price paths.

Government also made policy decisions during the development phase of the price path, including:[35]

- a requirement to not allocate lower bound costs to 'free allocations';

- recreation management costs to be included in the lower bound cost base; and

- approving a cap on the rate of increase (in real terms) for schemes below lower bound cost recovery to $2.50/annum or $10.00/ML in total, over the price path period. Government also provided CSO funding for the shortfall (refer below).

6.2 Application of prices for riparian rights

Landholders who are riparian to a watercourse, lake or spring hold a separate water access right over and above their WAE.[36] This is often referred to as a stock and domestic allowance or riparian rights.

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34 Refer to http://www.sunwater.com.au/irrigationpricing.htm.

35 SunWater Irrigation Price Paths 2006/07-2010/11. Final Report (September 2006).

In SunWater's schemes, many customers who own riparian land will have such rights, over and above their WAE. In some cases, these customers may take water under these rights through the same works and meter as their WAE, meaning that SunWater, DERM and the customer must account for water use under this right separately. Furthermore, charges do not apply for water taken as a riparian right.

DERM have issued guidelines for establishing and administering these rights, including maximum volumes.[37]

6.3 Tariff structure

Bulk water and network services

The current tariff structure essentially carries forward that set in 2000, for the original price paths. This is a two part tariff, subject to a minimum charge, for the bulk and network services. These tariffs are applied as follows:

- Part A – which is a fixed charge (or equivalent to an access fee for network services), and applies per ML of WAE; and

- Part B – which is a volumetric charge, applied to each ML taken.

The network service charges bundle together recovery of bulk water assets and network assets. Part A charges are also applied per ML of WAE rather than flow rates or delivery shares. For Burdekin-Haughton and St George, the Part B (channel) charge also applies to channel harvesting sales. In some cases, network charges also recover some or all drainage costs (refer later sections).

In general, Part A and Part B charges were set to recover a nominated proportion of lower bound costs, with Part A charges typically set to recover around 70% of costs, and Part B charges the residual. This split was generally determined without any reference to the underlying cost structure for each scheme. However this was consistent with the approach taken for the original 2000/01 to 2005/06 price paths and inherited for the price path review. The basis for the tariff split and the portion of variable (electricity) costs for each scheme were set out in Chapter 3.

There were also some cases where particular costs or revenues were assigned to either tariff. For example:

- any 'above lower bound' revenues, where prices were already achieving lower bound cost recovery were incorporated into the Part B tariff; and

- increases in drainage charges in the Burdekin-Haughton and Dawson Valley schemes were included in the Part A charge (rather than via an increase to the drainage charge).

A minimum charge applies where the sum of the Part A and Part B charges does not reach a specified amount. This usually applies to small users (eg 10ML or less), who would pay the difference between the Part A and Part B charges, and the minimum charge, in any year.

Different minimum charges apply for bulk water and network services, and these are set for each scheme. These are typically in the order of:

36 Refer to Section 20(3) of the *Water Act 2000*.

37 These can be found at http://www.derm.qld.gov.au/water/management/guide_sd_riparian_rop.html

- for network services, around $490 per water account; and
- for bulk water services, around $240 per water account.[38]

The Mareeba-Dimbulah WSS operates under a slightly different tariff arrangement, whereby an annual access charge (currently $528.88) applies in addition to Part A and Part B charges. There is no minimum charge in this scheme. Furthermore, the Mareeba-Dimbulah tariff for network services (outside re-lift) is a declining block tariff for both the Part A and Part B charges, as set out in the table below.

Table 78. Mareeba Dimbulah WSS – Channel supplies declining block tariff (2009/10)

Block	*Part A rate ($/ML)*	*Part B rate ($/ML)*
Up to 100ML	28.68	22.53
100ML to 500ML	27.24	17.31
Over 500ML	21.72	13.81

Source: SunWater, Fees and Charges Schedule 2009/10. Mareeba-Dimbulah Water Supply Scheme

Drainage

Drainage services are offered in five irrigation districts, alongside network services. Prior to the current price path, separate drainage rates were set on a per hectare basis in four of these districts. In Mareeba-Dimbulah, drainage costs were recovered in the network service charge. However, separate lower bound drainage costs were not identified in the original 2000/01 – 2005/06 price paths. This was remedied for the current price paths, with lower bound drainage costs determined for each of the five schemes with drainage services.

Irrigator representatives in the Burdekin-Haughton and Dawson Valley schemes had concerns about this approach and preferred some form of separate drainage charge. A number of options were then developed for setting separate drainage charges, for consideration by each Tier 2 group.

This resulted in the following arrangements:

- a per hectare rate being adopted in Nogoa-Mackenzie and St George to recover lower bound costs;
- a hybrid approach adopted in Burdekin-Haughton and Dawson Valley, where the previous per hectare rate was preserved, but the fixed network service charge increased to recover the shortfall between the per hectare rate and lower bound costs; and
- no separate drainage rate was introduced in the Mareeba-Dimbulah scheme, in accordance with the historic tariff arrangement.

Other charges

SunWater sets a number of administrative and other charges. These prices are common across all WSS, and relate to:

[38] As published for 2009/10.

- administration fees for the sale of a WAE ($235.25 per transfer);
- administration fees for the lease of a WAE ($392.25 per transfer);
- disconnection and re-connection fees (on application); and
- meter testing and special meter readings ($117/ per hour).[39]

There are also storage rental fees in some schemes, which apply to customers wishing to carry over water allocation into the next water year[40]. These are currently $1.89/ML in Nogoa Mackenzie, and $2.23/ML in the Dawson Valley. These revenues were applied to offset lower bound costs for each scheme.

SunWater has also published termination fees for customers wishing to terminate access to the network service.[41] Revenues from these fees were also applied to offset lower bound costs.

6.4 Price or revenue cap

During the Tier 2 process, customer representatives were given the option to adopt a revenue cap, instead of the price cap that was in place for the previous price path. This decision was made in response to the difficulties in forecasting water use and the volatility in demand, leading to over or under recovery of costs. This is particularly relevant given the volumetric charges typically contributed to the recovery of fixed, as well as variable costs.

Only three schemes opted for a revenue cap: Bowen Broken Rivers, Cunnamulla Weir and Macintyre Brook.

6.5 Key pricing inputs and assumptions

Lower bound costs

SunWater and the Tier 1 reference group set and published the lower bound costs at a scheme-level, rather than a tariff level. This comprised operating, maintenance and administration costs, electricity, and an asset renewals annuity.

A productivity adjustment was specified for each scheme.

The derivation of the lower bound costs is discussed below.

Operating costs

Indec Consulting were engaged to review SunWater's operating costs for efficiency and potential improvements, using the 2003/04 year as a baseline. This review identified potential savings to be realised through continuous improvement, and did not identify "any readily (instantaneously) realisable savings with respect to the 2003/04 year".[42]

39 Meter testing fees are reimbursed if the meter is found to be faulty.

40 Carry over essentially allows a user to store any unused allocation at the end of a water year in SunWater's storage, rather than their own.

41 The water charge rules for the Murray Darling Basin in relation to termination fees will be relevant for the St George WSS. We have not considered termination fees in any detail for this report.

42 SunWater Statewide Irrigation Pricing Working Group. Tier 1 Report (April 2006). Appendices, Section 9.3.

Renewals annuities

A refurbishment program was prepared for each scheme, and reviewed by Gutteridge, Haskins and Davey (GHD) who found them reasonable and appropriate. The Tier 1 reference group accepted this program.

The renewals annuity was calculated over a rolling 30 year period, and adopted the estimated annuity balance at 30 June, 2006 rather than the actual balance.

SunWater publishes the annuity balances for each scheme in its annual report.

Cost allocation

The following approach was adopted for cost allocation for the existing price paths:

- corporate head office and regional office costs to assets: allocated proportional to direct operating and maintenance costs (less electricity); and
- between customer sectors from the same asset: based on water entitlements held by each sector, with an adjustment between high and medium priority.

A conversion factor was calculated using hydrologic modelling to establish an equivalent yield for each product (refer earlier chapter).

Chapter 3 provides details on the portion of lower bound costs assigned to each scheme. Details about conversion factors themselves were not available for this report.

Water use forecasts

Water use forecasts were determined in consultation with the Tier 2 working groups, at a scheme level, taking into account historic levels of use as a proportion of WAE. As set out in Chapter 3, actual use to date has been lower than these forecasts.

Revenue offsets from related services

SunWater receives miscellaneous revenues from a number of sources for each scheme. These include flood margin rents and leases, recreation activities, drainage diversion fees, application fees, storage rental fees and termination fee revenue.

These revenues were outlined in the lower bound cost calculation for each scheme, and were typically minor amounts (< $20,000). The larger amounts were in Nogoa-Mackenzie ($207,000), Callide ($104,000), and Proserpine ($69,000).

6.6 Drought tariffs

The fixed charge operates to recover costs regardless of the availability of water. In some cases, irrigators have little or no water available during drought times, and many irrigators have expressed dissatisfaction with this arrangement. This stems from decisions about the assignment of the risk of water availability between the owner of the WAE and the service provider. Under a decentralised service regime, users (WAE holders) bear this risk and manage it through trading or other means.[43]

SunWater offered flexible arrangements to apply in the event of severe drought, and

[43] WAE holders also bear some upside, for example through increased values in temporary transfer markets during drought events.

drought tariff arrangements were adopted in two schemes, both of which have since been transferred to Seqwater:

- the Mortonvale section of the Central Lockyer scheme; and
- the Warrill Valley.

The application of these drought tariffs is complex, but essentially involves reductions to the fixed charge in times of water shortage, and additional revenue recovered through increases to the fixed charge when water is abundant. Interest is applied to the balance of the account. At the end of the price path period, the balance is incorporated into the cost base for the following price period.

6.7 Government rebates of Part A charges

In 2008/09, the State Government offered rebates of Part A charges (up to $10,000) to eligible irrigators in schemes suffering severe and sustained water shortages. These were the Three Moon Creek, Barker Barambah, Upper Condamine and Upper Burnett (Claude Wharton section) schemes.

This scheme was administered by the Queensland Rural Adjustment Authority.[44]

6.8 Community service obligations (CSO)

A CSO was provided to SunWater to recover the shortfall between the efficient lower bound costs and anticipated revenues from irrigators. For some schemes, this CSO will end over the course of the current price path.

However, CSO payments will continue through to the end of the price path (including the final year) for 7 Category 3 schemes (refer also next chapter). The table below details the CSOs that applied for 2008/09.

[44] Refer to http://www.qraa.qld.gov.au/index.php?option=com_content&view=article&id=43:irrigators-fixed-water-charges-rebate-scheme&catid=4:our-products

Table 79. Rural water CSOs paid by government to SunWater (2008/09)

WSS	*CSO Payment 2008/09* *$*
Barker Barambah	25,383
Bowen Broken	411
Boyne River and Tarong	29,310
Bundaberg	249,534
Callide Valley	514,118
Chinchilla Weir	1,969
Cunnamulla	48,205
Dawson Valley	9,979
Eton	158,060
Lower Fitzroy	10,444
Maranoa River	75,082
Mareeba-Dimbulah	262,979
Pioneer River	25,607
St George	8,937
Three Moon Creek	293,611
Upper Burnett	252,728
Upper Condamine	9,371
Other	50,958

Source: SunWater Annual Report.

CSOs were also provided in relation to development costs for ROPs. These CSOs were specified for each scheme.[45]

6.9 Scheme price paths

Attachment 1 sets out the price paths for each scheme, by tariff group, and compares the lower bound cost reference tariff to the actual price path.

[45] These CSOs may be included in the amounts in the above table.

7. KNOWN SCHEME-LEVEL ISSUES

In developing the price paths, there were a range of scheme-level issues that arose and were resolved or were flagged to be resolved in subsequent price reviews. This chapter summarises those issues, focussing on those that could be relevant in setting prices at the next review. There are of course a range of generic issues (eg asset value, cost allocation, WACC) that need to be considered for any price determination, however we have not considered these as they are outside the scope of this report.

The key issues for the QCA's review are set out below.

7.1 Category 3 schemes

The original price paths (which ended in 2005/06) included a number of schemes whose existing prices were significantly below the lower bound target. This meant that, at the commencement of the current price paths in 2006/07, these 'Category 3' schemes were still receiving a CSO payment.

For the current price paths, price increases for schemes yet to achieve lower bound were capped at $2.50/annum (in real terms) or $10/ML in total. For some schemes, this rate of increase was insufficient to meet the shortfall to lower bound costs over the price path period (to 2010/11).

These continuing Category 3 tariff groups are set out in the table below.

