QUEENSLAND COMPETITION AUTHORITY

Draft Report

SunWater Irrigation Price Review: 2012-17

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SUBMISSIONS

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

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

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

Confidentiality

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

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

Public access to submissions

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

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

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GLOSSARY OF ACRONYMS, TERMS AND DEFINITIONS

A	
ABS	***Australian Bureau of Statistics***
ACCC	***Australian Competition and Consumer Commission***
ACCESS CHARGE	*Access Charge* is a special fee that is levied per water account for each SunWater customer in the Mareeba Dimbulah *Water Supply Scheme*.
ACG	***Allen Consulting Group***
ACTEW	***Australian Capital Territory Electricity and Water***
ADMINISTRATION COSTS	*Administration Costs* are head office costs and local *Business Centre* costs.
ADOPTED MIDDLE THREAD DISTANCE	The *Adopted Middle Thread Distance (AMTD)* is the distance in kilometres (km) that a specific point in a *Watercourse* is from the *Watercourse's* mouth or junction with the main *Watercourse* and is measured along the middle of the *Watercourse*.
AER	***Australian Energy Regulator***
AGRICULTURAL AND RESOURCE MANAGEMENT COUNCIL OF AUSTRALIA	The *Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ)*, established in 1993, is one of a number of Ministerial Councils set up by the Commonwealth and State Governments to further co-operation and collaboration in particular fields of mutual concern. ARMCANZ addresses issues related to agriculture, land and water resources, and rural adjustment policy issues. Since 2000, ARMCANZ is known as the Primary Industries Management Committee (PIMC) and the Natural Resource Management Committee (NRMC).
ALLEN CONSULTING GROUP	The *Allen Consulting Group (ACG)* is an independent consulting firm..
AMTD	***Adopted Middle Thread Distance***
ANCID	***Australian National Committee on Irrigation and Drainage***
ANCOLD	***Australian National Committee on Large Dams***
ANNOUNCED WATER ALLOCATION	An *Announced Water Allocation* is the announced ratio (expressed as a percentage) which sets a limit to the amount of regulated water which an irrigator can divert during that water year as a proportion of the irrigator's licensed volume (nominal allocation). Thus, the Announced Allocations specify the portion of a customer's WAE available for use by priority group. The *Announced Water Allocation* may increase in a twelve month period but cannot be reduced from the previous announcement within a water year.
ARMCANZ	***Agriculture and Resource Management Council of Australia and New Zealand***
ARR	***Asset Restoration Reserve***

ARUP	*ARUP* is an independent firm of designers, planners, engineers, consultants and technical specialists.
ASMC	***Australian Sugar Milling Council***
ASSET RESTORATION RESERVE	An annual balance which accounts for renewals expenditure and annuity income. SunWater accounts for these transactions and maintains an annual balance through an Asset Restoration Reserve (ARR).
ATO	***Australian Taxation Office***
AUGMENTATION	*Augmentations* are works of a capital nature undertaken to either: (a) provide new *Water Infrastructure* assets; (b) enhance the service capability of existing *Water Infrastructure* assets; (c) significantly enhance the operational performance of existing *Water Infrastructure* assets.
AURECON	*AURECON* is a consulting firm that provides engineering, management and specialist technical services to government and private sector clients. .
AUSTRALIAN BUREAU OF STATISTICS	The *Australian Bureau of Statistics (ABS)* is Australia's official statistical organisation..
AUSTRALIAN CAPITAL TERRITORY ELECTRICITY AND WATER	The *Australian Capital Territory Electricity and Water (ACTEW)* Corporation supplies energy and water, promotes and manages the use of energy and water, and provides sewerage and communication services to the ACT and surrounding region.
AUSTRALIAN COMPETITION AND CONSUMER COMISSION	The *Australian Competition and Consumer Commission (ACCC)* is an independent authority of the Australia government established in 1995 with the amalgamation of the Australian Trade Practices Commission (TPC) and the Prices Surveillance Authority to administer the Trade Practices Act 1974 (TPA) (Cwth).
AUSTRALIAN ENERGY REGULATOR	The *Australian Energy Regulator (AER)* is a constituent part of the *Australian Competition and Consumer Commission (ACCC*). It was established under Part IIIAA of the Trade Practices Act 1974 and operates as a separate legal entity. The AER regulates the wholesale electricity market and is responsible for the economic regulation of the electricity transmission and distribution networks in the national electricity market (NEM).
AUSTRALIAN NATIONAL COMMITTEE ON IRRIGATION AND DRAINAGE	The *Australian National Committee on Irrigation and Drainage (ANCID)* is the Australian representative body on the International Commission on Irrigation and Drainage (ICID).
AUSTRALIAN NATIONAL COMMITTEE ON LARGE DAMS	The *Australian National Committee on Large Dams Incorporated (ANCOLD)* is an incorporated voluntary association of organisations and individual professionals with an interest in dams in Australia.
AUSTRALIAN TAXATION OFFICE	The *Australian Taxation Office (ATO)* is the Australian Government's principal revenue collection agency to manage and shape tax, excise and superannuation systems that fund services for Australians.
AWB	***Avondale Water Board***

B	
BARRAGE	*Barrage* is barrier constructed across a *Watercourse* to prevent the inflow of tidal *Water*.
BBWSSI	***Bowen Broken Water Supply Scheme***
BGA	***Blue Green Algae***
BENCHMARK RETAIL COST INDEX	*The Benchmark Retail Cost Index (BRCI)* for a particular year is the index used to calculate the total cost of electricity.
BENCHMARKING	*Benchmarking* is the process of independently comparing the cost structures of organisations carrying out similar activities to identify the most efficient costs of operation based on sustainable best practice management, while having regard to factors that may cause structural differences such as the size of the organisations, geographic dispersion and business complexity.
BFVG	*Bundaberg Fruit and Vegetable Growers Cooperative Limited*
BILL OF MATERIALS	*Bill of Materials (BoM)* is a list of the raw materials, sub-assemblies, intermediate assemblies, sub-components, components, parts and the quantities of each needed to manufacture an end product.
BLUE GREEN ALGAE	*Blue-Green Algae (BGA)* are simple aquatic plants and are types of bacteria known as *Cyanobacteria*. Blue-green algal blooms may persist depending on weather or flow conditions. As the bloom dies toxins may be released into the surrounding water.
BoM	***Bill of Materials***
BOM	***Business Operating Model***
BRCI	***Benchmark Retail Cost Index***
BRIAC	***Boyne River Irrigator Advisory Committee***
BRIAIC	***Burdekin River Irrigation Area Irrigators' Committee***
BRIG	***Bundaberg Regional Irrigators Group***
BS	***Bundaberg Sugar***
BUILDING BLOCK APPROACH	*Building Block Approach* is a generic approach to price/revenue regulation involving the determination of maximum revenue requirement made up of a number of separate components, including a return on capital, asset consumption charge and operating, maintenance and administrative charges.
BULK WATER ASSETS	*Bulk Water Assets* are water infrastructure storages, such as dams, weirs and off stream storages..
BULK WATER SERVICE CONTRACT	A *Bulk Water Service Contract* may include a dam, associated weirs, water accounting services, and a range of operational and maintenance services.
BULK WATER SUPPLY	*Bulk Water Supply* is the supply of large quantities of water other than as a supply of Irrigation Services.

BULK WATER SUPPLY SCHEMES	*Bulk Water Supply Schemes* provide bulk water services for customers.
BUSINESS CENTRE	*Business Centres* are SunWater offices, other than the office in Brisbane city, established throughout Queensland to undertake the day-to-day operation and maintenance of SunWater's water supply schemes.
BUSINESS OPERATING MODEL	SunWater's *Business Operating Model (BOM)* is a SAP (Systems, Applications and Products) based model designed to, among other things, record costs..
C	
CAB	***Cost Allocation Base***
CANEGROWERS	*CANEGROWERS* is the peak representative body for Australian sugarcane growers.
CAP	A *Cap* constraint on the volume of allocation water that a customer may take in a water year.
CARRY-OVER	*Carry-over(CO)* is a business product which SunWater is able to offer in some Water Supply Schemes which enables customers to carryover an amount of unused Announced Allocation at the end of one Water Year to the next Water Year.
CCC	***Cooinda Cotton Co.***
CDFVGA	***Childers and District Fruit and Vegetables Growers' Association***
CDI	***Central Downs Irrigators Ltd.***
CHANNEL DISTRIBUTION SYSTEMS	*Channel Distribution Systems* are water infrastructure designed to: (a) convey *Water* in bulk from headworks storage or river diversion points into a distribution system (main channel); or (b) deliver *Water* from a main channel to a *Customer's* supply point (distribution channels); or (c) remove excess *Water* from land (*Drainage* channels).
CHANNEL WATER HARVESTING WAEs	*Channel Water Harvesting WAEs* are WAEs issued to SunWater where during naturally occurring high-flow events, additional river water is made available to distribution system customers in Burdekin-Haughton and St George for a charge.
CHGIA	***Central Highlands Cotton Growers' and Irrigators' Association***
CO	***Carryover***
COAG	***Council of Australian Governments***
COMMUNITY SERVICE OBLIGATIONS	*Community Service Obligations* (CSO) are obligations on an entity to do anything that: (a) is not in the entity's commercial interests to perform; and (b) arises because of – (i) a direction by the Minister or a joint direction by the Minister and Treasurer; or

	(ii) notice by the Minister of a public sector policy that is to apply to the industry; and (c) does not arise because of the application of the following key commercialisation principles and their elements.
CONSUMPTIVE USE	*Consumptive Use* of water for purposes such as irrigation, urban supply or stock watering, resulting in the total removal of the *Water* from the *Water* resource from which it is taken, or its alteration of quality.
CONSUMER PRICE INDEX	The *Consumer Price Index (CPI)* is a measure of changes, over time, in retail prices of a constant basket of goods and services representative of consumption expenditure by resident households in Australian metropolitan areas.
CONTINUOUS SHARING	*Continuous Sharing* is a method developed to manage individual customer water accounts in accordance with their usage patterns and the volume of water physically in storage. This is achieved by allocating each customer a share of the storage and determining account balances on a daily basis according to the share size and individual current account balances. Only available to Macintyre Brook and St George schemes.
CONTRACTORS	*Contractors provide services* attributed directly to jobs within operations and maintenance activities, including weed control contractors, commercial contractors and consultants.
CONTRACT	A *contrac*t is a water supply agreement between SunWater and a customer under which SunWater agrees to release water and the customer accepts the release of water by SunWater on the terms of the agreement.
CORPORATE	*Corporate includes* a number of SunWater resource centres and is a SunWater functional groups responsible for: finance; human resources, information communication technology; procurement; and legal and property services.
CORRECTIVE MAINTENANCE	*Corrective Maintenance* is unplanned maintenance work that arises from either: (a) a failure of Water Infrastructure assets; or (b) an incident associated with Water Infrastructure assets; Emergency *Corrective Maintenance* refers to critical maintenance activities that are unplanned. Scheduled Corrective Maintenance activities are unplanned maintenance activities that do not have to be carried out immediately to restore normal operations but need to be scheduled to occur in advance of the otherwise planned maintenance cycle.
COST ALLOCATION BASE	The *Cost Allocation Base (CAB)* is the basis used to allocate costs to service contracts, where there is no direct causal link between costs and SunWater's business activities.
COST ALLOCATION METHODOLOGY	SunWater's *Cost Allocation Methodology* is to attribute all direct costs to the service contract where the costs were incurred, and to allocate all other costs on the basis of a single *cost allocation base (CAB).*
COST CENTRE	SunWater's cost structure is made up of three different types of *Cost Centre*: resource centres, indirect cost centres and service contracts.
COST RECOVERY	*Cost Recovery* is the ratio of revenue to costs expressed as a percentage value.

COST RISKS	*Cost Risks* relate to changes in market conditions for inputs (including those related to the maintenance and renewal of infrastructure) or as a result of regulatory imposts (such as changes in legislation, taxation and technical or economic regulation).
COUNCIL OF AUSTRALIAN GOVERNMENTS	*Council Of Australian Governments* (COAG) is the peak intergovernmental forum in Australia.
CPI	***Consumer Price Index***
CREDIT WATER	*Credit Water* is a business product which SunWater offer's in selected Water Supply Schemes which enables customers to take water under their Water Allocation during periods of Water shortages.
CRITICAL WATER SUPPLY ARRANGEMENT	For a water supply scheme, a *Critical Water Supply Arrangement (CWSA)* is a plan for the management of water during periods of critical water shortage when the storage levels in dams, weirs or waterholes are at or below minimum operating levels specified in the resource operations plan. .
CS	***Continuous Sharing***
CSG	***Customer Support Group***
CSO	***Community Service Obligation***
CUSTOMER ALLOCATIONS	Specific *Water Entitlements* granted to individuals or organisations (who are customers of SunWater) with a prescribed purpose of use and priority.
CWSA	***Critical Water Supply Arrangement***
D	
DAM	A *Dam* is an artificial structure, whether permanent or temporary, built as a barrier to retain or impound a volume of water, including the storage area created by the structure and the embankments or other structures that control the flow of water or are incidental to the main structure.
DEAD STORAGE	*Dead Storage* is the volume in the storage that cannot be released or diverted.
DELOITTE AUSTRALIA	*Deloitte Australia* is a consulting firm which provides a broad range of audit, tax, consulting, and financial advisory services to public and private clients.
DEMAND RISK	*Demand risk* occurs when customer demand for water is uncertain and can result in variations between actual and forecast revenues. For SunWater, demand risk can fluctuate according to: (a) changes in crop composition or acres irrigated due to a change in commodity prices; (b) changes in on-farm costs; (c) rainfall and changes in rainfall patterns (as the availability of water on-farm can affect the demand for SunWater's water); (d) customer access to alternative supplies; and (e) the price of water obtained from SunWater.
DEPARTMENT OF ENVIRONMENT AND RESOURCE MANAGEMENT	The *Department of Environment and Resource Management (DERM)* is the Queensland Government department with responsibility for water planning and resource management.