Table 80. Category 3 schemes below lower bound cost recovery in 2010/11 ($2005/6)

Water Supply Scheme	*Tariff*	*Lower bound reference tariff (total)*	*Final tariffs (total)*	*Total shortfall ($)*	*Shortfall per ML of WAE*
Barker-Barambah	Redgate Re-lift	$56.28	$42.81	$21,915	$13.47
Callide Valley	Surface water (Callide & Kroombit Ck)	$45.85	$26.05	$360,444	$19.75
Callide Valley	Benefitted Groundwater Area	$45.85	$26.05	NA	NA
Cunnamulla	River	$41.95	$28.01	$27,718	$11.20
Maranoa River	River	$111.22	$37.87	$58,533	$73.35
Mareeba-Dimbulah	Channel Re-lift	$96.43	$61.14	$250,990	$30.83
Three Moon Creek	River	$40.43	$33.48	$10,324	$5.78
Three Moon Creek	Groundwater	$40.43	$21.82	$188,387	$15.50
Upper Burnett	Nogo-Burnett River	$33.24	$28.83	$109,995	$3.91

Notes: The shortfall has been calculated by multiplying the WAE for each tariff group by the Part A charge, adding this amount to the forecast water use multiplied by the Part B charge. The shortfall per ML is the total shortfall, divided by the WAE for the tariff group. Hence this is more akin to a Part A increase, for illustration purposes.
Source: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006).

Hence, an issue for the next price review will be how to deal with any further increases for these schemes to achieve lower bound cost recovery, assuming lower bound costs do not fall significantly. Government will also be faced with decisions about the need to continue CSO funding for any shortfall, should it desire to continue to cap the rate of increase below what would be required to achieve lower bound cost recovery in 2011/12.

7.2 Tariff structure

The possible issues for tariff structure at the next price review are set out below.

Price signals and cost structure

The ACCC has considered irrigation tariffs in the context of setting water charge rules in the Murray Darling Basin, and for termination fees in particular. In its initial 2006 advice to governments, the ACCC discussed the need for volumetric charges to only recover the marginal

cost of supply, to avoid under-utilisation of the network infrastructure.[46] The ACCC further commented that:

> *To promote allocative efficiency, the price charged for water delivery services should reflect the cost of providing them at the margin. That is, the price for having an additional ML of water delivered to the farm-gate should equal the marginal cost incurred in delivering this extra ML of water. Since irrigators use delivery services up until the point where the marginal benefit they derive equals the price of the service, this ensures that water is delivered up to the point where the marginal benefits are equal to the marginal costs. At present, some infrastructure operators in the southern Murray–Darling Basin have usage fees for delivery that are substantially greater than the marginal cost of delivery...*

This suggests that an appropriate tariff structure is one where fixed charges are set to recover the fixed costs of the service, and volumetric charges are set to recover costs that vary with the volume delivered. Market prices for WAE and temporary transfers will signal the opportunity cost of using water.

This structure has been applied, in part, for the current price paths. For example, the Part B charge was set to recover the variable (ie pumping) costs in Redgate Relift (Barker Barambah WSS), and the Part A charge set to recover the fixed costs. However, for many schemes the arbitrary split set for the initial price paths (from 2000/01) were retained, with the Part A charge typically set to recover 70% of costs, and the Part B charge the residual despite many schemes having no or very low costs that varied with deliveries (refer Chapter 3 for scheme specific details).[47]

In some cases, and to a limited extent, this was due to a decision for 'above lower bound' revenues to be recovered in the Part B charge (refer below).[48]

The structure of tariffs beyond the current price path may need further consideration, in light of the economic efficiency objectives for pricing.[49]

Recovery of 'above lower bound' revenues

The Government's policy for the current price paths was for irrigation charges, as a minimum, to recover lower bound costs and where this was already occurring, prices would remain in real terms. The table below sets out those schemes where prices were recovering above lower bound costs.

46 ACCC. *A regime for the calculation and implementation of exit, access and termination fees charged by irrigation water delivery businesses in the southern Murray-Darling Basin. Advice to the Australian, New South Wales, South Australian and Victorian Governments* (November, 2006). p18.

47 Indeed, nearly all bulk water services will have no variable costs, while network services will have variable costs where pumping is required. Consultants Indec estimated that SunWater's fixed costs averaged around 93% across all schemes.

48 SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April 2006), p 31.

49 The water charge rules in the Murray Darling Basin in relation to termination fees will also be relevant for network service charges in the St George scheme.

Table 81. Schemes and tariffs achieving cost recovery above lower bound

Water Supply Scheme	*Tariff*
Bundaberg	Bulk water
Burdekin-Haughton	All
Chinchilla Weir	Bulk water
Dawson Valley	Bulk water
Lower Mary	Bulk water – Mary Barrage
Mareeba Dimbulah	Bulk water Some network tariffs
Nogoa-Mackenzie	All
Proserpine River	Bulk water
Upper Burnett	Bulk water – John Goleby Weir
Upper Condamine	Bulk water - Sandy Creek or Condamine River

Source: SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006), p. 12.

In these schemes, the portion of revenue that was above lower bound was included in the Part B tariff "so that SunWater only receives or the irrigator only pays the above lower bound revenue if water is delivered to the customer".[50]

This approach for the recovery of 'above lower bound' revenues may need to be considered for the next price path.

7.3 Form of regulation and administration of revenue cap schemes

As set out above, three schemes opted for a revenue cap instead of a price cap (Bowen Broken Rivers, Cunnamulla Weir and Macintyre Brook). This will have implications for the adjustment into the following price period.

SunWater described the arrangement as follows:[51]

> *Under a revenue cap, annual revenues are set at the start of the price path period for each scheme irrespective of actual irrigation water use. The revenue cap provides SunWater and irrigators with greater certainty of achieving the revenue targets over the price path period regardless of the volume of water sold. This is achieved by monitoring the revenues received over the price path and making any adjustments for under or over recoveries compared to the revenue targets, including any cumulative finance charges, at the commencement of the next price path. Any adjustment at the next price path will be made to the Part A charge.*

This highlights the level of detail already considered for the adjustment to the upcoming review, particularly in relation to the application of finance costs (where the reference rate and period was specified), and the specific tariff to be adjusted.[52]

50 SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006), pg. 12.
51 Ibid. P15.

The adjustments to tariffs arising from this arrangement will need to be considered for the next price period, along with decisions about the form of regulation, and whether there is merit in continuing different arrangements in different schemes rather than a single approach for all.

7.4 Renewals annuity balances

All schemes currently operate under a renewals annuity regime. The annuity balances for each scheme have been published in SunWater's annual reports. If renewals annuities are to continue, it will be necessary to adopt an opening balance when calculating the next price path. This may need to be estimated if the price path is to be set before the final balance for the 2010/11 year is known.

Furthermore, if depreciation is to be adopted, then a treatment will be required for these annuity balances as part of a conversion.

7.5 Drought tariff

Customers were given the option to adopt a drought tariff arrangement. This was another form of revenue cap in relation to the fixed (Part A) charge, allowing that charge to be reduced in times of low water availability with the shortfall recovered in times of higher availability.

Only two schemes adopted this arrangement – the Morton Vale section of the Central Lockyer WSS and the Warrill Valley WSS. These schemes have since been transferred to Seqwater as part of the broader institutional reforms in SEQ.

Nonetheless, the treatment of fixed charges during times of severe drought may remain as an issue for some irrigators for the next price path.

7.6 Unbundling of prices

It might be expected that separate prices would apply for each of the bulk water, network and drainage services to signal the costs of each service. This is considered below.

Separation of network and drainage services

In publishing its final report on the tariffs, SunWater noted the need for a more fulsome review of drainage charges:[53]

> *At the next price review, the drainage rate will require further analysis to identify the most appropriate charging structure as some schemes indicated that they would have preferred to move away from the per hectare rate to a per ML rate however insufficient time was available to analyse and discuss these alternatives with the broader irrigation customer base.*

Specification of separate bulk water and network service charges

In a fully unbundled environment, all customers would pay the same bulk water charge regardless of whether they are taking water from the network or directly from the source. Additional and separate network service charges would apply for network users.[54]

In contrast, network service charges are currently specified as a single 'bundled' fixed and volumetric rate, and fixed charges are set based on WAE as a proxy for share of network

52 Ibid. pp15 – 16.

53 Ibid. p14.

54 The Murray Darling Basin water charge rules for termination fees, and the content of network access charges as the basis for those fees, are also relevant.

capacity. In arriving at the cost recovery target for network services, assumptions are made about the assignment of lower bound costs for bulk water assets to the network.

It is possible that a price differential for bulk water charges between the two groups of users may emerge, for example if bulk water charges included a rate of return, yet the costs allocated to the channel segment did not. This may warrant more explicit consideration for the next price path, in the context of the Government's policy requirements.

7.7 Postage stamp pricing

The use of postage stamp pricing may present issues where there are significant differences in the costs of supplying different customers in a single scheme. Concerns may also arise where the use decisions of one customer impose costs on others. This could occur, for example, where the costs of pumping water to a customer's offtake were greater than their consumption charge. Indeed, a cross subsidy would occur if a user's prices were less than the incremental costs of supplying them.

This is unlikely to be the case for most bulk water services, given:

- in general, the cost structure for these assets is predominantly fixed, meaning incremental costs of supply are at or close to zero; and

- bulk water assets are normally interrelated, as WAE are associated with the joint operation of various storages that have a hydrologic relationship. Hence it is difficult to ascribe a WAE to a particular storage asset in a multi-storage system.

There are some 'schemes within schemes' where bulk assets, and their associated WAE, are distinct. Where it can be established that there is no linkage between bulk water assets in these schemes, there may be a case to consider separate tariffs. One way to establish whether such linkages exist is to identify sub-schemes with different water sharing rules set in the respective IROL or ROP. This already occurs to a large extent – for example Glebe Weir in the Dawson Valley WSS.

In some schemes, water is transported via pipelines or channels to supplement flows in other streams, or to recharge specific aquifers. These include the Upper Condamine, Barker Barambah, Callide Valley and Three Moon Creek schemes. There are also some schemes where channel assets perform a dual network and bulk water service, for example in Mareeba-Dimbulah, Lower Mary and Burdekin-Haughton schemes. There may also be a case to set separate charges for these areas to reflect the different costs of bulk supply in these areas – indeed this is already the case in most of these schemes.

Concerns may arise in irrigation districts where postage stamp pricing is applied and where the costs of delivering water vary throughout the network, or in fact where discrete networks attract the same price. This issue arose for the Bundaberg WSS, where the Tier 2 group considered the merits of moving away from a postage stamp price to different prices for various segments in the network.[55] There are other examples where channel networks comprise a mix of pumped and gravity fed areas, yet a single tariff group applies.

It may be necessary to examine the merits of postage stamp pricing in each irrigation district and between sub-systems and the scope for cross subsidy or inefficient outcomes to emerge.

[55] This issue is particularly relevant for the Bundaberg WSS given the variation in pumping costs between different segments.

7.8 Other cost allocation issues

Changes in asset composition

There have been substantial changes to SunWater's asset base during the current price path. This includes the construction and operation of new assets (eg Burdekin-Moranbah Pipeline, Cloncurry Pipeline), as well as the transfer of 5 schemes to Seqwater.

This is noteworthy as it will affect SunWater's level of direct operating costs, and may affect common costs, particularly at the regional level. Moreover, this would change the cost allocation outcomes for common costs for local and corporate costs assuming the same approaches were adopted in the future.

Water entitlement conversion factors

Each scheme's lower bound costs were allocated to the irrigation sector based on the WAE held by irrigators (refer Chapter 5). This required a conversion factor to be adopted for each scheme. SunWater undertook specific hydrologic modelling for this purpose, and calculated conversion factors accordingly.

Since this time, conversion factors have been developed separately for three schemes (Burdekin-Haughton, Lower Fitzroy and Nogoa-Mackenzie), enabling the WAE holders in those schemes to change from medium to high priority (or vice versa).

Hydrologic models and data will have improved over recent years with the completion of various WRPs and ROPs, and SunWater is in the process of completing updated assessments of conversion factors for pricing purposes, which will differ from those used in the ROPs. Review and validation of these conversion factors and the underlying methodology will be a matter for the next price setting process.

Cost allocation to free allocations

We understand that in some instances, SunWater appears to have legacy obligations to provide water free of charge to certain users. These obligations typically arose from historic agreements for the development of the WSS. This issue was considered by Tier 1 and the State Government, and it was resolved that no costs would be assigned to these free allocations:[56]

> *'Free' allocations have been identified within SunWater's operating licenses as pre-existing entitlements and were a condition precedent to the establishment of the particular schemes and therefore government has indicated that lower bound costs should not allocated to these allocations.*

As set out in earlier sections, these free allocations existed in only 4 schemes, and mostly relate to water supplied to the North and South Burdekin water boards, in the Burdekin-Haughton scheme (185,000ML out of a total of 191,312ML).

Decisions may be required about the continuation of this approach into the next price period, taking into account past Government policy on this matter.

7.9 Spillway upgrades

SunWater is subject to the dam safety regulation in the *Water Supply (Safety and Reliability) Act 2008*.

[56] SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April, 2006), pg. 69.

SunWater has developed a dam safety program involving inspections, technical and risk assessments, and identified the need to upgrade the spillway capacity for a number of dams. These are summarised in the table below.

Table 8\2. Dam Safety Upgrades

WSS	*Dam*	*Upgrade Status*	*Cost ($M)*
Bundaberg	Fred Haigh	Completed	Not available
Barker Barambah	Bjelke-Petersen	Completed	5.70
Mareeba-Dimbulah	Tinaroo Falls	Commenced July 2008	21.10
Burdekin-Haughton	Burdekin Falls	Due August 2009	148.00
Pioneer	Teemburra	Due March 2010	4.15
Eton	Kinchant	Due February 2011	43.00
Macintyre Brook	Coolmunda	Due February 2012	16.00

Source: SunWater online; SunWater Annual Report, 2008-09, pg. 73.

The State Government funded the cost of these upgrades. Government's policy for the current price path was to pass on price benefits to irrigators from their contribution:[57]

> *The new price paths will not have to include any capital contribution for high priority spillway upgrades of Bjelke-Petersen, Borumba and Tinaroo Dams over the period of the price paths. Construction has commenced on the upgrade to Fred Haigh Dam which will be financed by dividend reinvestment...*
>
> *Tier 1 requested clarification that customer funding would not be required for spillway upgrades for the first four priority dams, i.e. Fred Haigh, Bjelke-Petersen, Borumba and Tinaroo Falls. Government confirmed this.*

It appears that the price benefits were only intended to extend for the duration of the price path, and that the price treatment beyond that was a matter for the future:[58]

> *The government policy stated that there was to be no additional rate of return and no customer funding of priority spillway upgrades for the duration of the new price path...*
>
> *Tier 1 notes that many government policy outcomes will be reviewed at the end of the five year price path and prior to the commencement of the next irrigation price review beyond 2011. In particular, Tier 1 notes that the government commitment to funding of spillway upgrades will expire prior to the next price review.*

57 SunWater Statewide Irrigation Pricing Working Group Tier 1 Report (April, 2006) pp17 – 18.
58 Op Cit. p6, p77.

This will clearly be an important issue for the upcoming review.

7.10 Other issues to be advanced at the next price review

SunWater and the Tier 1 group identified a number of other issues that should be considered for the next price review. These included:[59]

- more time to consider customer service standards;
- the introduction of incentive regulation for SunWater;
- whether renewals annuities should continue as the preferred approach;
- the methodology for calculating pricing conversion factors;
- the appropriate index to apply to irrigation tariffs; and
- the treatment of recreation costs in prices (although Government policy was to include recreation in lower bound costs).

Customers or SunWater may continue to have an interest in these issues for the upcoming price review.

7.11 Scheme-specific issues

There are a number of detailed issues for each scheme that are worth noting. These are summarised in the table below.

[59] SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006), pp 92-94.

Table 84. Scheme specific price issues and anomalies

WSS	*Tariff*	*Issue or anomaly*
Burdekin-Haughton	Giru Benefitted Area	There is a historic recognition of 'natural yield' being supplied free of charge. This has been applied through setting charges for all water in the area at 50% of the channel rate up to twice the assessed natural yield.
	Network service charges	Channel harvesting sales are incorporated into the demand forecast, effectively contributing towards the recovery of lower bound costs. Channel harvesting is a separate product and relates to an entitlement held by SunWater, not users. The Part B (volumetric) charge currently applies.
St George	Network service charges	As above re channel harvesting.
Lower Mary	Bulk water	The current price paths allocated 1% of Borumba Dam costs to the Lower Mary, based on hydrologic modelling of the benefit of the upstream dam to the scheme. However, Borumba Dam is now owned by Seqwater, and hence the costs of the Dam are no longer incurred by SunWater.
Proserpine	Bulk water	Prices for the Kelsey Creek Water Board are lower than for irrigators. The basis for this differential is not clear from published information sourced for this report, although it may be related to the lower WASOs for the Board's WAE.

Attachment 1 – Rural water price paths

This attachment sets out the price paths for each tariff group for each WSS, compared to the lower bound reference tariff.

These price paths have been sourced from those published by SunWater in its final report.[60]

These price paths are indexed annual by CPI.

We have presented prices in $2005/06, consistent with SunWater's published cost and tariff information. Actual prices charges under the price path to date will be slightly higher, as they would include an annual CPI increase.

Drainage charges in the five schemes with drainage services have not been included. The table below sets out the current (2009/10) drainage rates where these were separately set as part of the price paths. Charges were (generally) common between schemes, although they apply to different classifications of land. Charges were also maintained in real terms (ie no real increase over the price path period), and would continue to be increased from 2009/10 onwards at CPI.

Drainage charges (2009/10)

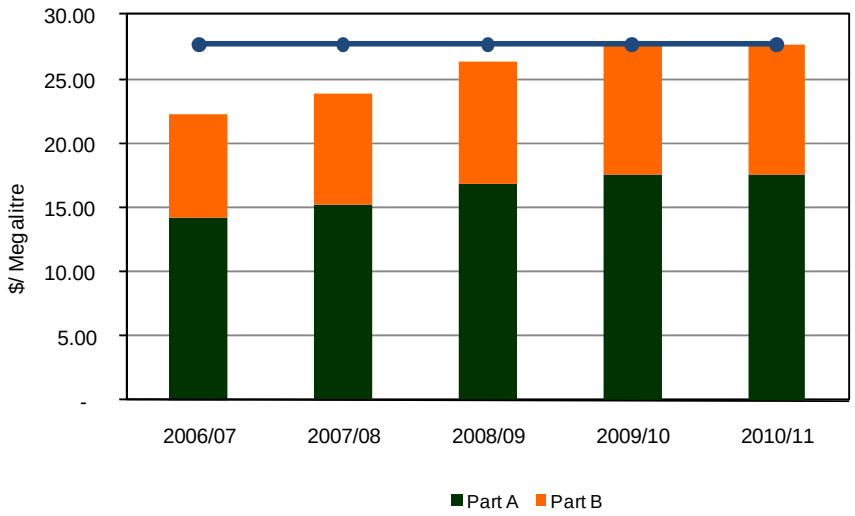
WSS	*Drainage rate ($/ha)*
Burdekin-Haughton	20.80 of land
Nogoa Mackenzie	20.85 of irrigable land
	5.20 of non-irrigable land
St George	20.85 of irrigable land
Dawson Valley	20.85 of land

Note: Drainage costs are recovered as part of network service charges in Mareeba-Dimbulah WSS. For the St George and Burdekin-Haughton schemes, increases to the previous drainage charge were included in the Part A network service charge.
Source: SunWater's published fees and charges schedules for 2009/10.

[60] SunWater Irrigation Price Paths 2006/07 – 2010/11 Final Report (September 2006).

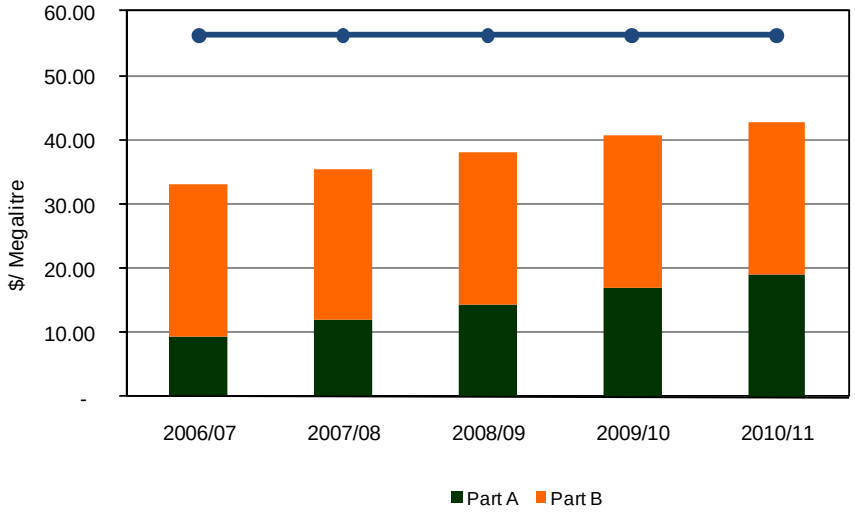
BARKER BARAMBAH WSS

Price path and lower bound reference tariff ($2005/06) – Regulated



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

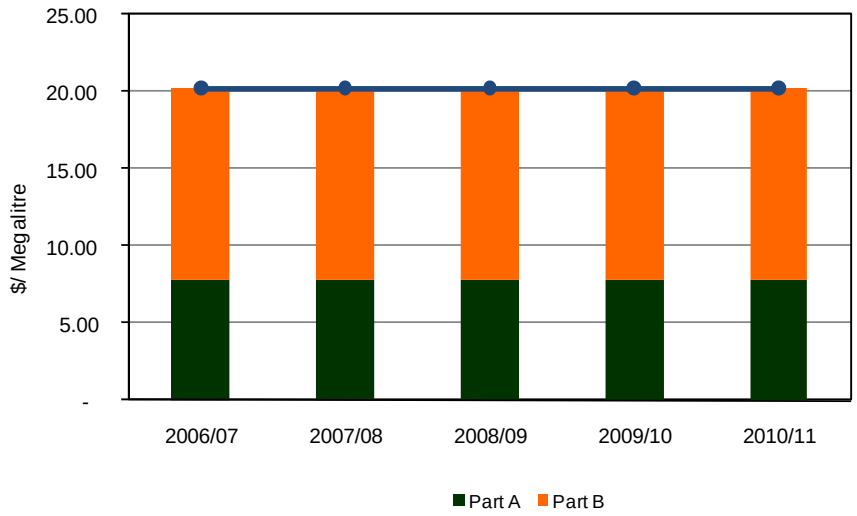
Price path and lower bound reference tariff ($2005/06) – Redgate Relift



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

BOWEN BROKEN WSS

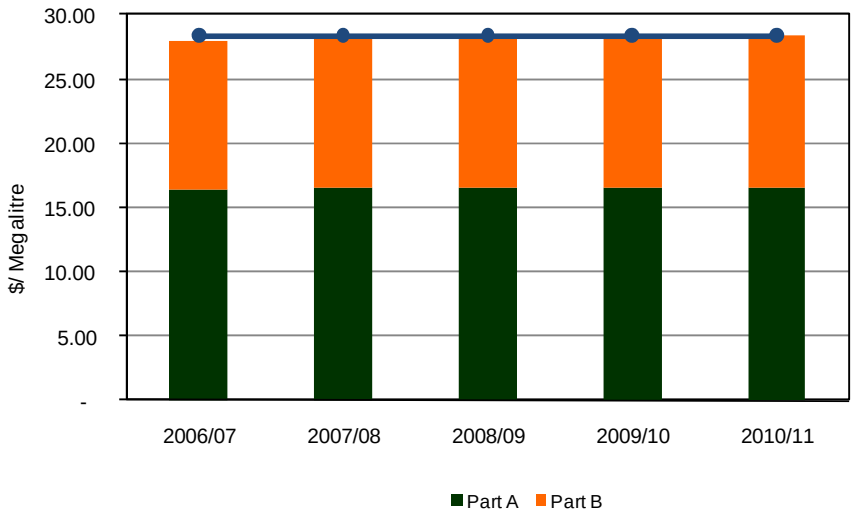
Price path and lower bound reference tariff ($2005/06) – River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

BOYNE RIVER AND TARONG WSS

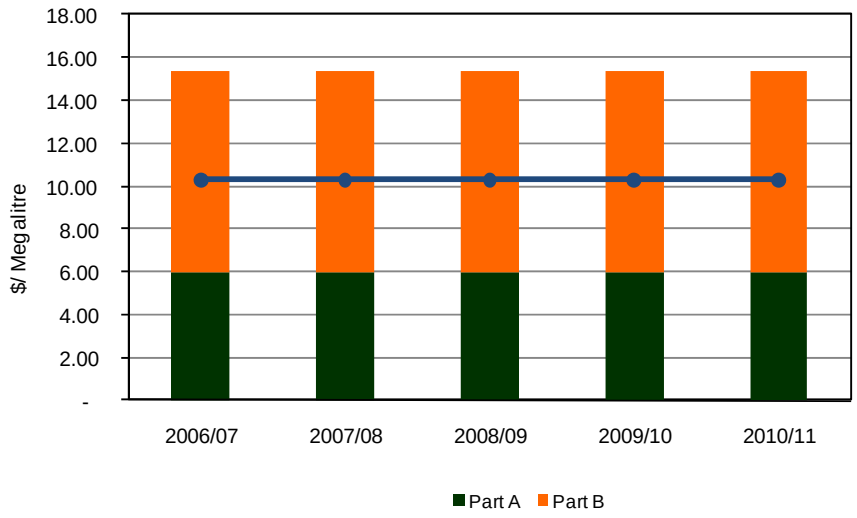
Price path and lower bound reference tariff ($2005/06) – Boyne River and Tarong