DERM	The *Department of Environment and Resource Management* (Queensland Government). Formerly known as the Department of Natural Resources and Water (NRW).
DIRECT COSTS	*Direct Costs* are costs which can be readily attributed to a specific service contract. The most common direct cost is labour. .
DIRECT LABOUR COSTS	*Direct Labour Costs (DLC)* has been proposed by SunWater as the cost allocation base for non-direct costs for the 2012-17 regulatory period.
DISCOUNT RATE	*Discount Rate* is the rate of adjustment used to convert a series of nominal cash flows over a future period of time into today's dollars.
DISTRIBUTION LOSS ENTITLEMENTS	*Distribution Loss Entitlements* are specific *Water Entitlements* granted to SunWater to account for *Distribution Losses* incurred in *Water Supply Schemes* with *Channel Distribution Systems*.
DISTRIBUTION LOSSES	*Distribution Losses* are losses of water which occur when *Water* is released or diverted for distribution through a *Channel Distribution System* or a pipeline system. The primary sources of distribution losses are through: (a) uncontrollable losses – evaporation, seepage, and overflows due to lack of customer usage after rainfall (b) controllable losses – leakages from channels, pumps and/or broken pipes, un-metered or uncontrolled use, metering errors, overflows and 'dumping' of channel *Water* for maintenance requirements and for weed control management.
DISTRIBUTION SYSTEM	*Distribution Systems* generally are comprised of pumps, open channels and or pipes designed to deliver water to customers not located on a river.
DISTRIBUTION SYSTEM ASSETS	*Distribution System Assets* typically include infrastructure used for the transmission, reticulation or treatment of water, usually through open channels and pipelines.
DISTRIBUTION SYSTEM WATER HARVESTING	*Distribution System Water Harvesting* is the practice of water extraction from a river during authorised or announced high flow periods (for example, flooding) that are specified in the applicable ROP.
DLC	***Direct Labour Costs***
DMP	***Drought Management Plan***
DRAINAGE	*Drainage* is a system of infrastructure (whether natural, constructed or improvement to waterways) designed to remove and dispose of excess *Water* from land.
DRAINAGE CHARGES	*Drainage Charges* are fees charged by SunWater for allowing run-off to drain into SunWater's *Drainage System* facilities. .
DRAINAGE DIVERSION	*Drainage Diversion* is the extraction of water from the drainage network.
DRAINGE DIVERSION CHARGES	In Emerald, St George, Theodore and Burdekin-Haughton

	Distribution Systems, SunWater allows customers to extract tail water[1], and rain and storm run-off from the drainage network and are charged *Drainage Diversion Charges.* Customers supply their own pump and other infrastructure (for example, sumps and weirs) in drains.
DRAINAGE SYSTEM	*Drainage systems* may be either a: (a) Sub-Surface *Drainage System* – a system of drainage collector pipes, wells, ditches and/or pumps designed to intercept and remove excess *Groundwater* so as to control the watertable level; or (b) Surface *Drainage System* – a system of open drainage channels, modified natural waterways and/or storages designed to collect drainage from rainfall and irrigation runoff and convey it to a point of disposal.
DRAINAGE WATER	*Drainage Water* is the flow of *Surface Water* from a given area of agricultural land resulting from the effects of rainwater and/or applied irrigation *Water* in excess of crop requirements, *Overland Flows*, underground storage or *Floodwater*.
DROUGHT MANAGEMENT PLAN	A *Drought Management Plan (DMP)* is a document required to be prepared by a registered water service provider setting out how the service provider intends to minimise the impact on communities of water shortages caused by drought. It should detail: (a) the principal activities and groups at risk (b) mitigation actions and programs that address the vulnerability faced by the service provider in continuing to provide water services during drought conditions. The DMP is directed at providing those responsible for decision making with an effective and systematic means of assessing drought conditions and the future outlook, developing mitigation actions and programs that reduce in advance the effects of drought and developing response options to minimise economic stress, environmental losses, and social hardship during drought.
DVIG	***Dawson Valley Irrigators Group***
E	
EBA	***Enterprise Bargaining Agreement***
ECM	***Efficiency Carry-Over Mechanism***
ECONOMIC REGULATION AUTHORITY	*The Economic Regulation Authority (ERA)* is the independent economic regulator for Western Australia.
EFFICIENCY CARRY-OVER MECHANISM	The *Efficiency Carry-Over Mechanisms (ECMs) allow the regulated firm to retain efficiency savings for a reasonable period of time.*
EFFICIENT COSTS	*Efficient Costs* is the lowest sustainable level of costs of supply incurred to provide a given level of service.
EIAC	***Eton Irrigators Advisory Committee***
ENTERPRISE BARGAINING AGREEMENT	An *Enterprise Bargaining Agreement (EBA)* consists of a collective industrial agreement between either an employer and a trade union

[1] Tail water refers to surplus water that flows across an irrigation property (as a result of irrigation) and, if not retained by the soil/mulch/crop, ends up in a drainage system

	acting on behalf of employees or an employer and employees acting for themselves.
ENVIRONMENTAL FLOWS	*Environmental Flows* are the levels of water flows in a *Watercourse* specified in a *Water Resource Plan (WRP)* with the objective of protecting the health of natural ecosystems for the achievement of ecological outcomes.
ERA	***Economic Regulation Authority***
ESC	***Essential Services Commission***
ESCOSA	***Essential Services Commission of South Australia***
ESSENTIAL SERVICES COMMISSION	The *Essential Services Commission (ESC)* is Victoria's independent economic regulator of essential services supplied by the electricity, gas, water and sewerage, ports, and rail freight industries.
ESSENTIAL SERVICES COMMISSION OF SOUTH AUSTRALIA	The *Essential Services Commission of South Australia (ESCOSA)* is the independent economic regulator established by the State Government of South Australia to regulate prescribed essential utility services supplied by the electricity, gas, water, ports and rail industries.
EXTERNALITIES	*Externalities* arise when an activity creates a cost or benefit for a third party (including the environment) for which that party is not fully compensated or charged.
F	
FINANCIAL YEAR	*Financial Year (FY)* is the year when the financial year ends.
FLOODWATER	*Floodwater* is water overflowing or that has overflowed from a *Watercourse* or *Lakes* onto or over Riparian land that is not submerged when the *Watercourse* or *Lakes* flows between or is contained within its bed and banks.
FLOW CONDITIONS	*Flow Conditions* are the rate of flow of water in a *Watercourse*, *Lake or Spring* or overland or the level of water in a *Watercourse*, *Lake*, *Spring*, aquifer, *Dam* or *Weir*.
FREE ALLOCATIONS	*Free Allocations* are specific water entitlements granted to individuals or organisations which SunWater is required to deliver free of charge.
FORM OF PRICE CONTROL	The *Form of Price Control* refers to the means for regulating prices for example by price caps, revenue caps or hybrid and other caps.
FORM OF REGULATION	The *Form of Regulation* refers to the choice between direct control (rate of return and incentive regulation), negotiate/arbitrate, yardstick regulation, price monitoring and relevant variations.
FSL	***Full Supply Level***
FSV	***Full Supply Volume***
FTE	***Full Time Equivalent***
FULL TIME EQUIVALENT	*Full Time Equivalent (FTE)* is a unit to measure employed persons in a way that makes them comparable although they may work or study a different number of hours per week. An FTE of 1.0 means that the person is equivalent to a full-time worker, while an FTE of

	0.5 signals that the worker is only half-time..
FULL SUPPLY LEVEL	The *Full Supply Level (FSL)* is the level of the *Water* surface when the *Water* storage is at maximum operating level (when not affected by flood).
FULL SUPPLY VOLUME	The *Full Supply Volume (FSV)* is the entire volume of water in the storage below the Full Supply Level.
FY	***Financial Year***
G	
GAUGE HEIGHT	A *Gauge Height* is a measure of level of a river or reservoir as a height above an arbitrary datum.
GAUGING STATION	*Gauging Station* is a measurement of flow made at a particular stage (water level) for purposes of establishing the relationship between water level and flow.
GAWB	***Gladstone Area Water Board***
GHD	*GHD* is an international network of engineers, architects and environmental scientists serving clients in the global markets of water, energy and resources, environment, property and buildings, and transportation.
GIGALITRE	A *Gigalitre(GL)* is 1 billion (1,000,000,000) litres or 1 thousand (1,000) Megalitre (ML)
GL	***Gigalitre***
GMW	***Goulburn-Murray Water***
G&S	***Gilbert & Sutherland***
Gilbert & Sutherland	*Gilbert and Sutherland (G&S)* is an independent specialist consulting group focussed on agricultural, soil and water scientists and engineering. .
GLADSTONE AREA WATER BOARD	The *Gladstone Area Water Board (GAWB)* is a commercialised statutory authority with responsibility for storing and delivering water to industrial, electricity-generation and local government customers in the Gladstone area. .
GOC	***Government Owned Corporation***
GROUNDWATER	*Groundwater* is water sourced from an underground aquifer.
GST	***Goods and Services Tax***
H	
HALCROW	*Halcrow* is an engineering consultancy company that provides planning, design and management services for developing infrastructure and buildings worldwide.
HARVESTING	*Harvesting* is a consumption of water taken during authorised or announced high flow periods.
HDPE	***High Density PolyEthylene***

HEADWORKS UTILISATION FACTORS	The *Headworks Utilisation Factors (HUFs)* apportion each Water Supply Scheme's storage headworks volumetric capacity[2] utilised by each water entitlement priority group in the scheme. (SunWater, 2010d)
HEALTH, SAFETY, ENVIRONMENT AND QUALITY	*Health, Safety, Environment and Quality (HSEQ) is* a SunWater resource centre or a functional group responsible for workplace health and safety, environmental issues and quality assurance.
HIGH DENSITY POLYETHYLENE	The *High Density Polyethylene* liners are 2mm thick sheets used to line channels.
HIGH PRIORITY WATER ALLOCATION	A holder of *High Priority Water Allocation* will usually be able to access a quantity of water equal to their nominal volume more frequently and with less restriction on their water availability than the holder of a water entitlement within a medium or other lesser priority group.
HSEQ	***Health, Safety, Environment and Quality (HSEQ)***
HUFs	***Headworks Utilisation Factors***
HYDROLOGY	*Hydrology* is the science of dealing with *Surface Water* and *Groundwaters* - their occurrence, circulation and distribution, their chemical and physical properties and their reaction with the environment.
I	
IAC	***Irrigator Advisory Committee***
ICRC	***Independent Competition and Regulatory Commission***
ICSM	***Isis Central Sugar Mill***
ICT	***Information, Communication and Technology***
INDEC	*Indec* is a management advisory consulting providing financial and economic analysis, benchmarking and efficiency improvement programs, and asset, program and engineering management.
INDEPENDENT COMPETITION AND REGULATORY COMMISSION	The *Independent Competition and Regulatory Commission (ICRC)* is a statutory body set up to regulate prices, access to infrastructure services and other matters in relation to regulated industries and to investigate competitive neutrality complaints and government-regulated activities in the ACT.
ID	***Infrastructure Development***
IM	***Infrastructure Management***
INDEPENDENT PRICING AND REGULATORY TRIBUNAL	The *Independent Pricing and Regulatory Tribunal (IPART)* is the independent economic regulator for NSW. IPART oversees regulation in the electricity, gas, water and transport industries and undertakes other tasks referred to it by the NSW Government.
INDIRECT COSTS	*Indirect Costs* are costs incurred from the provision of specialised services that pertain to a particular type of asset or group of service contracts (for example, asset management strategy and systems).

[2] Headworks volumetric capacity in this context includes the useable storage of all dams and weirs within a scheme.