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

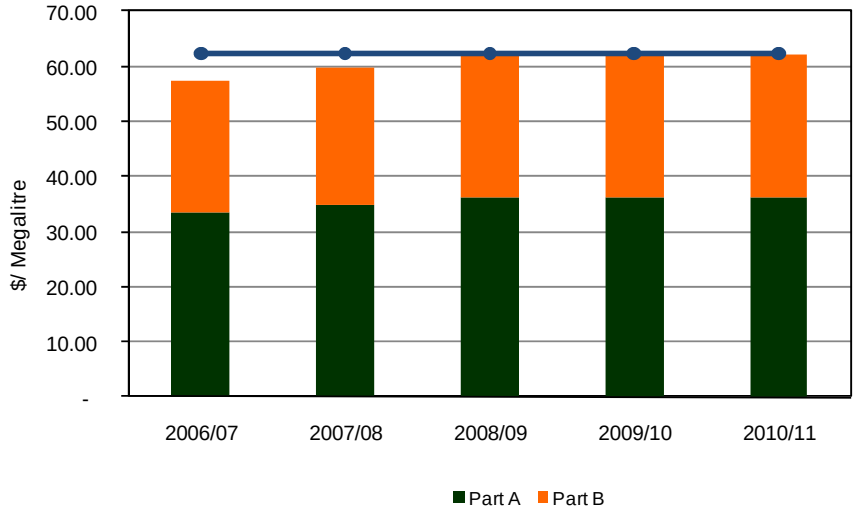
BUNDABERG WSS

Price path and lower bound reference tariff ($2005/06) – River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

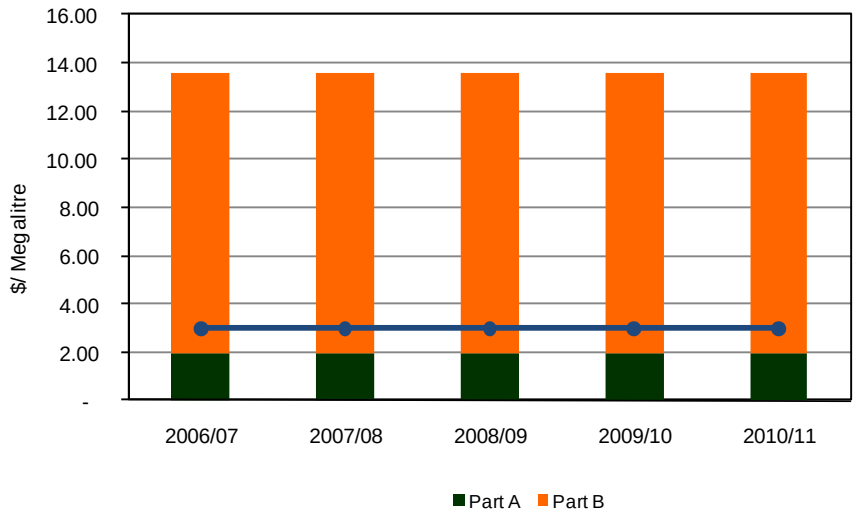
Price path and lower bound reference tariff ($2005/06) – Channel



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

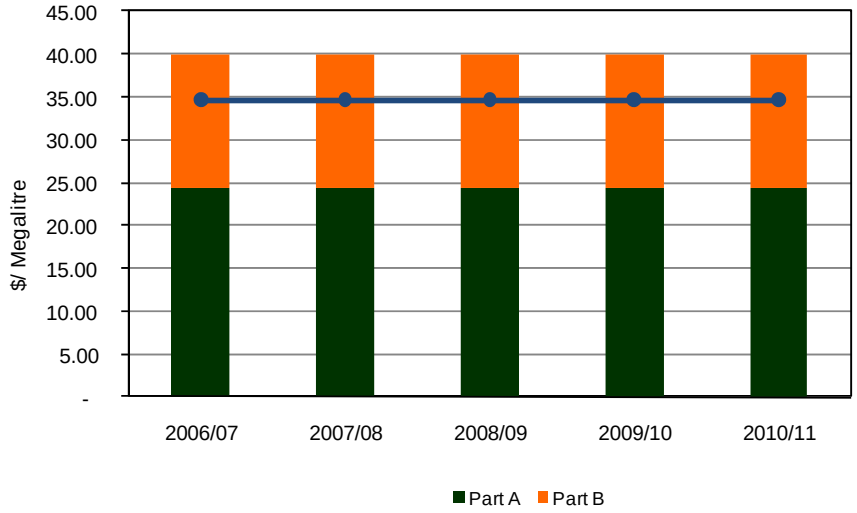
BURDEKIN-HAUGHTON WSS

Price path and lower bound reference tariff ($2005/06) – Burdekin River



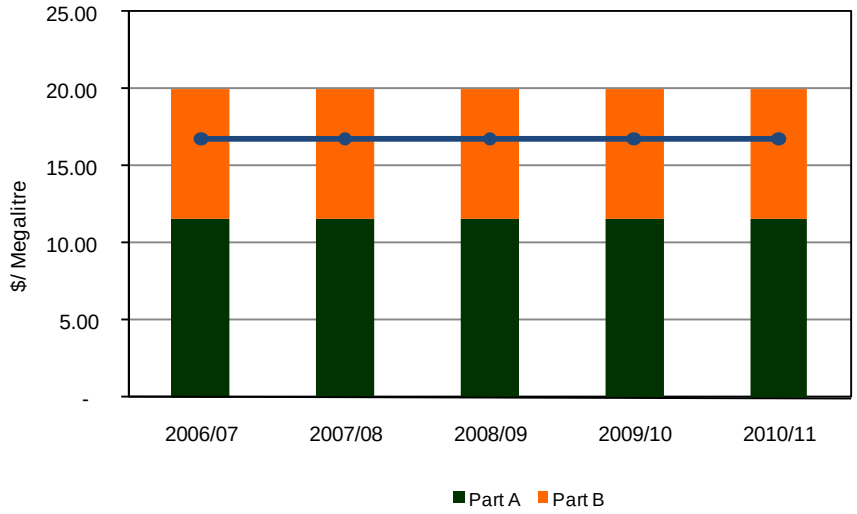
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Channel



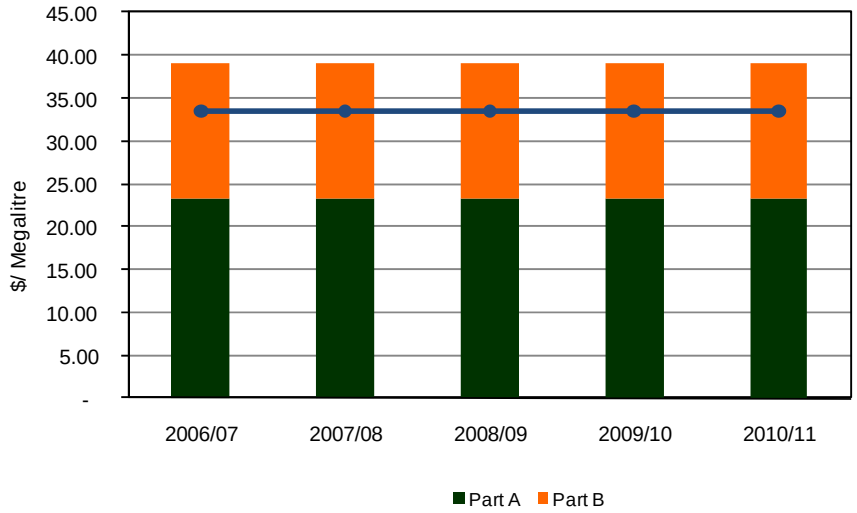
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Giru Groundwater Area



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

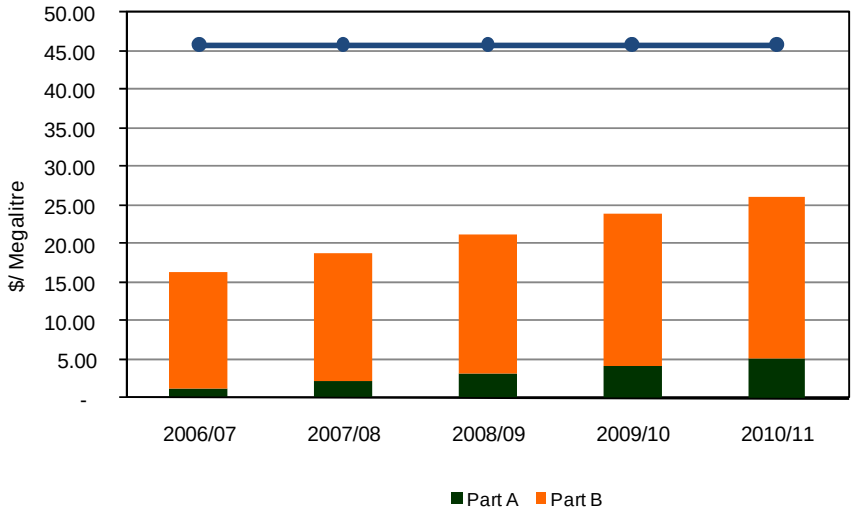
Price path and lower bound reference tariff ($2005/06) – Glady's Lagoon



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

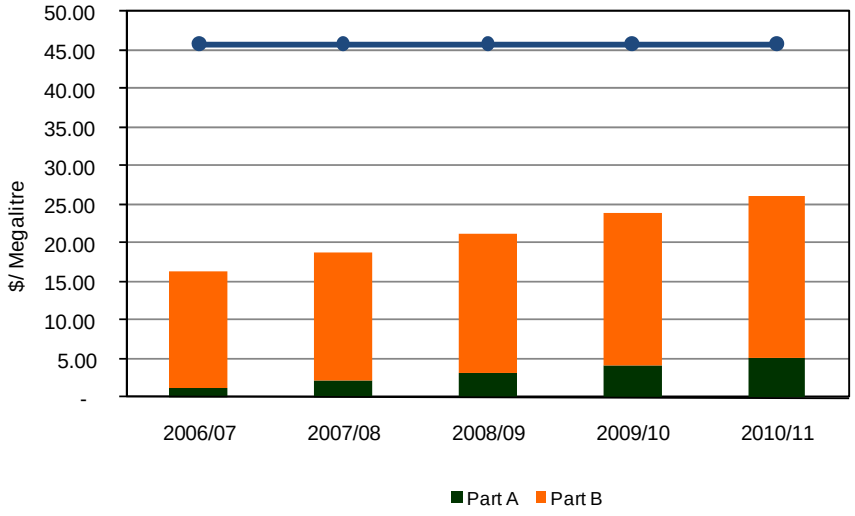
CALLIDE VALLEY WSS

Price path and lower bound reference tariff ($2005/06) – Surface Water (Callide and Kroombit Creek)



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

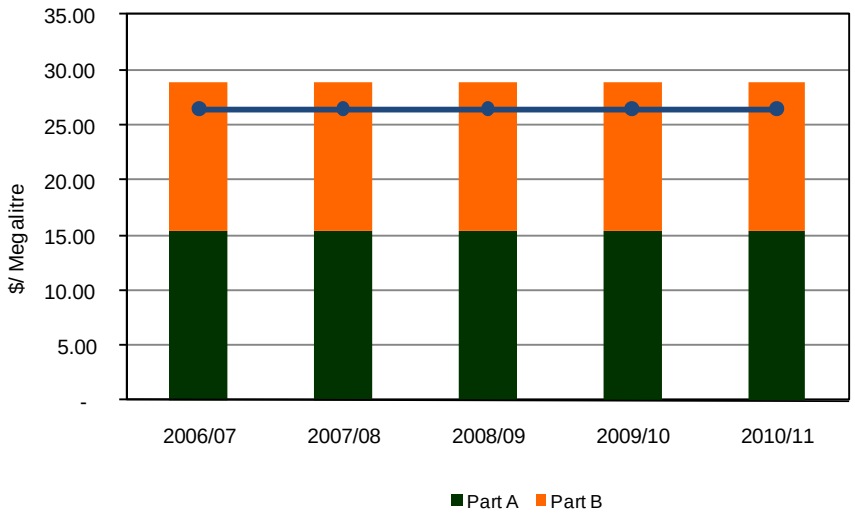
Price path and lower bound reference tariff ($2005/06) – Callide Benefited Groundwater Area