	Indirect Costs are allocated only to those service contracts that receive some benefit from the indirect cost centre.
INDIRECT COST CENTRE	*Indirect Cost Centre* is one of SunWater's three cost centres. They contrast with resource centres in that they generally do not employ staff. However, they are similar to resource centres in that whatever costs are charged to an indirect cost centre are apportioned out to service contracts.
INFORMATION, COMMUNICATION AND TECHNOLOGY	*Information, Communication and Technology (ICT)* is a SunWater resource centre in SunWater's Corporate functional group responsible for Network infrastructure including business systems analysis, infrastructure support (IT and phone), information governance (hard copy and library function) and IT service desk.
INFRASTRUTURE DEVELOPMENT	*Infrastructure Development* includes a number of SunWater resource centres and is a SunWater functional groups responsible for new infrastructure projects carried out both internally to SunWater and with external clients, project management and project proposals and business development.
INFRASTRUCTURE MANAGEMENT	*Infrastructure Management* includes a number of SunWater resource centres and is a functional groups responsible for: (a) Asset Management – Strategic asset management (including strategy, planning, and performance); (b) Water Accounts – Water accounting, ROP/ROL compliance, and customer service; and (c) Regional Service Delivery – WSS operations and maintenance. Includes regional service centres located in Clare (Far North), Eton (North), Bundaberg (Central) and Toowoomba (South) and depots.
INTEGRATED QUANTITY AND QUALITY MODELLING	The *Integrated Quantity and Quality Modelling (IQQM)* is a computer program that simulates daily streamflows, flow management, storage, releases, instream infrastructure, water diversions, water demands and other hydrologic events in the plan area.
INTERACTIVE VOICE RESPONSE	The *Interactive Voice Response (IVR)* is a computer technology used by SunWater to take water orders from its customers for the purpose of ordering water, reporting faults and for online support from SunWater.
INTERIM RESOURCE OPERATIONS LICENCE	*Interim Resource Operations Licence (IROL)* is a licence granted under section 175 of the *Water Act 2000 (Qld)* which authorises the licence holder to manage and operate *Water Infrastructure* (e.g. a *Water Supply Scheme*) and to interfere with the natural flow of *Water*, to the extent necessary for that operation, in an area where a *Resource Operations Plan* has not been approved.
INTERIM WATER ALLOCATION	An *Interim Water Allocation (IWA)* is an authority to take water managed under an *IROL* or a *Resource Operations Licence(ROL)* that represents a volumetric share of *Water* and any conditions attaching to the authority. *Interim Water Allocations* will usually be converted to *Water Allocations* when a *Resource Operations Plan* is approved that specifies the details of conversion.
INTERSAFE	SunWater's *Intersafe* project has sought to rectify extreme and high workplace health and safety risks in irrigation assets across the State. The project has involved the supply and installation of around $13.6 million of 1,430 assets across Ayr, Biloela, Mackay, Mareeba,

	Bundaberg and Toowoomba from 2008-09 to 2010-11.
IPART	***Independent Pricing and Regulatory Tribunal***
IQQM	***Integrated Quantity and Quality Modelling***
IRRIGATOR ADVISORY COMMITTEE	*Irrigator Advisory Committee (IAC) is an irrigation customer committee established within a water supply scheme to consult with SunWater on operational issues.*
ISP	***Isis Sugar Partnership***
IT	***Information Technology***
IROL	***Interim Resource Operations License***
IRRIGATION SERVICE	*Irrigation Service* is the supply of water or drainage services for irrigation of crops or pastures for commercial gain.
IVR	***Interactive Voice Response***
J	
K	
KCWB	***Kelsey Creek Water Board***
L	
Labour	*Labour* includes direct labour costs attributed directly to service contracts, and excludes the cost of contractors and consultants.
Labour Utilisation	*Labour Utilisation* is calculated for each SunWater employee by dividing the number of hours directly attributed each year to either a service contract or indirect cost centre by the total capacity of that position.
LBRI	***Lower Boyne River Irrigators***
LBW	***Lower Burdekin Water***
LOSSES (*WATER*)	The annual volume of *Water* lost in a supply/distribution system due to evaporation and leakage.
LOWER BOUND COSTS (LOWER BOUND PRICING)	As defined by *COAG*, *Lower Bound Pricing* is the level at which to be viable, a *Water* business should recover, at least, the operational, maintenance and administrative costs, externalities, taxes or TERs (not including income tax), the interest cost on debt, dividends (if any) and make provision for future asset refurbishment/replacement.
M	
MAE	***Mission, Activities and End Products***
MAINTENANCE COST INDEX	*Maintenance Cost Index* was developed by QR to reflect changes in its central Queensland maintenance costs.
MATERIALS	*Materials* include direct materials costs attributed directly to jobs within operations and maintenance activities, including pipes,

	fittings, concrete, chemicals, plant and equipment hire.
MAXIMUM REVENUE REQUIREMENT	*Maximum Revenue Requirement (MRR)* is the total amount of revenue that an efficiently operated business would need to receive to remain commercially viable, but not earn monopoly profits. Generally derived using the building block approach.
MBIA	***Macintyre Brook Irrigators Association***
MCI	***Maintenance Cost Index***
MCL abd MSL	***Mackay Canegrowers Limited and Mackay Sugar Limited***
MDB	***Murray-Darling Basin***
MDIAC	***Mareeba Dimbulah Irrigation Area Council***
ML	***Megalitre***
MEGALITRE	A *Megalitre* is1 million (1,000,000) litres.
METER	A *Meter* is a measurement device (e.g. a dethridge *Meter* or in-line flow *Meter*) that is attached to a *Metered Offtake* to measure the amount of *Water Taken* (e.g. delivered or consumed) by a *Customer* through that *Offtake*.
METERED OFFTAKE	A *Metered Offtake* is an *Offtake* fitted with a *Meter*.
METER READING	A *Meter Reading* is a record of the number displayed on the Meter Dials.
MINIMUM CHARGE	A *Minimum Charge* is applied to a *Customer's* account by SunWater when the volume of the *Customer's Water Usage* is such that the sum of all charges applied to the account (i.e. the sum of *Part A Charge* plus *Part B Charge*) is less than a prescribed *Minimum Charge*.
MISSION, ACTIVITIES AND END PRODUCTS	A *Mission, Activities and End Products* (MAE) analysis is a bottom up, needs based assessment of organisational costs on a functional level, breaking down each function into sub-functions (missions), activities and end-products (or deliverables) (Deloitte, 2011a). The purpose of the analysis is to collect information about the business that explains: how employees spend their time; and what costs within a function are directed to which activities.
MRR	***Maximum Revenue Requirement***
MSF	***Maryborough Sugar Factory***
N	
NATIONAL COMPETITION COUNCIL	The *National Competition Council (NCC)* is a research and advisory body which was established in 1995 by agreement of the Council of Australian Governments (COAG). The Council's main function is to recommend on the regulation of third party access to services provided by monopoly infrastructure.
NATIONAL WATER COMMISSION	The *National Water Commission* is responsible for helping to drive national water reform and advising the Commonwealth Minister for Climate Change and Water and State and Territory governments on water issues.

NATIONAL WATER INITIATIVE	The *National Water Initiative(NWI)* is an intergovernmental agreement between the Australian, state and territory governments to improve the management of the nation's water resources and provide greater certainty for future investment. The Natural Resource Management Ministerial Council is the body primarily responsible for overseeing implementation of the NWI.
NCC	***National Competition Council***
NWC	***National Water Commission***
NERA Economic Consulting	*NERA Economic Consulting* is a consulting firm which addresses economic, finance issues.
NETWORK SERVICE PLAN	The *Network Service Plans (NSPs)* present SunWater's forecast of efficient costs, including operating costs and a renewals annuity, for each of the 22 bulk water supply schemes and 8 distribution systems relevant to the Ministers' amended referral notice.
NRM&W	***Queensland Department of Natural Resources, Mines and Water.*** *Now known as Department of Environment and Resource Management (DERM)*
NRW	***Natural Resources and Water.*** *Now known as Department of Environment and Resource Management (DERM)*
NOMINAL WATER ALLOCATION	*Nominal Water Allocation* is the quantity of water apportioned under a water allocation at the time it is first granted or a licensed volume of water that is specified as proportion of storage.
NOMIMAL VOLUME	A *nominal volume* meaning: (a) for a *Water Allocation* managed under a *Resources Operations Licence* – the number used to calculate the *Water Allocation's* share of the *Water* available to be *Taken* by holders of *Water Allocations* in the same priority group; (b) for a *Water Allocation* not managed under a *Resources Operations Licence* – the number used to calculate the *Water Allocation's* share of the *Water* available to be *Taken* by holders of *Water Allocations* in all *Water* allocation groups in a *Water Resource Plan* area.
NON-DIRECT COSTS	*Non-direct costs* are defined as *overhead costs* and *indirect costs*.
NSP	***Network Service Plan***
NWI	***National Water Initiative***
O	
OIC	***Orders in Council***
OFFTAKE	An *Offtake* is the point of delivery from a *Water Supply Scheme* to an individual *Customer*, being a pipe or channel through which *Water* is *Taken* from a stream, *Channel*, bore or storage.
OFFSTREAM STORAGE	A lake or artificial *Water* storage constructed away from a *Watercourse* into which *Water* is diverted from the *Watercourse.*
ORDERS IN COUNCIL	*Order in Council* is a form of legislation in many countries.
OTHER COSTS	*Other Costs* include direct costs attributed directly service contracts,

	including insurance, local government rates, land tax and miscellaneous costs.
OVERHEADS	These are costs incurred by SunWater functions in providing support to the whole business (all 62 service contracts) and are not able to be directly charged out to a particular service contract. They will generally be the residual amount of a functions costs once direct and indirect costs have been charged out.
OVERLAND FLOW WATER	*Water*, including *Floodwater*, flowing over land, otherwise than in a *Watercourse* or *Lake*. *Overland Flow Water* does not include: (a) *Water* that has naturally infiltrated the soil in normal farming operations, including infiltration that has occurred in farming activity such as clearing, replanting and broadacre ploughing (b) *TailWater* from irrigation if the *TailWater* recycling meets best practice requirements (c) *Water* collected from roofs for rainwater tanks.
P	
PARSONS BRINCKERHOFF	*Parsons Brinckerhoff (PB)* is a consulting firm specialising in transport, infrastructure and environmental matters.
PART A CHARGE	A charge implemented in the current irrigation price path intended to recover the fixed costs of maintaining the *Water Infrastructure* of a *Water Supply Scheme*.
PART B CHARGE	A variable charge implemented in the current irrigation price path intended to recover the marginal costs associated with the actual delivery (usage) of *Water*.
PB	***Parsons Brinckerhoff***
PC	***Productivity Commission***
PDCCL	***Proserpine District Canegrowers Cooperative Limited***
PCSMAL	***Proserpine Co-operative Sugar Milling Association Limited***
PERMANENT TRADE OF WATER ALLOCATION	*Permanent Trading* of a *Water Allocation* involves transferring ownership of a *Water Allocation* and may also involve: (a) a change to the resource related elements of a *Water Allocation* itself (e.g. location or purpose of use) (b) a subdivision of a *Water Allocation* (c) an amalgamation of *Water Allocations*.
PLC	***Programmable Logic Controller***
POSTAGE STAMP TARIFF	*Tariffs* (charges) that are uniform for all users (or classes of users) within a defined supply area, regardless of differential costs of supply.
PREVENTIVE MAINTENANCE	*Preventive Maintenance* is planned maintenance work that: (a) is intended to maintain the ongoing operational performance and service capacity of *Water Infrastructure* as close as possible to its designed standard (b) is cyclical in nature with a typical interval of 12 months or less. *Preventive Maintenance* includes: condition monitoring; routine

	servicing; and weed control management.
PRICE PATH	Regulated prices and charges for *Irrigation Services* provided by Sun*Water* in each of Sun*Water*'s *Water Supply Scheme.*
PRICING CONVERSION FACTORS	A *Pricing Conversion Factor* is a number derived specifically for the irrigation pricing determination and is used to differentially proportion *Lower Bound Costs* according to priority of *Water Entitlements* such that all *Water Entitlements* are converted to an "equivalent" volume of medium priority entitlement.
PRIORITY GROUP	*Water Allocations* that have the same *Water Allocation Security Objective (WASO).*
PRICEWATERHOUSECOOPERS	*PricewaterhouseCoopers (PwC)* is a consulting firm that provides industry-focused assurance, tax and advisory, corporate accountability, performance & process improvement, risk management, and mergers and acquisitions advisory services.
PRODUCT	A *Product* or service that is offered by SunWater to its customers. A product is defined as either a Water Product to be taken through the meter, a business product or another product, for example; Allocated Water, River Harvesting, Temporary Transfer.
PRODUCTIVITY COMMISSION	The *Productivity Commission* is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians.
PROGRAMMABLE LOGIC CONTROLLER	A *Programmable Logic Controller (PLC)* is a stand-alone digital computer used for automation of electromechanical processes, such as control of machinery on factory assembly lines, amusement rides, or light fixtures.
PS	***Pump Station***
PUMP STATION	*A Pump Station (PS)* is a water infrastructure comprised of mechanical and electrical equipment to assist in the movement and *Taking of Water.*
PVWater	***Pioneer Valley Water Co-operative Limited***
PwC	***PricewaterhouseCoopers***
Q	
QCA	***Queensland Competition Authority***
QCCCE	***Queensland Climate Change Centre of Excellence***
QECAIPD	***Queensland Engineering Construction Activity Implicit Price Deflator***
QFF	***Queensland Farmers' Federation***
QUEENSLAND CLIMATE CHANGE CENTRE OF EXCELLENCE	The *Queensland Climate Change Centre of Excellence (QCCCE),* the state-based climate science research centre in Australia, is a whole-of-government unit located within the Office of Climate Change. QCCCE undertakes targeted research and delivers specialised information to inform Queensland's response to climate change, climate variability and climate extremes.

QUEENSLAND COMPETITION AUTHORITY	The *Queensland Competition Authority* is the independent Statutory Authority created as a result of a series of Council of Australian Government agreements primarily to oversee pricing practices relating to monopoly business activities, competitive neutrality and access to services.
QUEENSLAND COMPETITION AUTHORITY ACT 1997 (QLD)	The *Queensland Competition Authority Act 1997* is an Act to establish the Queensland Competition Authority, give it powers and functions about pricing practices relating to government monopoly business activities, competitive neutrality and access to services, and for other purposes.
QUEENSLAND FARMERS' FEDERATION	The *Queensland Farmers' Federation (QFF)* is a peak rural industry organisation in *Queensland* representing more than 13,000 primary producers across Queensland.
QUEENSLAND DEPARTMENT OF NATURAL RESOURCES, MINES AND WATER	Now known as the Department of Environment and Resource Management (DERM)
QVAS	***Queensland Valuation Services***
QUEENSLAND VALAUTION SERVICES	The *Queensland Valuation and Sales (QVAS)* is a data base maintained by the Valuer-General who values all land on behalf of the State Government.
R	
RAB	***Regulatory Asset Base***
RCM	***Reliability Centred Management***
Real $	Values expressed in 2010-11 dollar terms (unless otherwise specified)
RECREATIONAL FACILITIES	Facilities that do not form part of the core *Water Infrastructure* but are provided for general public use (e.g. picnic shelters, barbeques, lookouts, public toilets, parks, boat-ramps, etc).
REFERABLE DAM	A *Dam* is a *Referable Dam* if: (a) a failure impact assessment of the *Dam* is required to be carried out under part 6 of the *Water Act 2000 (Qld)* (b) the assessment states the *Dam* has a category one or category two failure impact rating (c) the chief executive has, under section 487, accepted the assessment. A *Weir* is not considered to be *Referable Dam* unless the *Weir* has a variable flow control structure on the crest of the *Weir*.
REFURBISHMENTS (RENEWALS)	*Refurbishment* of Water Infrastructure refers to works: (a) intended to maintain the ongoing performance and service capacity of Water Infrastructure as close as possible to the original design standards (b) cyclical in nature with a typical interval of greater than 12 months.
REFURBISHMENT ANNUITY	Refurbishment Annuity is a series of equal payments occurring over a relatively long period of time to recover the costs of *refurbishment*/rehabilitation (asset consumption charges) associated with *Water Infrastructure* in each of SunWater's *Water Supply*

	Schemes.
REGULATED AREAS	*Regulated Areas* are areas that benefit from artificial supplementation through storage infrastructure such as dams and weirs. Natural flows can be supplemented by releases from storages increasing reliability of supply.
REGULATORY ASSET BASE	*Regulatory Asset Base* is the value of assets used for the purpose of determining the regulatory cost of capital, also referred to as the regulatory capital value or regulatory capital base.
RELIABILITY CENTRED MANAGEMENT	*Reliability Centred Management (RCM)* is a risk-based process that can assist in providing the optimal mix of preventive and corrective maintenance. In the short term, this will be reliant on the effective use of historical data to inform future planning; however, over the longer term, improved condition and performance monitoring will provide the basis for more robust, long term maintenance and renewals planning.
RELIABILITY (OF SUPPLY)	*Reliability or probability of supply* concerns the regularity with which a holder of a *Water Entitlement* can expect to obtain the volume of *Water* specified in the *Water Entitlement*.
RENEWALS	See *Refurbishments*.
RENEWALS ANNUITY	Where asset consumption charges reflect a constant amount necessary to recoup the costs of refurbishment/rehabilitation of the network as measured over a relatively long period of time.
RESERVE ALLOCATIONS	*Reserve Allocations* are specific water entitlements granted to SunWater to hold in reserve for future use by specific *Customers*.
RESOURCE CENTRE	*Resource Centres* are the starting point for all overhead costs. They are the SunWater cost centre primarily responsible for employing staff and incurring non-labour overhead costs. Labour and other resources from SunWater's resource centres are either directly attributed to other cost centres (for example, to service contracts), or are included in SunWater's overhead cost pool.
RESOURCE OPERATIONS LICENCE	A *Resource Operations Licence (ROL)* is a licence granted under section 108 of the *Water Act 2000 (Qld)* which authorises the licence holder to operate *Water Infrastructure* and to interfere with the flow of *Water* to the extent necessary for that operation.
RESOURCE OPERATIONS PLAN	*Resource Operations Plans (ROPs)* are plans approved under section 103(2) of the *Water Act 2000 (Qld)*. *Resource Operations Plans* are used to implement *Water Resource Plans* in specified areas. They detail the operating rules for *Water Infrastructure* and other management rules that will be applied in the day-to- day management of the flow *Water* in a reach or sub-catchment. Generally, *Resource Operations Plans* will specify: (a) *Water* access rules; (b) *Environmental Flow* rules; (c) *Water Trading* rules; (d) Details of the conversions of *Water Licences* to *Water Allocations;* (e) *Water* monitoring requirements.
RETURN FLOWS	Surface runoff from irrigation, irrigation drainage and *Groundwater* discharge from irrigation areas that reach the river

	system.
REVENUE REQUIREMENT	The total amount of revenue that must be recovered from *Water* prices to ensure the full recovery of *Lower Bound Costs* and ensure minimum financial viability.
RIVER HARVESTING	*River Harvesting* is a consumption of (*Water Taken)* during authorised or announced high flow periods by DERM.
ROP	***Resource Operations Plan***
RTI	***Right to Information Act 2009 (Qld)***
S	
SAHA INTERNATIONAL	*SAHA International* is a consulting firm focused on transportation, energy, water and wastewater.
SAMP	***Strategic Asset Management Plan***
SAP	***Systems, Applications and Products***
SCADA	***Supervisory Control and Data Acquisition***
SCARM	***Standing Committee for Agriculture and Resource Management***
SCHEME	A *Scheme* is water supply system based around a defined storage and/or distribution business activity, usually serving irrigation and other customers. It is also a geographically distinct area of responsibility as defined in the Resource Operating Licence (ROL).
SEASONAL WATER ASSIGNMENT	A *Seasonal Water Assignment (SWA)* is the assignment by the holder of an *Interim Water Allocation, Water Allocation or Water Licence* of the benefit under the allocation or licence to another person, in a given *Water Year*, of all or part of the *Water* that may be taken under the allocation or licence.
SEGMENT	A component of a *Water Supply Scheme* that may be distinguished from other components of the same *Water Supply Scheme* on the basis of any number of factors, including its geographical location, the type of operating requirements, type of *Water Infrastructure* used to supply the relevant services and in some cases, the type of *Customers Taking Water*.
SERVICE CONTRACT	A *Service Contract* represents a group of assets that generate cash inflows largely independent of cash flows from other group of assets. Service Contract is a group of one or more segments (for example, reticulation, headworks, drainage) of a WSS that collects both revenue and costs. Service contracts are the end point (before customers) for all of SunWater's direct, indirect and overhead costs.
SERVICE STANDARDS	*Service Standards* are comprised of two parts: (a) operational service standard – as per Scheme Supply Arrangements and Service Targets for each service contract setting out how SunWater is to address issues such as billing, notification periods, number and duration of interruptions to water supply, restricting supply and complaints; and (b) asset service capacity – SunWater sets out the way in which it intends to maintain irrigation asset capacity for bulk and

	distribution systems as part of its Strategic Asset Management Plan/s (SAMPs).
SFM	***SunWater Financial Model***
SGI	*St George Irrigators*
Sinclair Knight Merz	*Sinclair Knight Merz (SKM)* is a consulting firm specialising in strategic consulting, engineering and project delivery.
SKM	***Sinclair Knight Merz***
SLFI	***Smarter Lighter Faster Initiative***
SMARTER LIGHTER FASTER INITIATIVE	*Smarter Lighter Faster Initiative* (SLFI) was an internal efficiency program instigated by SunWater in 2008-09 to reduce costs and improve operations. SLFI is forecast to be fully implemented by 30 June 2012.
SRW	***Southern Rural Water***
SSR	***Strategy and Stakeholder Relations***
STANDING COMMITTEE ON AGRICULTURE AND RESOURCE MANAGEMENT	The *Standing Committee on Agriculture and Resource Management (SCARM)* supports the ARMCANZ. Membership of the Standing Committee comprises relevant Departmental Heads/Chief Executive Officers of Australian Commonwealth/State/ Territory and New Zealand agencies as well as representatives of CSIRO and the Bureau of Meteorology.
STATE WATER	***State Water Corporation***
STATE WATER CORPORATION	*State Water Corporation (State Water)* is New South Wales' rural bulk water delivery business. State Water owns, maintains, manages and operates major infrastructure to deliver bulk water to approximately 6,300 licensed water users on the state's regulated rivers along with associated environmental flows. Historically, this has involved delivery of an average 5,500 GL annually, but in the recent extreme drought conditions, diversions have fallen to as low as 1,110 GL.
STOCK PURPOSES	In relation to *Taking Water*, means watering stock of a number that would normally be de-pastured on the land on which the *Water* is, or is to be, used.
STORAGE	A general reference to *Water Infrastructure* such a *Dam, Weir, Barrage, Off-stream Storage*, etc.
STORAGE LOSSES	*Storage Losses are* water lost in storage infrastructure due to evaporation and seepage.
STORAGE RENTAL FEE	A storage rental fee is applied where customers can carry over unused water from one year to the next. The original intent was to provide disincentives for irrigators to carry over water when they do not intend to use the water.
STRATEGIC ASSET MANAGEMENT PLAN	*Strategic Asset Management Plan (SAMP)* is the asset management that aligns customer service standards with asset objectives.
STRATEGY AND STAKEHOLDER RELATIONS	*Strategy and Stakeholder Relations (SSR)* is a SunWater resource centre responsible for water planning, corporate relations and business strategy. SSR is also responsible for strategic external

	communications such as website and advertising.
SUNWATER	*SunWater* is a Government Owned Corporation which supplies water and related services throughout rural and regional Queensland (excluding south east Queensland). SunWater supplies irrigators, mines, power generators, industry and local governments. SunWater has 62 service groups referred to as service contracts, 30 of which relate to irrigators. SunWater was corporatized on 1 October 2000.
SUNWATER ALLOCATIONS	General *Water* entitlements granted to SunWater with no specific purpose of use and for which no medium or long-term *Customer* contract has been entered into. Subject to the particular terms and conditions of each *ROL/IROL*, SunWater is entitled to use this *Water* for its own purposes or offer the *Water* for sale to a *Customer*. Note that *SunWater Allocations* are in addition to specific *Distribution Losses* which may also been granted to SunWater to account for losses incurred in channel distribution systems.
SUNWATER FINANCIAL MODEL	The *SunWater Financial Model (SFM)* is a financial model of SunWater's business built in Microsoft Excel.
SUNWATER WATER INFORMATION MANAGEMENT SYSTEM	*SunWater Water Information Management System* (SWIMS) is a computerised system which serves as SunWater's recording, archival, reporting, data and information management system.
SUPERVISORY CONTROL AND DATA ACQUISITION	*Supervisory Control and Data Acquisition (SCADA*) is a computer system that in SunWater's case monitors and controls water delivery and distribution infrastructure.
SUPPLEMENTED *WATER*	*Supplemented Water* refers to *Water* supplemented by releases made from *Water Infrastructure* such as *Dams* and *Weirs*. *Supplemented Water* is managed by *Water Service Providers* such as SunWater.
SUPPLY CONTRACT	A *Supply Contract* is a contract between SunWater and a *Customer* for the storage and supply/delivery of *Water* under a *Water Entitlement*. Supply contracts can take the form of a standard (bulk, distribution or groundwater) supply contract, or a negotiated contract.
SURFACE *WATER*	***Water* in a *Watercourse, Lake, Spring, Dam* or *Weir*.**
SWIMS	***SunWater Water Information Management System***
SYNERGIES ECONOMIC CONSULTING	*Synergies Economic Consulting* is a consulting firm that provides a range of economic and finance advisory services.
T	
TARIFF	*Tariff* is the price Sun*Water* charges its *Customers* for the supply of services.
TCL and **MDFVGA**	***Tableland Canegrowers Ltd and Mareeba District Fruit and Vegetable Growers Association Inc***
TEMPORARY TRANSFER	*Temporary Transfer* is the transfer of available *Water Allocation* during the current *Water Year*. A *Temporary Transfer* can occur between:

	(a) a SunWater *Customer's Water* account to another SunWater *Customer's Water* account (b) a SunWater account to a SunWater *Customer's Water* account (c) a SunWater *Customer's Water* account to a SunWater account.
TERMINATION FEE	A fee applied when a distribution system WAE is permanently transferred to the river (or in some cases to scheme sub-systems). In some schemes, SunWater also applies termination fees for permanent trades from one bulk tariff group to another.
TIER 1 WORKING GROUP	*The Tier 1 Working Group or the Statewide Irrigation Pricing Working Group* established as a representative group of SunWater and its *Customers* to consider state wide issues for the purposes of the 2006-11 price paths.
TIER 2 WORKING GROUP	The *Tier 2 or the Scheme Irrigation Pricing Working Groups* established for each scheme to negotiate and resolve scheme specific issues (i.e. customer service standards, tariff structures and *Water* usage forecasts) for the purposes of the 2006-11 price paths.
the Authority	**The *Queensland Competition Authority.***
the QCA Act	***Queensland Competition Authority Act 1997 (Qld)***
the Water Act	***Water Act 2000 (Qld)***
the WHS Act	***Workplace Health and Safety Act 1995 (Qld)***
TOTAL CAPACITY	*Total Capacity* for each SunWater employee is either 1,632 or 1,710 hours per year. SunWater's methodology for calculating total capacity is outlined in Section 6.6 of Chapter 6 –Operating Costs.
TRANSMISSION LOSSES	*Transmission Losses* are water lost (to the environment) once released into natural watercourses, for example, from evaporation and percolation into water tables.
TWO PART TARIFFS	*Two-Part Tariffs* are non-linear pricing structures, under which users face a fixed charge and a volumetric charge based on consumption.
U	
UNALLOCATED *WATER*	*Water* that is able to be made available for future consumptive use by urban, irrigation or industrial *Customers* without compromising the environment or the security of supply to existing *Water* users, under the auspices of a Water Resource Plan.
UNBUNDLING	*Unbundling* is the process of disaggregating prices to reflect the underlying values of individual services and/or commodities.
UNDERGROUND *WATER*	*Underground Water* means *Artesian Water* or *Sub-Artesian Water*.
UNREGULATED AREAS	*Unregulated Areas* are areas that do not benefit from supplementation of available water supplies by infrastructure such as dams and weirs.
UNSUPPLEMENTED *WATER*	*Unsupplemented Water* is *Water* that flows naturally and is not dependent on *Water Infrastructure* such as *Dams, Weirs* or Channels. *Unsupplemented Water* is therefore managed by *DERM.*