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

CHINCHILLA WEIR WSS

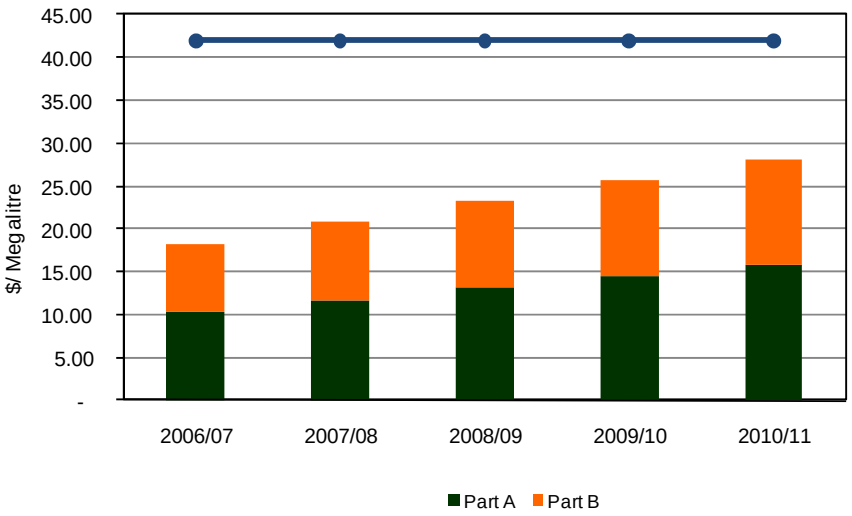
Price path and lower bound reference tariff ($2005/06) – River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

CUNNAMULLA WSS

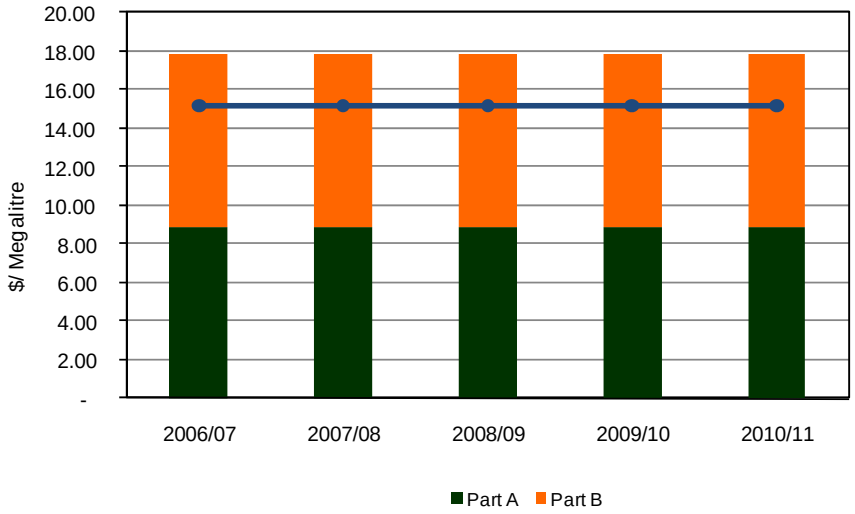
Price path and lower bound reference tariff ($2005/06) – River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

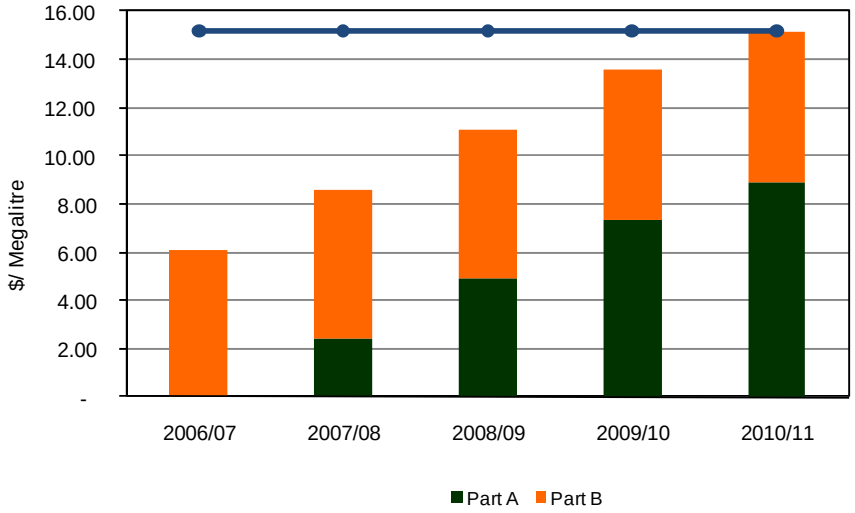
DAWSON VALLEY WSS

Price path and lower bound reference tariff ($2005/06) – Dawson River



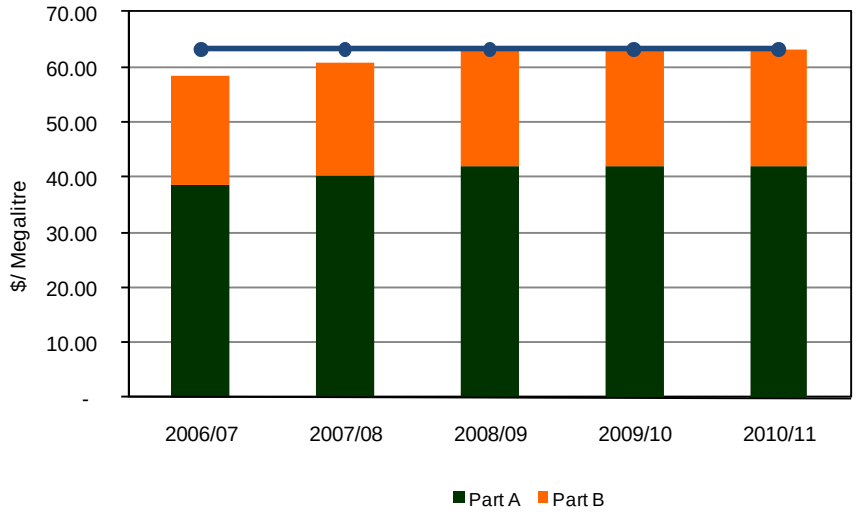
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Dawson River at Glebe Weir



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

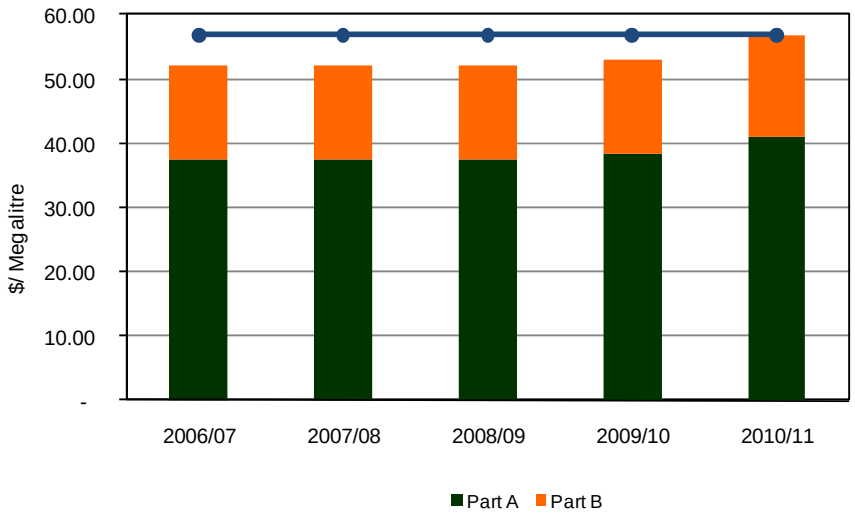
Price path and lower bound reference tariff ($2005/06) – Dawson Channel



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

ETON WSS

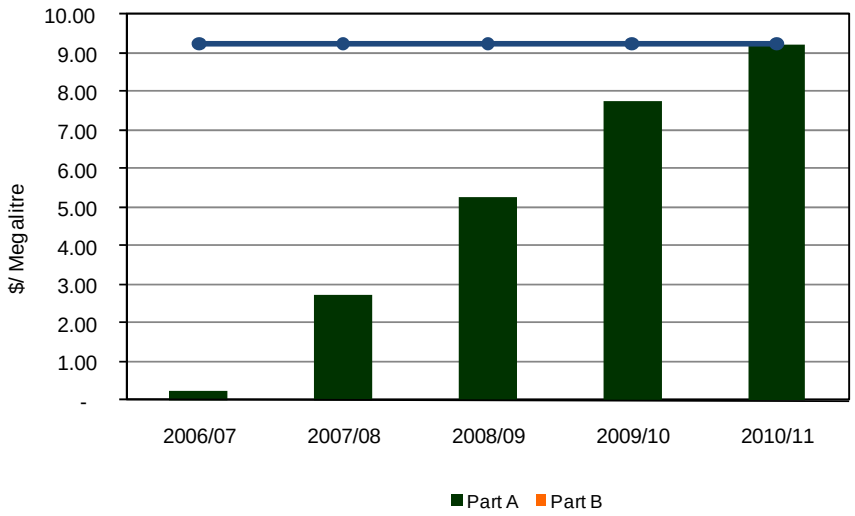
Price path and lower bound reference tariff ($2005/06) – Channel



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

LOWER FITZROY WSS

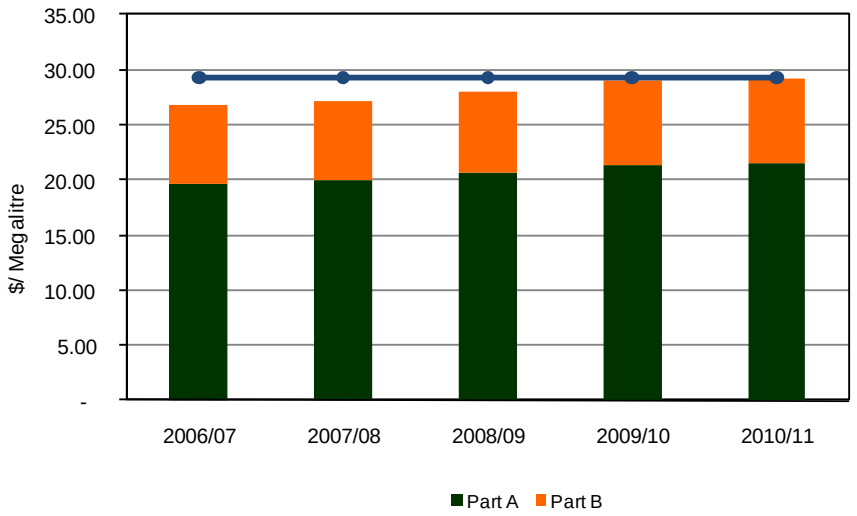
Price path and lower bound reference tariff ($2005/06) – River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

MACINTYRE BROOK WSS

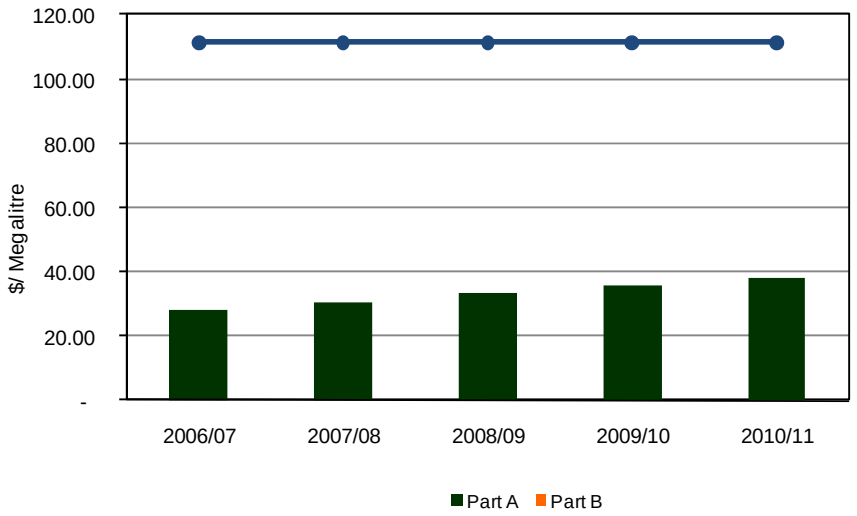
Price path and lower bound reference tariff ($2005/06) – Macintyre Brook



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

MARANOA RIVER WSS

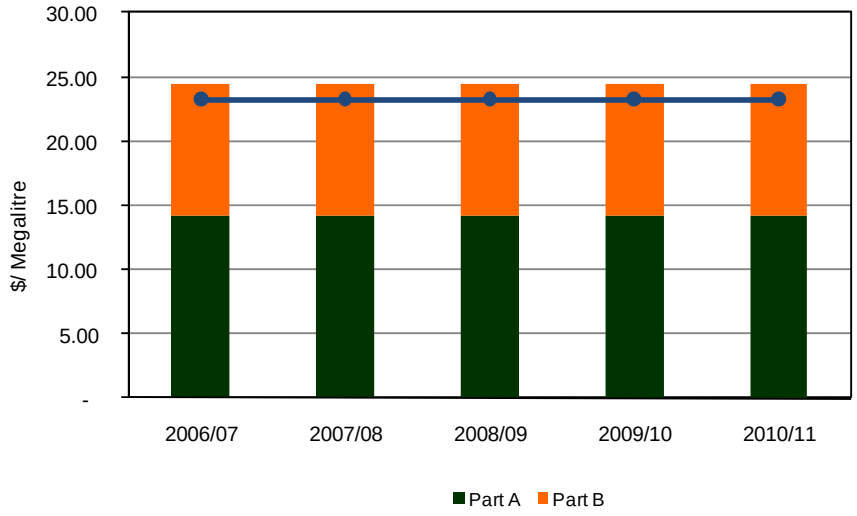
Price path and lower bound reference tariff ($2005/06) – River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

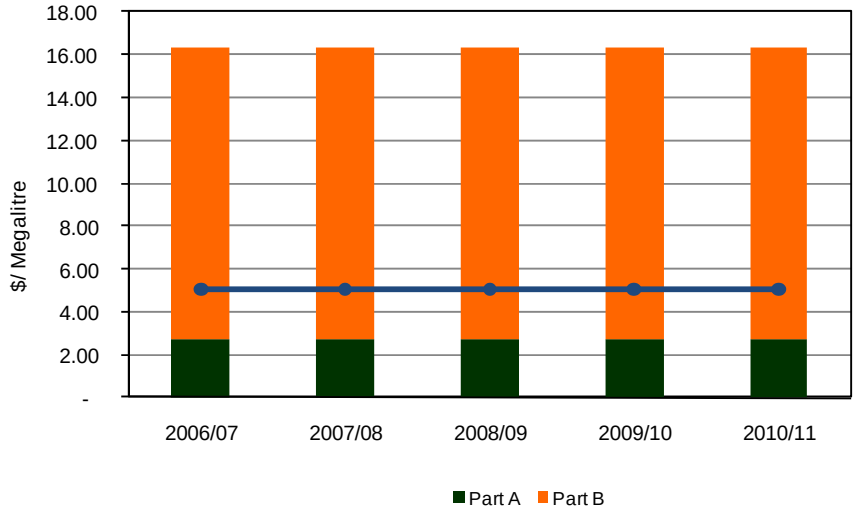
MAREEBA-DIMBULAH WSS

Price path and lower bound reference tariff ($2005/06) – River (Supplemented Streams & Walsh River)



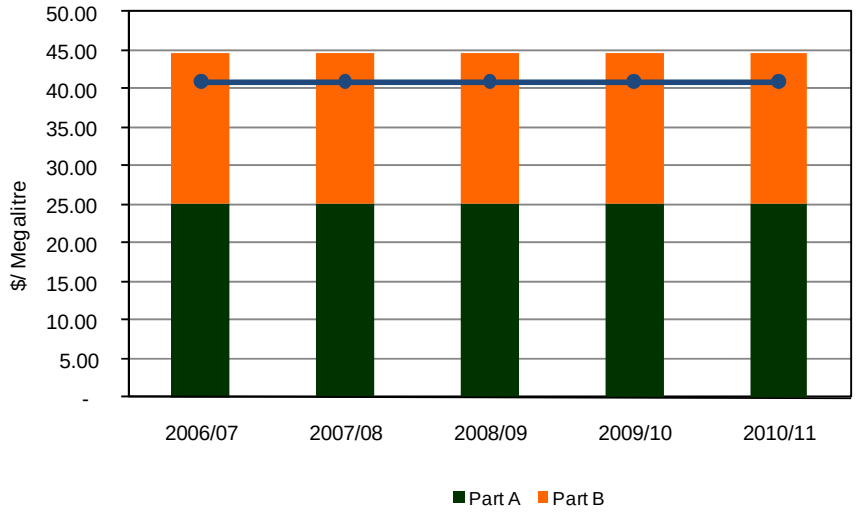
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – River (Tinaroo/Baron)



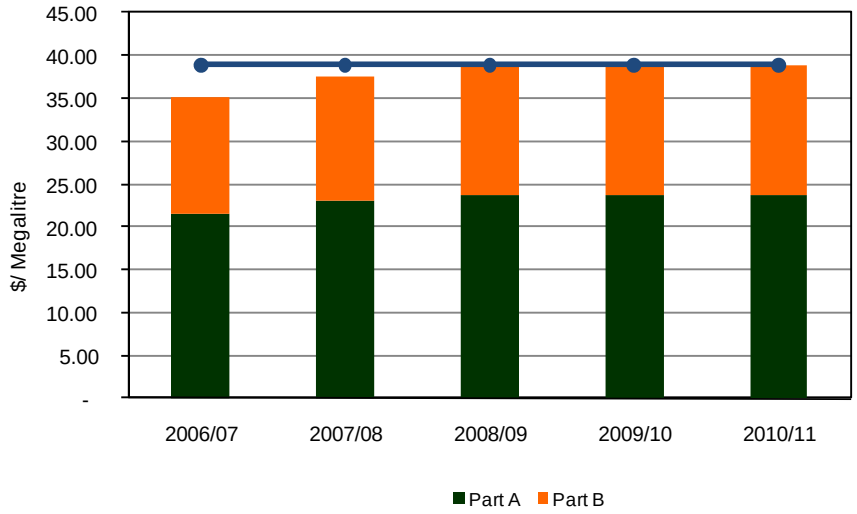
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Channel (Outside a Re-lift up to 100ML)



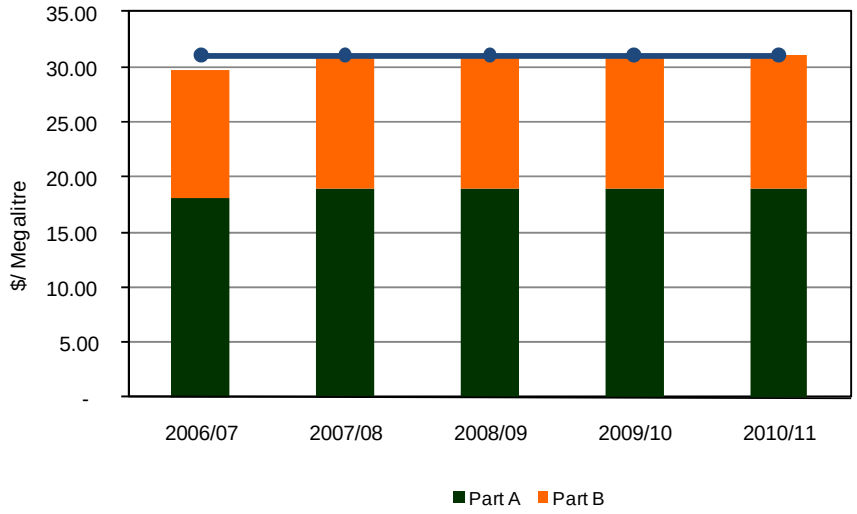
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Channel (Outside a Re-lift 100ML-500ML)



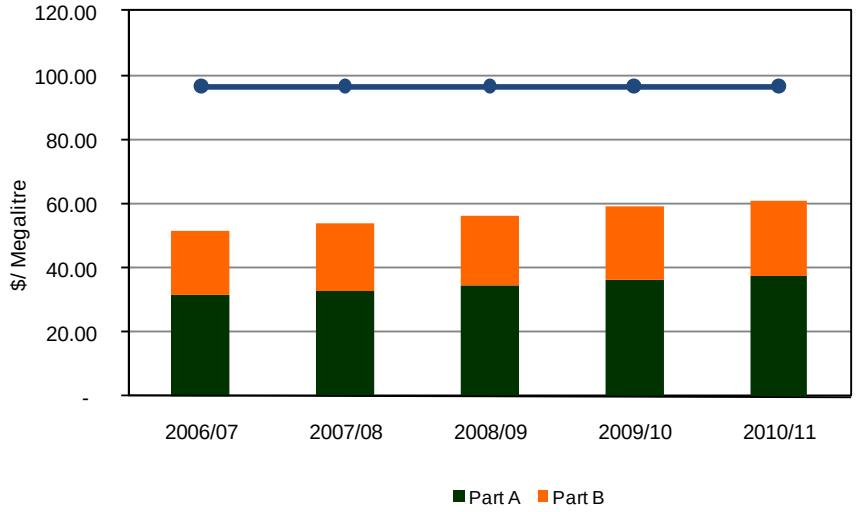
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Channel (Outside a Re-lift more than 500ML)



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

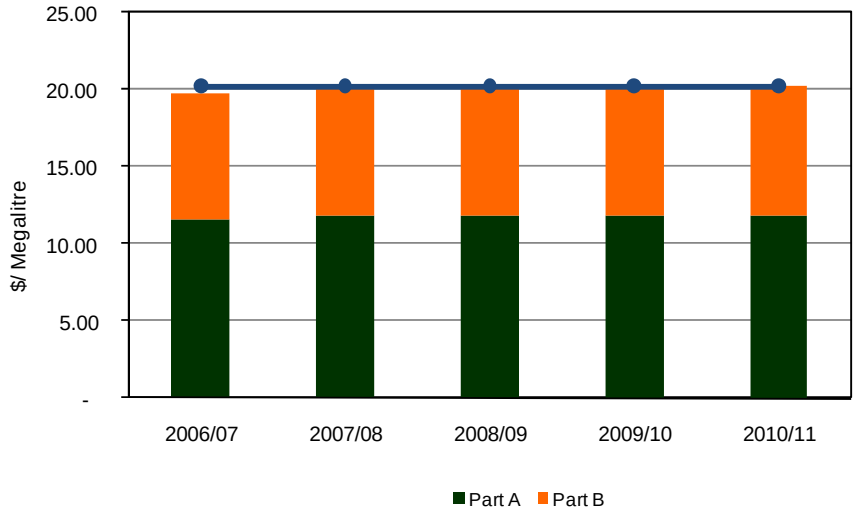
Price path and lower bound reference tariff ($2005/06) – Channel (Re-lift)



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

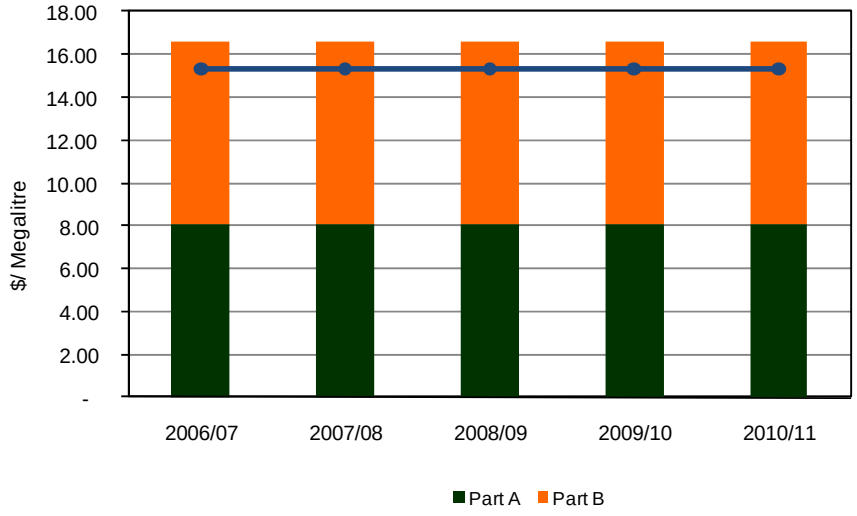
LOWER MARY WSS

Price path and lower bound reference tariff ($2005/06) – Lower Mary River (Tinana Barrage and Teddington Weir)



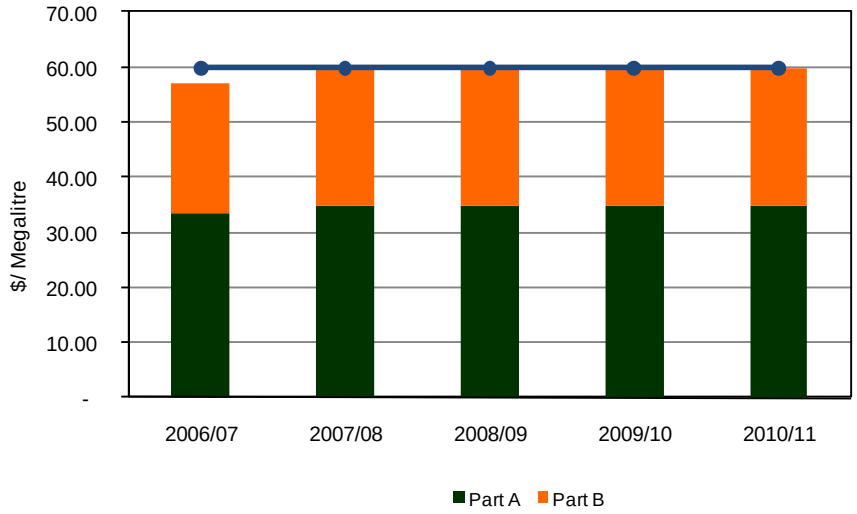
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Lower Mary River (Mary Barrage)