USAGE TRANSACTION	A *Usage Transaction* can be a Meter Reading or a Usage Assessment. Each of these transactions records Water Usage Volumes for a specific Offtake.
V	
VOLATILITY ALLOWANCE	The *Volatility Allowance* – calculated as the mean of the absolute differences between the 20-year average of extractions and actual extractions – measures the degree to which extractions have fluctuated over the last 20 years, rather than using the assumption that the worst case scenario repeats itself.
VOLUME RISK	Volume risks can be categorised according to their short or long term nature, as well as whether they are driven by demand or supply. Short term volume risks are associated with existing infrastructure, while long term volume risks relate to the augmentation of supply (that is, planning and infrastructure risks).
W	
WA	***Water Allocation***
WACC	***Weighted Average Cost of Capital***
WAE	***Water Access Entitlement***
WATER ALLOCATION	A *Water Allocation* is an authority granted under Section 121 or 122 of the *Water Act 2000 (Qld)* to *Take Water*. A *Water Allocation* is the specified volume of water (in ML) allocated to a water access entitlement in a given season, defined according to rules established in the relevant Resource Operations Plan.
WAMP	***Water Allocation and Management Plan***
WASO	***Water Allocation Security Objective***
WATER ACCESS ENTITLEMENT	A *Water Access Entitlement (WAE)*, such as a water licence, refers to an ongoing entitlement to exclusively access a share of water. WAE is a tradeable property right providing access to water within a catchment.
WATER ACT 2000	The Water Act 2000 is an Act to provide for the sustainable management of water and other resources and the establishment and operation of water authorities, and for other purposes Unless specified otherwise, all references to 'the Act' refer to the *Water Act 2000 (Qld)*, Reprint No. 8c. Reprint as in force on 27 June 20011.
WATER ALLOCATION	The *Water Allocation* is a specified volume of water (in ML) allocated to a water access entitlement in a given season, defined according to rules established in the relevant Resource Operations Plan.
WATER ALLOCATION MANAGEMENT PLAN	*Water Allocation Management Plan* is a basin wide planning process involving the identification of environmental flow objectives, water entitlements and development opportunities.
WATER ALLOCATION SECURITY OBJECTIVE	The *Water Allocation Security Objective (WASO)* is an objective stated in a *Water Resource Plan* for the protection of the probability of being able to obtain *Water* in accordance with a

	Water Allocation. In defining the availability of *Water*, a W A S O is normally expressed as a performance indicator and provides a level of security for a *Water Allocation*.
WATER AUTHORITY	*Water Authority* is a legal entitlement established under the *Water Act 2000 (Qld)* related to the authority to *Take Water* and/or manage and operate *Water Infrastructure*.
WATER CHARGE (INFRASTRUCTURE) RULES (CWLTH)	The *Water Charge (Infrastructure) Rules (Cwlth)* sets out the *Australian Competition and Consumer Commission's (ACCC's*) final advice to the minister on the water infrastructure charge rules. This is accompanied by proposed rules – the draft water infrastructure charge rules.
WATER ENTITLEMENT	*Water Entitlement* is a general term encompassing *Water Allocations*, *Interim Water Allocations* and *Water Licences*.
WATER HARVESTING	*Water Harvesting* is water taken on an opportunistic basis usually from stream flood flows. *Water Harvesting is also* the diversion or *Taking* of *Unsupplemented Water* during high flow events and generally involves the pumping of *Water* into on-farm storage for later use.
WATER INDUSTRY REGULATION ORDER	*Water Industry Regulation Order (WIRO)* applies to the Victorian Essential Services Commission.
WATER INFRASTRUCTURE	*Water Infrastructure* includes works (including land) operated by the state or the holder of an *Interim Resource Operations Licence, Resource Operations Licence* or other authorisation that is relevant to the management of *Water Entitlements*.
WATER LICENCE	*Water License* is a licence granted under the *Water Act 2000 (Qld)* for *Taking Water* and using *Water* or interfering with the flow of *Water*.
WATER PRICING CONVERSION FACTORS	The *Water Pricing Conversion Factors (WPCF)* used in the previous SunWater (2006-07 to 2010-11 Price Path) essentially equalled the ratio of volume of all water entitlements in a scheme modelled at medium priority reliabilities divided by the volume of all water entitlements in the scheme modelled at high priority reliabilities.
WATER RESOURCE PLAN	*Water Resource Plans* are statutory plans produced and approved under section 50(2) of the *Water Act 2000 (Qld)*. They provide a 10-year blueprint for future sustainability by establishing frameworks to share *Water* between human and environmental needs by defining an acceptable balance between various *Water* uses, including provision for present demands, environmental needs and allowance for future requirements. *Water Resource Plans* are developed through detailed technical and scientific assessment as well as extensive community consultation to determine a balance between competing requirements for *Water*. A *Water Resource Pl*an may also provide for a *Water Trading* system to be established.
WATER RESOURCE PLANNING	A *Water Resource Planning* process is designed to plan for the allocation and sustainable management of *Water* to meet Queensland's future *Water* requirements, including the protection of natural ecosystems and security of supply to *Water* users. Outcomes of this planning process are set out in *Water Resource Plans* (*WRPs*).

WATER SUPPLY SCHEME	A *Water Supply Scheme* is a geographically distinct area of responsibility, as defined in a *Water Resource Plan* or a *Resource Operating Plan*, managed under a *Resource Operations*
WATER TRADING	*Water Trading* means buying or selling a *Water Entitlement* or *Water* that is available to be taken under a *Water Entitlement*. A *Water Entitlement* can be a *Water Allocation*, an *Interim Water Allocation* or a *Water Licence*. In Queensland, three types of *Water Trading* are possible: (a) permanent trades of Water Allocations and Interim Water Allocations; (b) leases of Water Allocations; and (c) Seasonal Water Assignment of Water available to be Taken under Water Allocations, Interim Water. *Water Trading* is voluntary and entitlement holders can decide whether they want to buy or sell. *Water* brokers facilitate *Water Trading* and assist in interpreting trading rules and other requirements, such as any resulting need for a land and *Water* management plan.
WATER USAGE	The *Taking of Water* or consumption of *Water* where the *Water Entitlement* is reduced.
WATER YEAR	The accounting period for *Taking Water* as specified in a *Resource Operations Plan (ROP)* or *Water Licence*. A *Water Year* is usually a 12-month period, generally commencing in July (although they can commence in another month).
WATERCOURSE	A *Watercourse* means a river, creek or stream in which *Water* flows permanently or intermittently: (a) in a natural channel, whether artificially improved or not (b) in an artificial channel that has changed the course of the *Watercourse*. A *Watercourse* includes the bed and banks and any other element of a river, creek or stream confining or containing *Water*.
WCIR	***Water Charge (Infrastructure) Rules (Cwlth)***
WDE	***Water Delivery Entitlements***
WEIGHTED AVERAGE COST OF CAPITAL	The *Weighted Average Cost of Capital (WACC)* is the most common means of determining the value of the opportunity cost of capital..
WEIR	A *Weir* is a control or barrier constructed across the width of a *Watercourse* below the banks of the *Watercourse* that hinders, obstructs or controls the flow of *Water* in the *Watercourse*. *Weirs* are similar to *Dams* but tend to be smaller in size.
WHS	***Workplace Health and Safety***
WHSQ	***Workplace Health and Safety Queensland***
WIRO	***Water Industry Regulation Order***
WMS	***Works Management System***
WORK MANAGEMENT SYSTEM	The *Work Management System* is the system used to mange projects

	within SAP.
WORKPLACE HEALTH AND SAFETY ACT 1995	*The Workplace Health and Safety Act 1995* is an Act about workplace health and safety, and for related purposes.
WORKPLACE HEALTH AND SAFETY QUEENSLAND	The *Workplace Health and Safety Queensland (WHSQ)* is responsible for improving workplace health and safety in Queensland and helping reduce the risk of workers being killed or injured on the job. WHSQ enforces workplace health and safety laws, investigates workplace fatalities, serious injuries, prosecutes breaches of legislation, and educates employees and employers on their legal obligations. WHSQ also provides policy advice on workers' `compensation matters.
WPCFs	***Water Pricing Conversion Factors***
WRP	***Water Resource Plan***
WSS	***Water Supply Scheme***
WWF	***World Wildlife Fund***
X	
Y	
Z	

EXECUTIVE SUMMARY

Ministerial Direction

The Authority has been directed to recommend irrigation prices for SunWater's water supply schemes (WSSs) and distribution systems for the period 1 July 2012 to 30 June 2017 (2012-17). The Ministerial Direction forms Appendix A.

SunWater

SunWater is a Government Owned Corporation which supplies water and related services throughout rural and regional Queensland (excluding South East Queensland (SEQ)) to irrigators, mines, power generators, industry and local governments.

Irrigators account for the majority of SunWater's customers but represent a lower share of SunWater's revenue than other customers.

The Department of Environment and Resource Management (DERM) is responsible for long term water planning and determines the volume and reliability of water that can be released under water allocations, referred to in this report as water access entitlements (WAEs). Customers, and in some circumstances SunWater, own the WAEs.

SunWater consolidated its regional and Brisbane head office functions during the previous price path (2006-11) to create a centralised service delivery model.

SunWater's new organisational structure consists of its Brisbane Head Office, which includes the majority of corporate and specialised services, and four regional service centres at Clare (Far North), Eton (North), Bundaberg (Central) and Toowoomba (South). Depots are located in Ayr, Mareeba, Emerald, Moranbah, Maryborough, Biloela, Mundubbera, Theodore, Goondiwindi and St George.

Recommended Draft Prices

The Authority's recommended 2012-17 prices for the tariff groups nominated in SunWater's network service plans (NSPs), are detailed in Chapter 7 and outlined in the scheme specific reports which constitute Volume 2. These reports also detail the recommended termination fees, channel water harvesting, drainage and drainage diversion charges.

Cost Reflective Tariffs

To establish recommended prices, the Authority initially estimated cost reflective prices incorporating estimates of efficient costs allowable for 2012-17 under the Ministerial Direction, that is, the efficient operational, maintenance and administrative costs, and prudent and efficient expenditure on renewing and rehabilitating current assets (as at 30 June 2012).

As directed, these allowable costs exclude a rate of return on existing assets, and dam safety and metering upgrade costs related to changes in national standards.

The prices also reflect the Authority's recommended apportionment of fixed and variable costs. The tariff structure typically has a ratio of fixed to volumetric charges higher than evident in 2006-11, but lower than proposed by SunWater for 2012-17 prices.

In most bulk WSSs, the estimated revenue resulting from the Authority's cost reflective tariffs is lower in real terms than the lower bound cost estimate made in 2005-06. This is due to a combination of factors including:

(a) rebalancing of tariffs from the 2006-11 general practice of a 70:30 fixed to volumetric tariff structure to the recommended average 90:10 fixed to volumetric tariff structure. As more fixed revenue is recovered by SunWater on the basis of nominal WAEs, total revenues can be maintained with lower published tariffs;

(b) the use of headworks utilisation factors (HUFs) proposed by SunWater rather than the previous pricing conversion factors to allocate costs between medium and high priority (where high priority WAE exists in other sectors). The effect is particularly marked in schemes which have high proportions of non-irrigation high priority WAE; and

(c) savings identified by the Authority (and SunWater in some cases) in renewals expenditure and operating expenditure.

The Authority's cost reflective tariffs for 2012-17 are higher for most distribution systems than those determined in 2005-06 for the previous price path. This is due to a combination of factors including:

(a) increases in unit costs of electricity estimated at 7.41% per cent per annum;

(b) expected 4% per annum increases in labour and contractors' costs; and

(c) the cost of the Intersafe Program and other renewals expenditures, which impacted on many systems. The Intersafe Program was not budgeted for prior to the 2006-11 price paths, but was found by the Authority to be prudent and efficient.

Also in distribution systems, the allocation of costs between high and medium priority customers on a nominal WAE basis, rather than using the previously adopted pricing conversion factors, affects any comparison between the Authority's cost reflective tariffs for 2012-17 and past prices.

Maintaining Revenues in Real Terms and Price Paths

For tariff groups where water revenues (based on the water price prevailing in 2010-11 and average irrigation water use during 2006-11) exceed the revenues implied by cost reflective tariffs using the same water-use assumptions, past revenues are maintained in real terms, as required under the Ministerial Direction. The extra revenue for this purpose is recouped in the fixed component of the tariff structure. It is recommended that the volumetric component remain cost-reflective and provide the appropriate efficient price signal, while also serving to manage SunWater's short term volume risk.

By contrast, for tariff groups where water revenues are less than the revenues implied by cost reflective tariffs, the Authority has recommended price paths with a $2 per ML real increase per annum to apply until efficient (lower bound) costs are reached.

The Authority has applied real price increases of $2/ML as these reflect increases that were generally accepted by irrigators and Government for the purpose of the 2006-11 price path. Some schemes will not achieve full cost reflectivity over 2012-17.

All prices/tariff structure components are escalated by CPI (assumed to be 2.5% per annum) during the 2012-17 regulatory period.

The Authority has allocated any excess of bulk revenue paid by distribution system customers over efficient costs as an offset against the distribution system revenue requirement. In effect, the distribution system customers are being allocated the benefit of paying bulk revenue (in excess of efficient costs or above lower bound) to assist with payment of the higher distribution system costs.

This is not a cross-subsidy as the adjustment occurs for distribution customers only, and does not affect other bulk (including river) customers in that scheme or distribution customers in separate tariff groups.

Implications

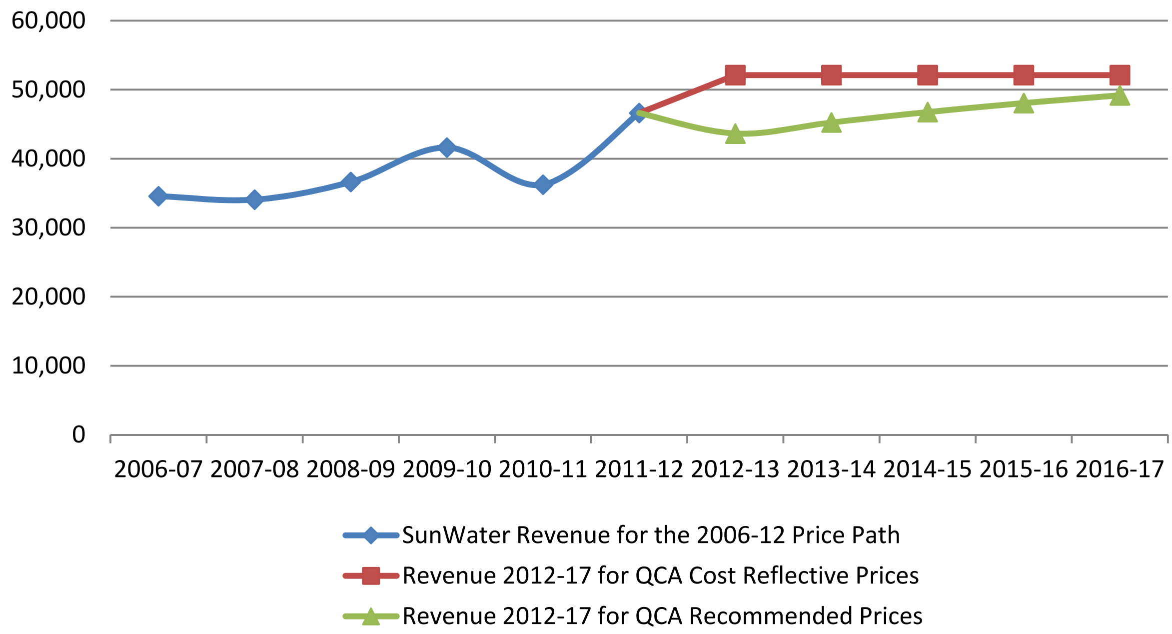
As a result of the rebalancing of the tariff structures from those prevailing in 2006-11, the implications of the draft prices are best assessed in terms of their impact on the total revenues implied for SunWater or, in the case of an individual, on the basis of the individual's total water bill. The impact of the cost-reflective and recommended prices on SunWater's forecast total revenues (from irrigation charges only) compared with those of 2006-12, are outlined in Table 1 and Figure 1.

Table 1: Irrigation Revenues for SunWater 2006-17 (Real $'000)

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Revenue for the 2006-12 Price Path	34,575	34,072	36,631	41,622	36,235	46,628					
Revenue for 2012-17 with QCA Cost Reflective Prices							52,112	52,112	52,112	52,112	52,112
Revenue for 2012-17 with QCA Recommended Prices							43,713	45,256	46,756	48,069	49,189

Source: QCA (2011) Note: SunWater's 2011-12 revenue assumes average irrigation only water usage for 2006-11.

Figure 1: Irrigation Revenues for SunWater 2006-17 (Real $'000)



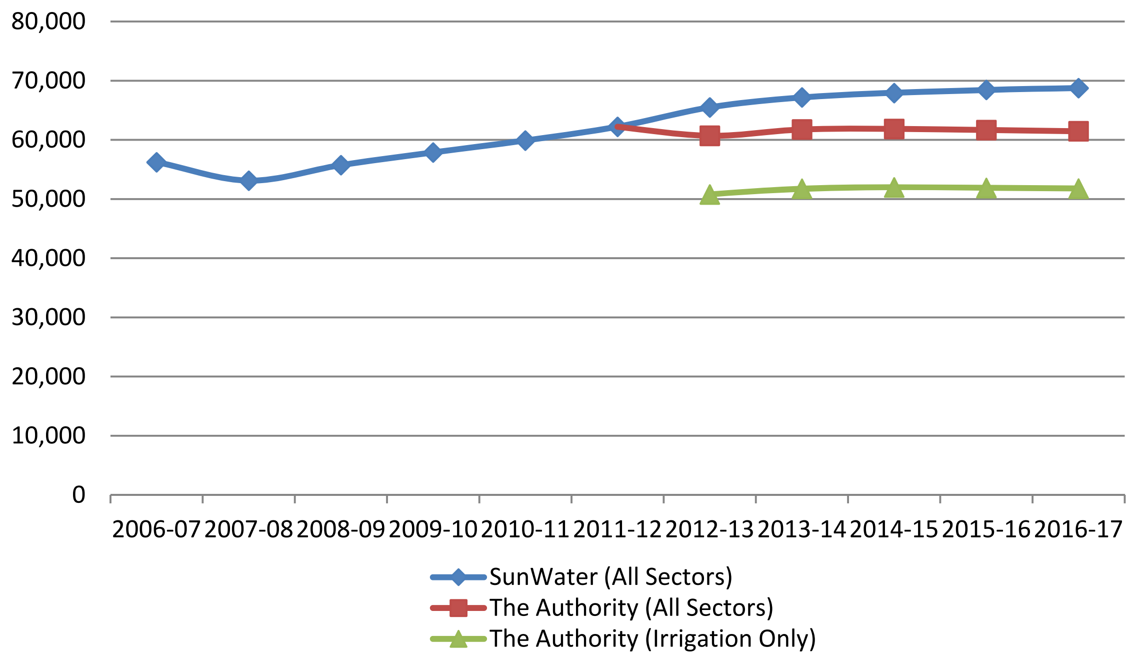
Total scheme and irrigation-only efficient costs estimated by SunWater and the Authority are outlined in Table 2 and Figure 2 below.

Table 2: Total Costs All Sectors and Irrigation Only Efficient Costs 2006-17 (Real $'000)

Costs	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
SunWater (All Sectors)	56,217	53,107	55,729	57,866	59,890	62,214	65,485	67,179	67,915	68,456	68,752
Authority (All Sectors efficient costs)							60,759	61,822	61,917	61,724	61,512
Authority (Irrigation only efficient costs)							50,987	51,943	52,167	52,066	51,957

Source: QCA (2011) Note: The Authority's irrigation-only efficient costs vary slightly from QCA Revenue for 2012-17 Cost Reflective Prices in Table 1 due to the smoothing applied to the cost reflective prices, whereas Table 2 reflects lumpy capital expenditure.

Figure 2: Total Costs All Sectors and Irrigation Only Efficient Costs 2006-17 (Real $'000)



Source: QCA (2011)

Approach

To establish the prudency and efficiency of proposed costs, a regulated entity needs to demonstrate that its approach to providing services is based on sound strategies aimed at providing necessary resources (prudency) in a manner that ensures efficient operation and maintenance of assets (efficiency). Essential also, is the provision of documented and detailed analyses of the underlying assumptions and proposed costs.

SunWater estimates that it manages approximately 50,000 water assets relevant to the 30 irrigation service contracts. It was not possible in the time available, nor appropriate in view of the potential costs involved, for the Authority to review each proposed renewals expenditure item, or forecast cost. The Authority therefore based its analysis on samples of SunWater's past and proposed costs, as well as the methodologies proposed by SunWater, available cost information, stakeholder submissions and consultant reviews.

While the Authority consulted extensively with SunWater and stakeholders, the lack of relevant and timely information from SunWater, restricted the size of the sample of data that could be reviewed.

Pertinent information relating to scheme specific costs is still unavailable from SunWater, particularly in relation to specific renewals expenditures in some schemes and the specific basis for SunWater's proposed operating costs.

It is intended that further detailed consideration will be given to SunWater's costs and stakeholder submissions in response to the Draft Reports. This will include further reviews of renewals expenditure items. Hence, final prices may vary from draft prices.

The Authority proposes to make available its scheme-specific calculations to stakeholders to ensure transparency and the accuracy of key assumptions behind estimated draft prices. Stakeholder representatives will be able to review the relevant material in the Authority's offices.

The Authority is also mindful that much relevant and material information will not be available even before completion of the Final Report. Such information is simply not recorded by SunWater in an appropriate form. Such deficiencies need to be attended to before the next pricing review. Indeed, it is recommended that these be addressed within two years of the current review (that is, by 30 June 2014).

Volume 1 of the Draft Report incorporates the principles and methodology relevant to the Ministerial Direction, and includes summary information. Volume 2 provides scheme-specific details in thirty reports, one for each of SunWater's irrigation service contracts.

Findings and Recommendations

The Authority notes that certain of SunWater's proposals relating to the regulatory and pricing framework differ from those applied during the previous price path. In particular, these include the unbundling of distribution system costs and tariffs from bulk schemes, a greater emphasis on the cost structure underlying the fixed and volumetric charges, and the use of different methodologies for the allocation of costs to irrigation service contracts and between different priorities of WAE.

The Authority has accepted, in principle, many of the methodologies proposed by SunWater.

In some instances, however, the Authority has recommended alternative approaches. For example, although the Authority generally agrees with the proposed methodologies for the allocation of renewals expenditures to customers using SunWater's headworks utilisation factors (HUFs) and non-direct operating costs to service contracts using the direct labour cost, it considers that the proposed approach for allocating operating costs to customers, particularly for bulk schemes, should be modified so that a greater share of costs is allocated to high priority WAE (by applying HUF to maintenance and half of operations costs).

Moreover, the Authority has developed alternative estimates of fixed and variable costs to those proposed by SunWater - finding that less costs are fixed and more are variable (whereas SunWater submitted that only electricity pumping costs vary with water use). This is reflected in the Authority's proposed tariff structures and in particular, the recommended adoption of cost-reflective volumetric tariffs to ensure appropriate economic signals and to address SunWater's short term volume risk.

The Authority also identified efficiency savings to estimates of renewals, non-direct and direct operating costs. As a result, estimates of the associated efficient costs and the tariff structure may in some cases vary substantially from those of the 2006-11 price paths.

Regulatory Framework (Chapter 3)

The Ministerial Direction requires that, in general, prices should recover efficient operational costs and expenditure on renewing and rehabilitating existing assets. The Ministerial Direction also requires the Authority to recommend appropriate regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with allowable costs outside the control of SunWater. In addition, in considering tariff structures, the Authority is to have regard for the fixed and variable nature of the underlying costs.

The Authority has examined the risks and operating environment within which SunWater must operate and has concluded that:

(a) the risks associated with the recovery of allowable costs outside the control of SunWater relate primarily to unpredictable or unexpected changes over the regulatory period in water demand and supply, and to some extent associated costs;

(b) in relation to short term volume risks, SunWater is not able to manage short term demand risks, either due to their being driven primarily by customers requirements, or as a result of the legislative framework requiring SunWater to respond according to the agreed WAEs. Similarly, SunWater cannot manage water supply risks in the short term as it cannot influence rainfall or the assessed hydrology. As customers are the primary beneficiaries, it is recommended that short term volume risk be assigned to customers;

(c) as revenues must (at least) cover the efficient cost of continued water delivery, it is recommended that short term volume risk should be addressed through a tariff structure that recovers all fixed costs through fixed charges (based on the WAEs) and variable costs through volumetric charges (based on water usage). Such a tariff structure, combined with an adjusted price cap form of regulation, would avoid the need for more intrusive regulation to address under- or over-recovery of revenues resulting from changes in supply, and would promote price stability over the regulatory period;

(d) long term volume risks are associated primarily with the augmentation of supply (that is, planning and infrastructure risks), and the reduction of distribution losses.

    SunWater has no effective means of increasing storage capacity, as augmentation of bulk infrastructure is the legislative responsibility of the Queensland Government. However, SunWater does have some capacity to manage distribution system infrastructure and losses, provided that it maintains its obligations in respect of the delivery of WAEs.

    To provide an incentive for SunWater to reduce distribution losses, it is recommended that the proceeds from the sale of new WAEs (previously distribution loss entitlements) should be retained by SunWater;

(e) SunWater faces cost risks due to potential changes in market conditions for inputs, or as a result of regulatory imposts. Depending on the circumstances, the Authority recommends the following mechanisms for managing cost risks:

    (i) end of regulatory period revenue adjustments which would then impact on future prices. Only efficient costs beyond SunWater's control should be eligible, on receipt of a relevant submission from SunWater;

    (ii) triggers to allow a review of costs (and prices) during the regulatory period. Such a review should be initiated only if SunWater is able to demonstrate material differences between forecast and efficient costs that it is unable to manage, and that the differences could not have been reasonably forecast at the time prices were set;

(iii) cost pass-through mechanisms to allow adjustments to prices during the regulatory period. A cost pass through may be appropriate when the nature of costs can be reasonably foreseen and the subsequent change unambiguous. Government imposed regulatory imposts are relevant.

The Authority expects that most cost variations should be resolved through end-of-period review adjustments;

(f) notwithstanding the cost risks to SunWater, the Authority also notes that a reduction in costs may also arise from a decrease in service rather than an increase in efficiency.

The current service standards are described in the Water Supply Arrangements and Service Targets (also referred to as SunWater Rules). The standard supply contract allows SunWater to make and amend the SunWater Rules which describe the process for ordering water and delivery times, circumstances that require suspension or restriction of supply and the duration and frequency of shutdowns.

The success of a regulatory framework depends on service standards being precisely defined and monitored. SunWater's current performance regime, being based on delivery response to requests from customers, could prove ineffectual if SunWater fails to meet the service standards without penalty or change the standards unilaterally.

Therefore, the Authority recommends that the current approach to monitoring of service quality should be reviewed by DERM, in consultation with customers, by 30 June 2014; and

(g) the Authority's risk analysis has also highlighted the following:

(i) the form of price control could be characterised as an adjusted price cap or as an adjusted revenue cap, as it maintains price stability over the regulatory period but provides for some recoupment of efficient costs, in limited circumstances;

(ii) as the nature of the risks is essentially the same in each scheme, the same regulatory arrangements are recommended for all schemes (whereas in 2006-11 revenue targets were applied in three schemes and price caps adopted by the balance of schemes); and

(iii) the general regulatory framework cannot always address every regulatory objective, and other complementary arrangements are required. For example, efficiency reviews and specific incentives (such as efficiency targets) are typically used to further promote efficiency gains.

Table 3 summarises the Authority's findings in relation to the regulatory framework.