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

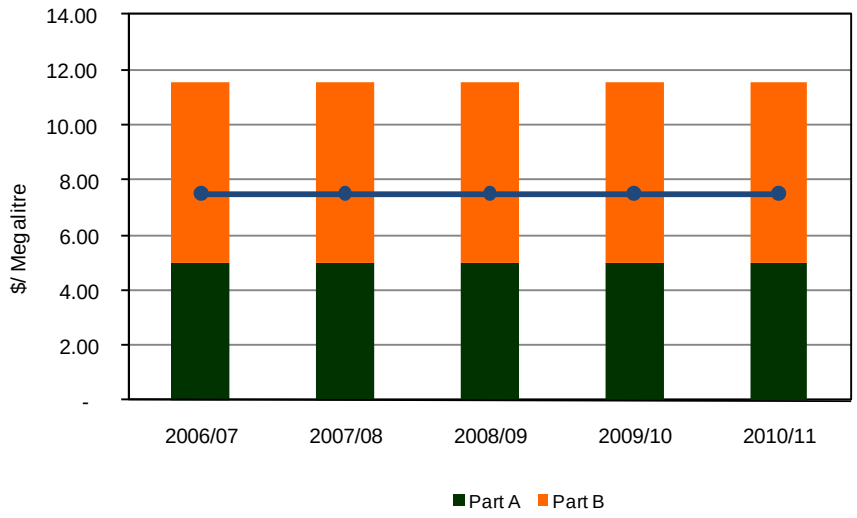
Price path and lower bound reference tariff ($2005/06) – Lower Mary Channel



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

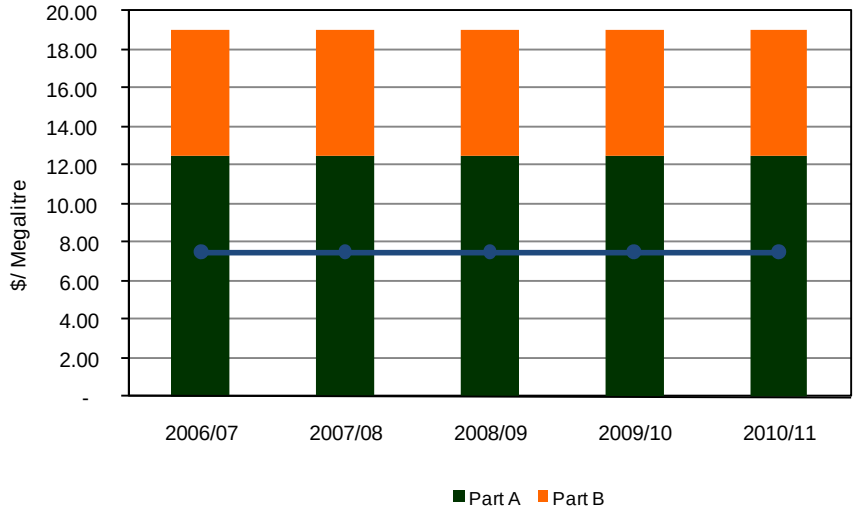
NOGOA-MACKENZIE WSS

Price path and lower bound reference tariff ($2005/06) – River – Medium Priority



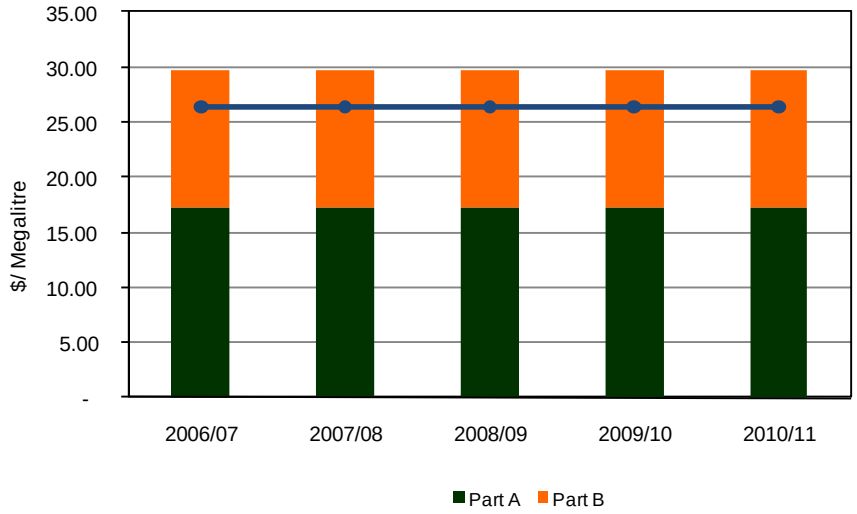
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – River – High Priority



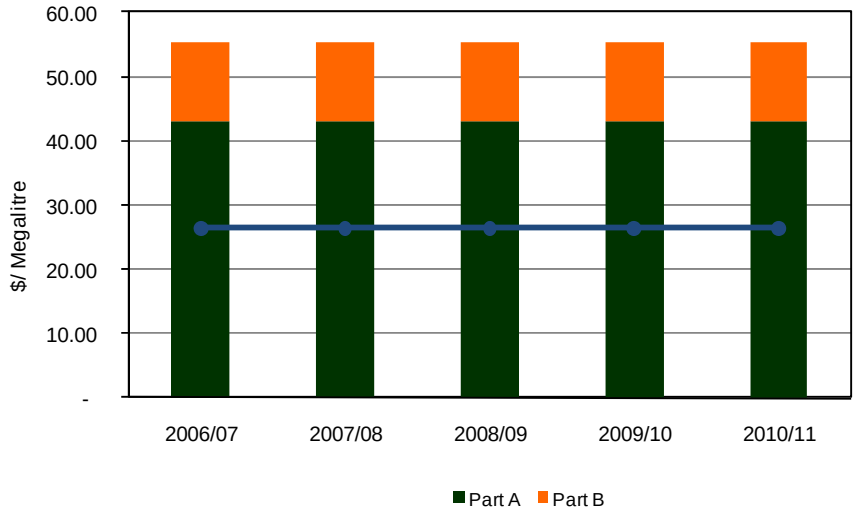
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Channel - Medium Priority



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

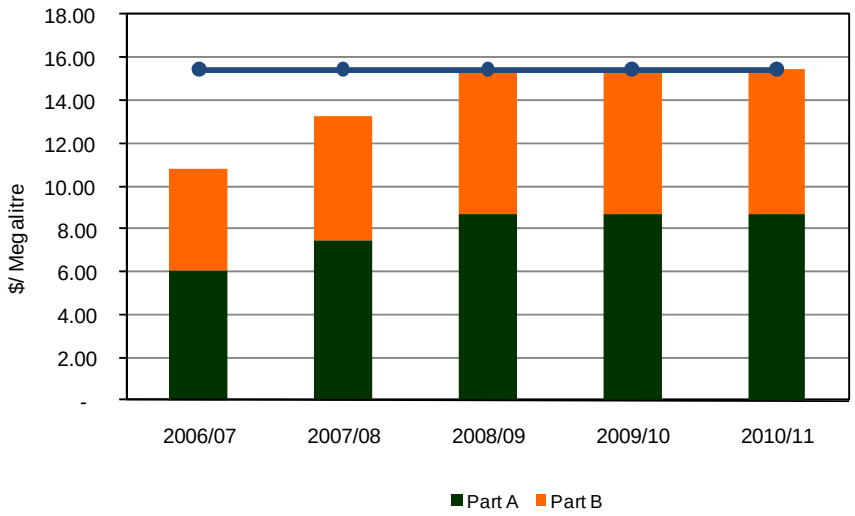
Price path and lower bound reference tariff ($2005/06) – Channel – High Priority



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

PIONEER RIVER WSS

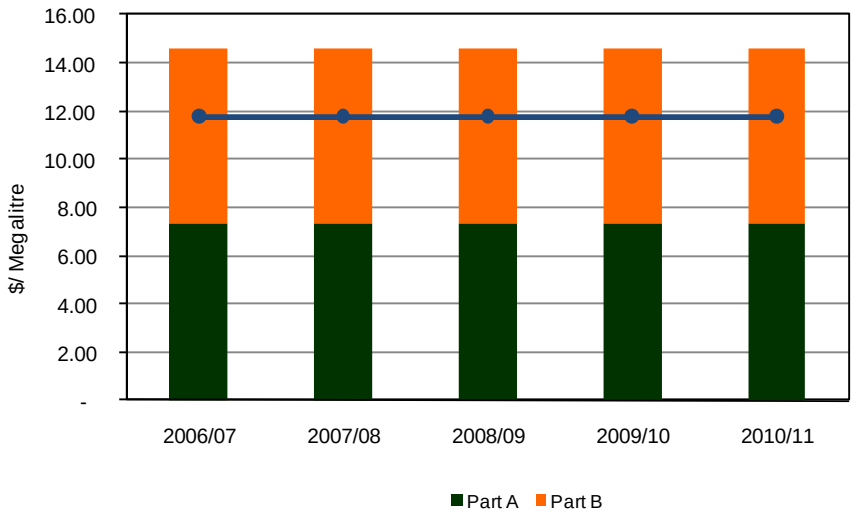
Price path and lower bound reference tariff ($2005/06) – Pioneer Valley Water Board



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

PROSERPINE RIVER WSS

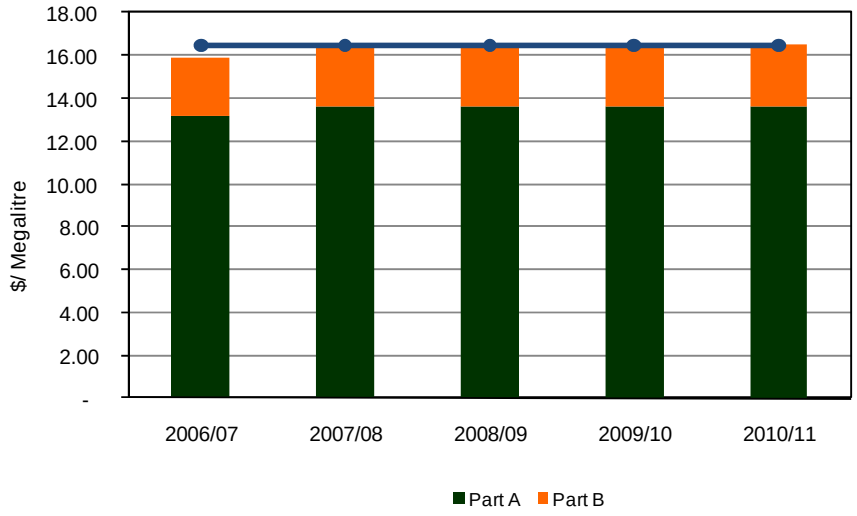
Price path and lower bound reference tariff ($2005/06) – River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

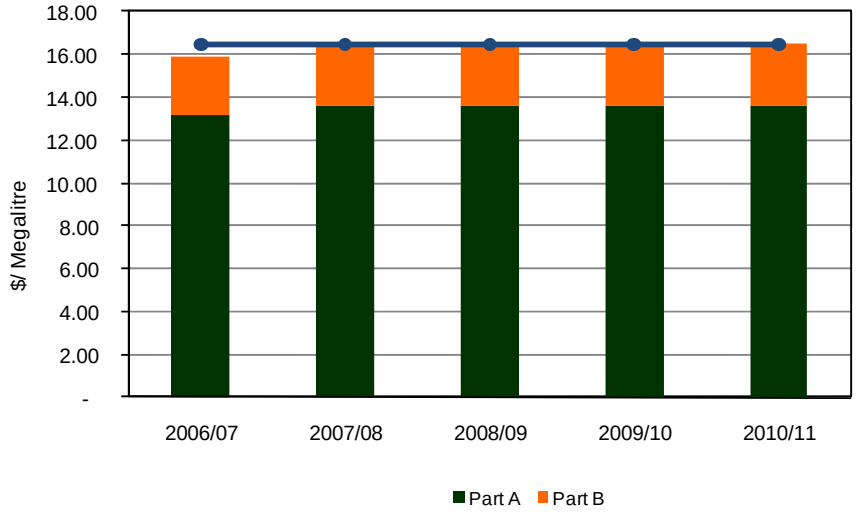
ST GEORGE WSS

Price path and lower bound reference tariff ($2005/06) – Regulated Section (Beardmore Dam or Balone River)