Table 3: Summary of Risks, Allocation and Authority's Recommended Response

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

Pricing Framework (Chapter 4)

In having regard to the fixed and variable nature of SunWater's underlying costs, the Authority recommends the adoption of a two-part tariff with the fixed component reflecting fixed costs and the volumetric component reflecting costs that are expected to vary with water usage over the five-year regulatory period.

The Authority's recommended tariff structure is consistent with the regulatory framework appropriate for managing volume risk (outlined above) and is an efficient price signalling mechanism which ensures revenue adequacy.

A different approach was adopted by the Tier 1 Group for SunWater's 2006-11 price paths, where a standard 70:30 tariff structure was adopted generally, with the effect of including a portion of fixed costs in 2006-11 volumetric tariffs. (The volumetric tariff was increased further in schemes paying above lower bound costs, because that component of revenues was also recovered via volumetric tariffs.)

The Authority also recommends that:

(a) SunWater's termination fees should recover 20 years of fixed distribution system costs, discounted to present values using the Authority's recommended WACC, with no recovery of the balance of such costs from other users. The remaining costs should be managed by SunWater (effectively providing it with the incentive to remove excess capacity and reduce costs). This results in the Authority's termination fee multiple of up to 13.8 times fixed costs (including GST). This contrasts with SunWater's current approach which recovers 10 years of fixed charges discounted at the bond rate (resulting in a multiple of up to 9.4 times fixed charges including GST) with the balance recovered from remaining customers;

(b) prudent and efficient bulk costs associated with distribution loss WAEs should be recovered from high- and medium-priority distribution system customers. In theory, distribution system customers should not pay for distribution loss WAEs held by SunWater in excess of that needed to meet its actual loss releases. Sustained differences between the loss WAEs and actual losses should immediately be reviewed by DERM. This seems to be needed in a number of schemes;

(c) SunWater should continue to bear the costs of legacy arrangements for free water. By contrast, pre-existing rights to free water should be maintained where they continue as part of a current agreement, or current legislation or Government policy;

(d) drainage charges should recover actual drainage costs. However, in the absence of relevant cost data, current drainage charges in distribution systems should be maintained in real terms and the revenue be treated as an offset. A review of drainage charges should be initiated immediately upon completion of the current price investigation to allow cost reflective charges in the next regulatory period. SunWater should identify its drainage system costs from 1 July 2012 and report back to the Authority with a draft in 12 months and a final submission of detailed costs and proposed charges by 30 June 2014;

(e) current drainage diversion charges should be maintained in real terms and be treated as a revenue offset;

(f) distribution system water harvesting charges should reflect the applicable distribution system volumetric charge plus the DERM water harvesting charge. The lease fee, if any, should be determined in the market and the revenue be retained by SunWater; and

(g) storage rental fees should not be levied by SunWater, contingent upon the adoption of cost reflective tariff structures.

The appropriateness of current legislative and contractual arrangements, insofar as they relate to schemes where water deliveries consistently fall below expectations for sustained periods due to a lack of supply, is a matter for Government.

Renewals Expenditure (Chapter 5)

SunWater maintains an ARR (or renewals fund) for each of its schemes to account for its ongoing renewals expenditure and revenues. The opening ARR scheme balances for 2012-17 are based on the opening adjusted ARR balances for 2006-11, less renewals expenditure, plus income and interest over the 2006-12 price paths.

Adjustments to the opening ARR balances for 2006-11 recognise the need to unbundle the balances for 16 linked bulk and distribution service contracts (which have been combined in the past as a whole scheme and therefore have a single ARR per combined scheme). In the absence of actual renewals expenditure for 2000-06, the Authority has accepted SunWater's proposed methodology for establishing ARR balances. SunWater's judgement-based adjustments to individual WSS's unbundled ARR balances are, however, not considered appropriate.

The Authority recommends that SunWater's proposed methodology for calculating its renewals annuities over a 20 year planning period should be adopted for the 2012-17 review. The length of the planning period should be revisited in subsequent price reviews (or as the result of a price trigger) should problems of intergenerational equity arise from future significant capital expenditure proposals.

However, the Authority's proposed cost escalation factors should be applied in calculating the renewals annuity:

(a) for the direct labour, materials and contractors' costs, 4% per annum over the regulatory period (2012-17), and 2.5% per annum thereafter; and

(b) for other direct and non-direct costs, 2.5% per annum for the entire recommended renewals planning period.

The discount rate should reflect SunWater's opportunity cost of funds (7.62%).

The Authority reviewed a sample comprising some 18% of SunWater's past (2006-11) renewals expenditures and forecast renewals expenditures relevant to the 20 year planning period. As a result, the Authority proposes to:

(a) exclude from renewals expenditure all items identified by consultants as not prudent or, in the case of some forecast items, defer these beyond the current planning period. These total approximately $9.1 million;

(b) incorporate all specific efficiency savings identified by consultants. These total approximately $3.5 million;

(c) include sampled items identified by Arup, Aurecon, Halcrow and SKM as being prudent and efficient in renewals expenditure in full. These total $33.0 million; and

(d) apply a 10% saving to all non-sampled items and sampled items for which there was insufficient information. These items total approximately $24 million.

That is, within the period 2006-07 to 2035-36, the Authority recommends a reduction of $36.6 million of SunWater's $290 million of past and future renewals expenditure (present value, real terms). That is, about 12.6%.

To improve the rigour of SunWater's long-run forecasting of costs for pricing purposes, the Authority recommends that SunWater undertake:

(a) high-level options analysis for all material renewals expenditures expected to occur over the Authority's recommended planning period, with materiality defined as 10% or more in present value terms of total forecast renewals expenditure for each service contract;

(b) detailed options analysis (which also takes into account trade-offs and impacts on operational expenditures) for all material renewals expenditures expected to occur within the subsequent five-year regulatory period, with materiality defined as in (a) above but over a five year period; and

(c) a review of its renewals planning process to adopt the improvements suggested by the Authority's consultants.

To increase transparency and provide customers with a strong basis for constructive engagement with SunWater in the future, the Authority recommends that:

(a) SunWater's Statement of Corporate Intent (and relevant legislation) be amended to require SunWater to consult with customers in relation to, and publish on its website, annually updated NSPs commencing prior to 30 June 2014. The NSPs should be enhanced to present: (i) the options analysis described in (a) and (b),above; (ii) details of SunWater's proposed renewals expenditure items; and (iii) explanations of significant variances between previously forecast and actual material renewals expenditure items; and

(b) customers' submissions in response to the NSPs and annual updates be published on SunWater's website alongside SunWater's responses and related decisions.

In relation to proposed cost allocation methodologies, the Authority recommends that:

(a) SunWater's proposed HUF methodology be used to allocate fixed renewals expenditure in bulk schemes between medium and high priority customers (subject to a slight amendment proposed by the Authority);

(b) nominal WAEs be used for the allocation of fixed distribution system costs between priority groups. Fixed distribution system charges should also remain with customers when they convert between priority groups; and

(c) at the conclusion of this review, SunWater develop a more appropriate means of allocating fixed renewals costs in distribution systems (and submit this for approval by the Authority within 2 years).

This approach contrasts with that adopted for 2006-11 prices, where water pricing conversion factors were applied to high priority WAEs, thereby allocating more costs per unit of high priority WAE (than medium priority WAE) in both bulk and distribution systems.

Operating Expenditure (Chapter 6)

The Authority's findings and recommendations in relation to SunWater's direct and non-direct operating expenditure are as follows:

(a) service contract efficiency gains should be applied to SunWater's forecast total non-direct operating costs from 2012-13 to 2016-17 as follows:

   (i) gains of 2.7% in 2012-13 to include identified cost savings of approximately 1.2% and 1.5% productivity gain; and

   (ii) for subsequent years, compounding efficiency gains of 1.5% per annum, leading to a gain of 8.93% in 2016-17;

(b) except where higher scheme-specific savings have been identified, irrigation service contract efficiency gains should be applied to SunWater's forecast total direct operating costs (excluding electricity) from 2012-13 to 2016-17 as follows:

   (i) gains of 3.18% in 2012-13 to include identified cost savings of approximately 2.43% and a 0.75% productivity gain; and

   (ii) for subsequent years, compounding efficiency gains of 0.75% per annum, leading to a gain of 6.24% in 2016-17;

(c) SunWater's targeted 1% electricity reduction to 30 June 2015 be incorporated into cost savings in addition to specific adjustments recommended by the Authority's engineering consultants. SunWater should also continue to review the cost differential between franchise and contestable electricity tariffs on an annual basis commencing in 2012-13;

(d) by 23 December 2011, SunWater should disaggregate its non-direct costs (by expenditure type) and reconcile these with staffing levels (including SLFI targets) from 2008-09;

(e) in relation to cost allocation methodologies:

(i) non-direct costs should be allocated to service contracts using direct labour costs (DLCs) (as proposed by SunWater) with two exceptions:

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

- the overhead component of Infrastructure Development should be allocated (using DLC) to only those service contracts serviced by that resource centre;

(ii) for bulk WSSs:

- fixed preventive and corrective maintenance costs be allocated to medium and high priority customers using HUFs; and

- for fixed operations costs, 50% be allocated using HUFs and 50% using current nominal WAEs; and

(iii) for distribution systems, fixed operating costs be allocated to medium and high priority customers using current nominal WAEs;

(f) over both the interim 2011-12 and the regulatory period 2012-17, cost components should be escalated as follows:

(i) labour, materials and contractors costs by 4% per annum;

(ii) electricity costs by 7.41% per annum; and

(iii) other non-direct and direct costs by 2.5% per annum;

(g) SunWater should be allowed to recover the cost of working capital, calculated as 0.9% of forecast revenue for each scheme multiplied by the approved regulatory WACC. For the future, however, SunWater should aim to base working capital requirements on efficient forecasts of revenue and cash flows from SunWater's irrigation schemes, rather than relying on historical, whole of business data for the subsequent regulatory period;

(h) SunWater's estimates of insurance costs be accepted;

(i) SunWater should undertake a review of its planning policies, processes and procedures to better achieve its strategic objectives;

(j) SunWater should improve its information systems. In particular, it should document and improve access to information necessary to:

(i) attain greater operating efficiency;

(ii) achieve greater transparency;

(iii) facilitate future price reviews; and

(iv) promote more meaningful stakeholder engagement;

(k) SunWater should improve its management accounting processes and procedures for its labour costs, including appropriate and transparent recording and documentation. This should include alignment of budgeted and actual cost information to activities performed, and the management of variances between budgeted and actual labour costs to ensure continuous improvement in the use of labour resources.

Proposals relating to planning policies, processes and procedures, and improvements in the information and management systems should be submitted for approval by the Authority by 30 June 2014, following submission of a draft report to the Authority by 30 June 2013.

Submissions

The Draft Report is intended to provide a further opportunity to identify key issues and where relevant, provide further information or commentary which will assist achieve appropriate outcomes.

While the third round of consultation should provide an opportunity for stakeholders to provide further commentary upon the Draft Report and draft prices, written submissions are particularly important as these serve to document in detail stakeholder concerns.

Written submissions are due by **23 December 2011** (see Submissions page for relevant details).

1. BACKGROUND

The Queensland Competition Authority (the Authority) has been directed to recommend irrigation water prices for SunWater water supply schemes (WSSs), including drainage and channel water harvesting charges, for the five-year period 1 July 2012 to 30 June 2017.

Recommended prices are to reflect efficient operational, maintenance, and administrative costs, and prudent and efficient expenditure on renewing and rehabilitating existing assets through a renewals annuity. Prices are to exclude a rate of return on existing assets, and dam safety and metering upgrade costs related to changes in national standards.

The Authority is to have regard to the level of service provided by SunWater and SunWater's legitimate commercial interests. SunWater's tariff groups are to be adopted and tariffs are to have regard to the fixed and variable nature of costs.

The Authority is required to at least maintain prices in real terms and (where real cost increases apply) consider price paths to moderate the impacts on customers.

While the Authority consulted extensively with stakeholders during its investigations, a lack of timely information and the time available for the review has impacted the Authority's analysis.

1.1 Ministerial Direction

The Minister for Finance and The Arts and the Treasurer of Queensland have directed, under Section 23 of the *Queensland Competition Authority Act 1997* (the QCA Act), the Authority to develop irrigation prices to apply to all SunWater irrigation WSSs from 1 July 2012 to 30 June 2017 (the 2012-17 regulatory period).

Essentially, the Ministerial Direction (**Appendix A**) requires the Authority to recommend:

(a) prices that allow SunWater to recover the following allowable costs:

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

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

(b) appropriate regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with the allowable costs.

The costs are to exclude:

(a) any rate of return on existing rural irrigation assets (as at 30 June 2012);

(b) capital expenditure for dam safety upgrades; and

(c) costs associated with the National Framework for Non-urban Water Metering.

Further, in recommending prices, the Authority is required to:

(a) have regard to the level of service [service standards] provided by SunWater to its customers;

(b) provide for a commercial return on, and of, prudent capital expenditure in respect of augmentation assets constructed after 30 June 2012;

(c) have regard for the legitimate commercial interests of SunWater and the requirement for SunWater to operate as a commercial entity;

(d) have regard to the fixed and variable nature of the underlying costs when considering tariff structures;

(e) adopt tariff groups as proposed in SunWater's network service plans (NSPs) and not to investigate additional nodal pricing arrangements;

(f) review drainage charges and channel water harvesting charges;

(g) maintain prices in real terms based on an appropriate measure of inflation, as recommended by the Authority, where current prices are already above the level required to recover allowable costs;

(h) increase prices in real terms for certain nominated schemes at a pace consistent with 2006-11 prices (or until such time as the scheme reaches costs sufficient to recover allowable costs); and

(i) where tariffs for a WSS or segment of a WSS have the effect of a price increase higher than the Authority's measure of inflation, implement a price path for the introduction of the price increase to moderate price impacts on irrigators and have regard for SunWater's legitimate commercial interests. In this regard:

    (i) a price path period may be longer than one price path period, however, the Authority must provide its reason for the longer timeframe; and

    (ii) if the Authority recommends against a price path, it must provide reasons.