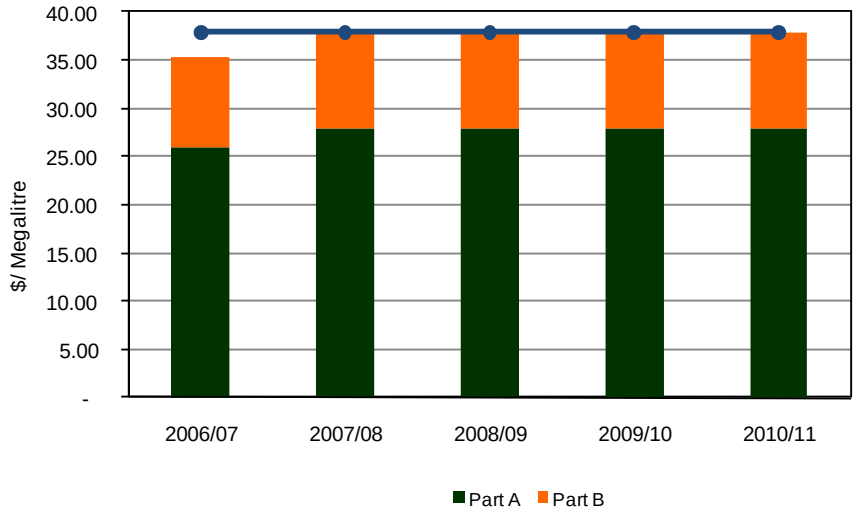
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – Regulated Section (Thuraggi Watercourse)



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

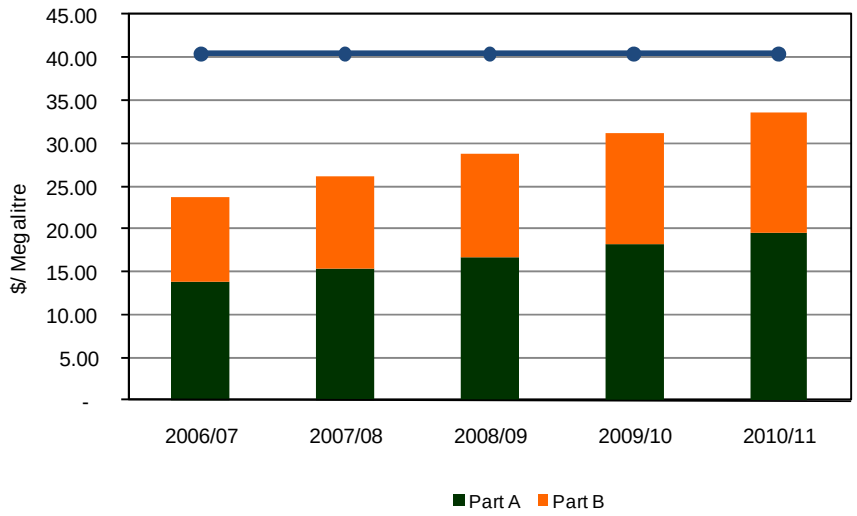
Price path and lower bound reference tariff ($2005/06) – Channel



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

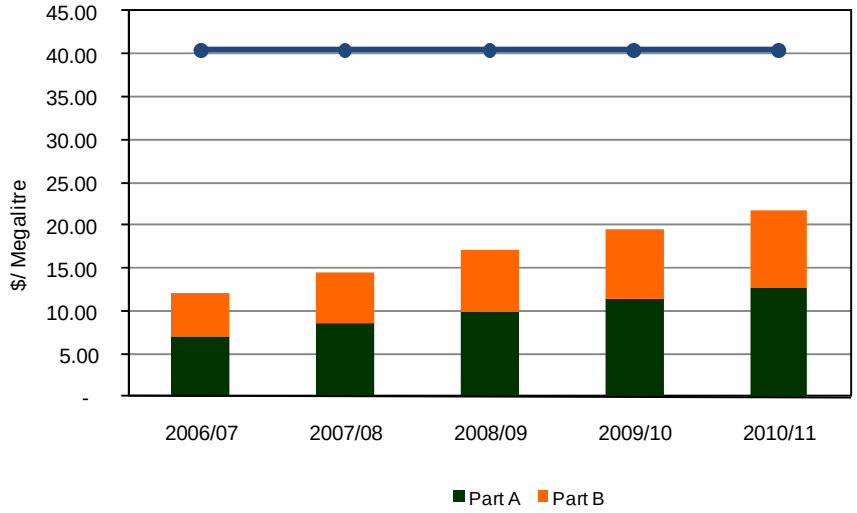
THREE MOON CREEK WSS

Price path and lower bound reference tariff ($2005/06) – River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

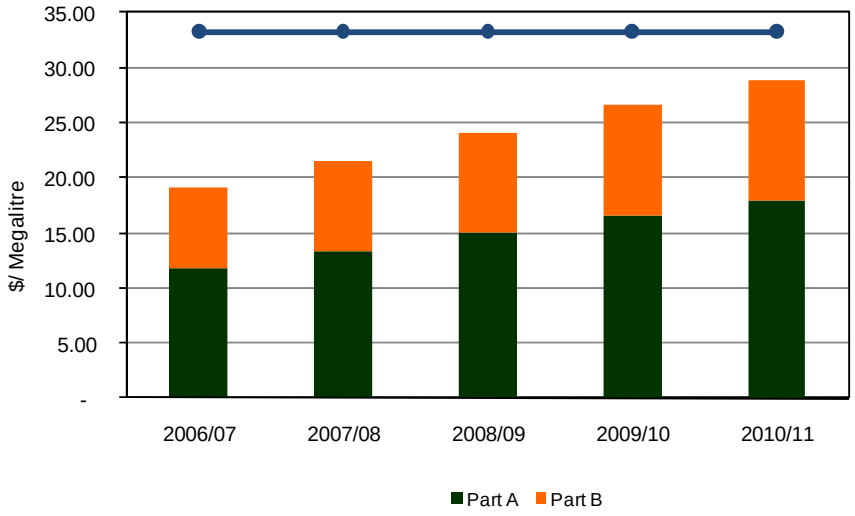
Price path and lower bound reference tariff ($2005/06) – Groundwater



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

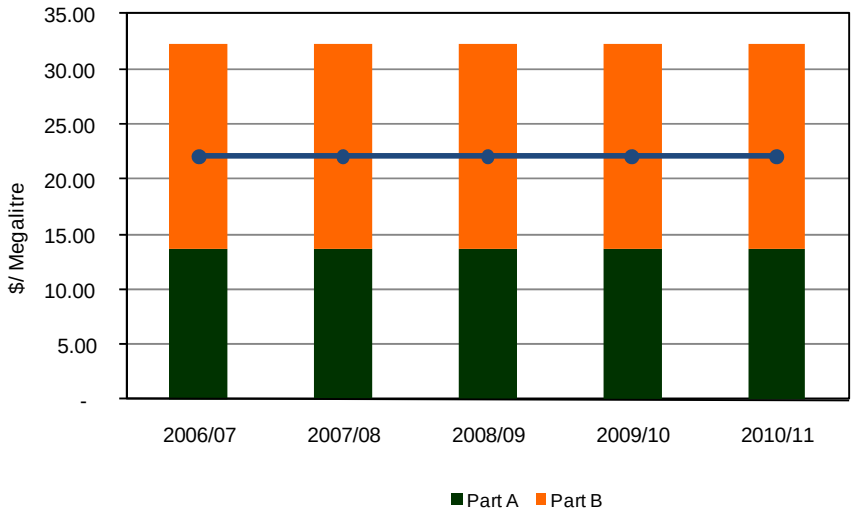
UPPER BURNETT WSS

Price path and lower bound reference tariff ($2005/06) – Regulated Section of Nogo/Burnett River



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

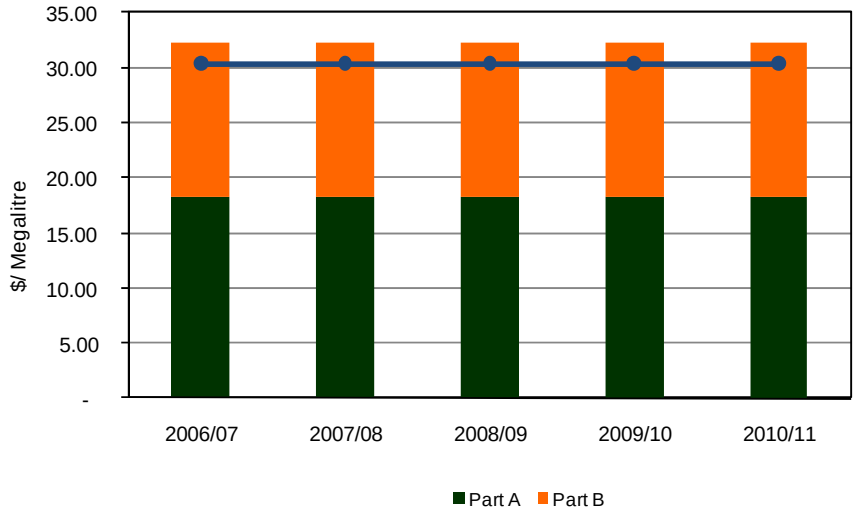
Price path and lower bound reference tariff ($2005/06) – John Goleby Weir



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

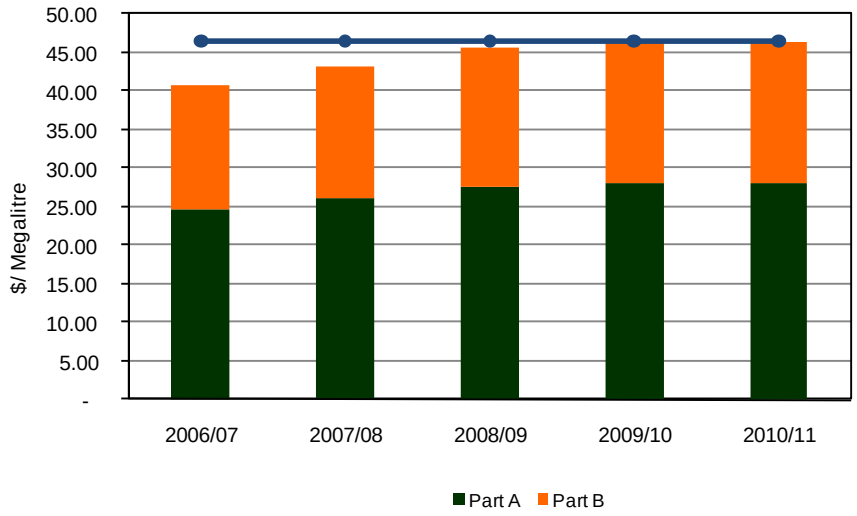
UPPER CONDAMINE WSS

Price path and lower bound reference tariff ($2005/06) – Sandy Creek or Condamine River



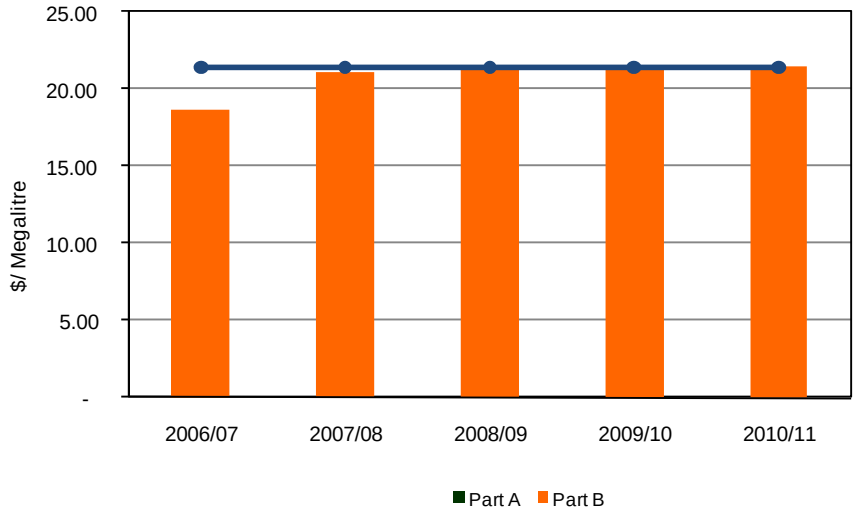
Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – North Branch



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).

Price path and lower bound reference tariff ($2005/06) – North Branch – Risk A



Source: SunWater. Irrigation Price Paths 2006/07 – 2010/11. Final Report (September 2006).