1.2 Price Paths for 2006-11

Irrigation prices for 2006-11 were approved by the Queensland Government, on the basis of SunWater's recommendations. These prices were developed during 2005-06 as part of a consultative process between SunWater and the State-wide Irrigation Pricing Working Group (or Tier 1) and further customer groups representing each of SunWater's schemes (Tier 2).

The Queensland Government's policy framework specified that:

(a) most SunWater schemes were to achieve allowable (lower bound) pricing, that is, recovery of operating, maintenance, administration and asset refurbishment costs by the end of the price path;

(b) a community service obligation (CSO) would be provided for schemes (or scheme segments) that were unable to recover lower bound costs;

(c) there would be no additional rate of return; and

(d) no customer funding of priority spillway upgrades.

SunWater was required to maintain prices in real terms for schemes with prices above lower bound costs. Schemes or segments within a scheme that could not achieve lower bound pricing were defined as Category 3 (or hardship) schemes. CSO payments were made to SunWater by the Queensland Government to assist with the transition to lower bound pricing. CSO payments were also provided to fund the development of resource operations plans (ROPs).

1.3 Prices for 2011-12

On 1 July 2011, the Minister for Energy and Water Utilities extended the prices set for the 2006-11 price path to 30 June 2012 by applying a consumer price index (CPI) increase to all tariff groups.

In addition to CPI, all eight distribution systems and five river service contracts incurred increases of $2/ML (Bowen Broken Rivers, Callide Valley, Macintyre Brook, Maranoa River and Pioneer River) and $1/ML (St George River) – applied to Part A charges.

1.4 Current Review Process

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

(a) invited submissions from interested parties;

(b) met with stakeholders to identify and discuss relevant issues (three rounds of consultation by end 2011);

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

(d) commissioned independent consultants to prepare issues papers and review aspects of SunWater's submissions, business systems, data and physical works (via targeted field inspections);

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

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

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

The amended Ministerial Direction of 19 March 2010 (and further advice from Government on 23 September 2010 and 9 June 2011) clarified that these issues are outside the scope of this price review.

The Authority's analysis has been impacted by a lack of timely information from SunWater and the relatively constrained timing available for the review.

2. BUSINESS OVERVIEW

SunWater is a Government Owned Corporation which supplies water and related services throughout rural and regional Queensland (excluding South East Queensland).

SunWater supplies irrigators, mines, power generators, industry and local governments. SunWater has 62 service groups referred to as service contracts, 30 of which relate to irrigators.

While irrigators account for the majority of SunWater's customers, they represent the minority of SunWater's revenue.

The Department of Environment and Resource Management (DERM) is responsible for long term capacity planning and determines the volume and reliability of water that can be released under water access entitlements (WAEs). Customers own WAEs and manage their own demand.

The majority of irrigators have standard supply contracts for bulk and/or distribution services.

SunWater estimates that it manages approximately 50,000 water assets relevant to the 30 irrigation service contracts.

SunWater underwent an organisational restructure during 2006-11 which achieved cost savings of $9.8 million per annum by June 2011. The restructure focussed on consolidating regional and Brisbane head office functions to create a centralised service delivery model.

SunWater's new organisational structure consists of its Brisbane Head Office, which includes the majority of corporate and specialised services, and four major regional service centres at Clare (Far North), Eton (North), Bundaberg (Central) and Toowoomba (South). Additional depots are located in Ayr, Mareeba, Emerald, Moranbah, Maryborough, Biloela, Mundubbera, Theodore, Goondiwindi and St George.

SunWater owns three subsidiary companies: the Eungella Water Pipeline Pty Ltd (servicing mining customers); the North West Queensland Water Pipeline Pty Ltd (servicing urban customers drawing water from Julius Dam); and Burnett Water Pty Ltd, which owns Paradise Dam and Kirar Weir near Bundaberg.

2.1 Business Framework

SunWater provides services within a business framework influenced by a range of national agreements which seek to promote economically efficient and sustainable use of water resources, water infrastructure assets and resources devoted to water management as well as relevant Queensland legislation.

Queensland Government legislation includes the *Water Act 2000* (Water Act) and *Water Supply (Safety and Reliability) Act 2008* and subordinate legislation such as Water Resource Plans (WRPs), ROPs and Resource Operations Licences (ROLs).

Collectively, these agreements and legislation define SunWater's water resource planning and management framework (**Appendix B**).

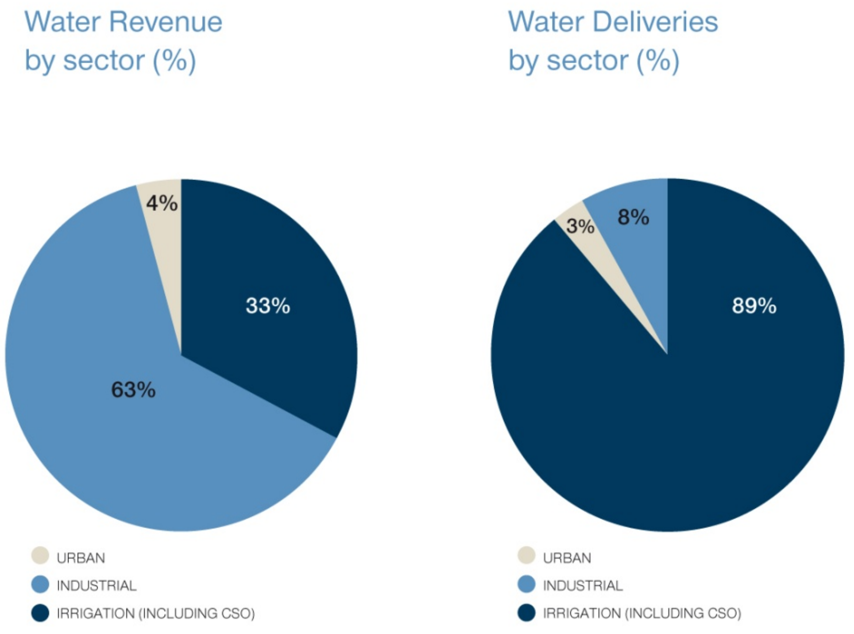
SunWater is required to meet a number of compliance obligations, most required for normal business operations. However, some include reporting waterway flow rates to the Bureau of Meteorology and water usage data to the Murray-Darling Basin (MDB) Authority.

2.2 Services Provided

SunWater supplies water storage and delivery services to irrigators, mines, power generators, industry and local governments.

Irrigators account for the vast majority of SunWater's customers and volume of water (89% in 2009-10) delivered. However, they account for a minority of SunWater's total revenue (33% in 2009-10).

Figure 2.1: SunWater's Water Deliveries and Revenues by Customer Sector



Source: SunWater Annual Report 2009-10

Bulk Water

SunWater has 22 bulk WSSs providing bulk water services that involve storing for, and delivering raw water to, customers in accordance with customers' WAEs.

DERM determines the WAE held by each customer, including annual nominal volume, reliability (usually medium or high priority) and location of extraction.

SunWater can only supply water to a customer with a WAE. Announced allocations specify the portion of a customer's WAE available for use (by priority group). They are updated throughout the water year (generally after rainfall events).

SunWater, in complying with the regulatory regime, accounts for water losses prior to determining water to be made available to customers. These water losses relate to:

(a) storage losses – water lost in storage infrastructure due to evaporation and seepage; and

(b) transmission losses – water lost (to the environment) once released into natural watercourses, for example, from evaporation and percolation into water tables.

The storage and operating rules to accommodate these losses are determined by DERM.

Distribution Systems

Eight of SunWater's bulk schemes have links to distribution systems. Distribution systems generally are comprised of pumps, open channels and/or pipes designed to deliver water to customers not located on a river.

All distribution system customers must also hold bulk WAEs.

SunWater also holds WAEs to account for distribution losses. DERM's water planning allows for water lost in the process of delivering water to distribution system customers.

The primary sources of controllable distribution losses include leakage from channels, pumps and/or broken pipes, un-metered or uncontrolled use and 'dumping' of water (emptying channels or pipes) for maintenance to occur.

Drainage

SunWater provides a drainage service in conjunction with its eight distribution systems. Drainage services remove excess or run-off water from customers' properties and dispose of it via a system of drains which SunWater maintains.

Drainage infrastructure was integral to the design and development of the distribution systems. Hence, in general, drainage network and distribution system infrastructure assets service the same irrigation areas. However, not all properties drawing upon a distribution system are contracted to receive drainage services (usually due to the location or fall of the property).

Drainage Diversion

In some distribution systems, SunWater permits customers to extract water from the drainage network. Customers supply their own pump and other infrastructure (for example, sumps and weirs) to access water from the drainage network. SunWater incurs some additional costs to provide this service and does not guarantee water availability.

Channel Water Harvesting

DERM's water planning processes have determined distribution system water harvesting WAEs for the Burdekin-Haughton and St George distribution systems. These WAEs have been issued to SunWater. In accordance with the WAE, during naturally occurring high-flow events, additional river water is made available to these distribution system customers for a charge.

Water harvesting WAEs are derived from natural (high) river flows and not as a result of storage infrastructure assets. However, SunWater does incur costs as a result of delivering such water through its distribution systems.

2.3 Service Delivery Framework

SunWater operates a decentralised water delivery regime. Under this regime, SunWater owns and maintains the service infrastructure and provides a contracted service to its customers according to their WAEs. Customers are responsible for managing their own demand and bear the risk of water not being available under their WAE.

SunWater does not have a role in demand-side management. DERM determines the target reliability of a WAE.

In some instances, DERM has identified unallocated water in WRPs or ROPs, presenting opportunities for a proponent to develop storages and sell additional WAEs[3]. However, existing customers do not bear the costs of increased (or surplus) headworks capacity if SunWater undertakes investment to increase water storage. Rather, the owners of any new WAE (deriving benefit from new assets) pay for the cost of SunWater providing that benefit.

As there are limited opportunities for infrastructure, and particularly storage, augmentation in SunWater's existing irrigation schemes, growth or changes in demand are met primarily through permanent and temporary trading of WAEs.

2.4 Service Contracts

SunWater's operations comprise a total of 62 service contracts, only 30 of which (the irrigation service contracts) are directly relevant to this review.

A service contract represents a group of assets that generate cash inflows largely independent of cash flows from other groups of assets. For example, a bulk water service contract may include a dam, associated weirs, water accounting services, and a range of operational and maintenance services.

SunWater's 30 irrigation service contracts are shown in Table 2.1.

Table 2.1: SunWater's Irrigation Service Contracts

Bulk Water Service Contracts	*Distribution Contracts*
Barker-Barambah WSS	Bundaberg Distribution
Bowen-Broken River WSS	Burdekin-Haughton Distribution
Boyne River and Tarong WSS	Emerald Distribution
Bundaberg WSS	Eton Distribution
Burdekin-Haughton WSS	Lower Mary Distribution
Callide Valley WSS	Mareeba-Dimbulah Distribution
Chinchilla Weir	St George Distribution
Cunnamulla Weir	Theodore Distribution
Dawson Valley WSS	
Eton WSS	
Lower Fitzroy WSS	
Lower Mary River	
Macintyre Brook WSS	
Maranoa WSS	
Mareeba-Dimbulah WSS	
Nogoa-Mackenzie WSS	
Pioneer WSS	

[3] DERM has published policies in relation to the release of this unallocated water. This can involve payment for unallocated water reflecting its market value.

Bulk Water Service Contracts	Distribution Contracts
Proserpine WSS	
St George WSS	
Three Moon Creek WSS	
Upper Burnett WSS	
Upper Condamine WSS	

2.5 Supply Contracts

SunWater enters into a supply contract with its customer. Supply contracts can take the form of a standard (bulk, distribution or groundwater) supply contract, or a negotiated contract.

Most irrigation customers are subject to deemed (or unsigned) standard contracts pursuant to the *Water Act 2000 (Qld)*.

The standard contract requires SunWater to release or divert water from SunWater's works in accordance with a customer's WAE.

The standard contracts can be varied by SunWater in agreement with customers. If SunWater proposes changes to the standard contract that are not agreed to by customers, SunWater can terminate the contract.

SunWater undertook consultation on the standard supply contracts during 2001 and 2002. Presentations on the contract were held for each customer council shortly after this time. Nine comments were received. SunWater advised that it addressed all comments received and reviewed the standard contract.

2.6 Service Standards

SunWater must identify appropriate service standards including customer service and performance indicators.

SunWater advised that the current service standards were established in consultation with customer representatives in 2001. They can be periodically reviewed in response to requests by customer representatives or at SunWater's own initiative. SunWater's proposed costs for 2012-17 are based on the existing service standards continuing throughout the regulatory period.

Standard supply contracts address service standards. However, the service standards are not defined in the supply contracts but rather refer to a stand-alone document for each scheme (in the form of Scheme Supply Arrangements and Service Targets).

The Authority considers that service standards are comprised of two parts:

(a) operational service standards – as per Scheme Supply Arrangements and Service Targets for each service contract setting out how SunWater is to address issues such as billing, notification periods, number and duration of interruptions to water supply, restricting supply and complaints; and

(b) asset service capacity – SunWater sets out the way in which it intends to maintain irrigation asset capacity for bulk and distribution systems as part of its Strategic Asset Management Plan/s (SAMPs). DERM reviews SunWater's SAMPs.

SunWater is required to report annually on its performance against the scheme Service Targets. In addition, SunWater must also submit an annual report after its SAMP has been approved.

To change a Service Target, SunWater is required under its standard supply contract to consult with its customers. Agreement by customers, or DERM, is not required.

2.7 Irrigation Assets

Nature of Assets

SunWater owns and manages bulk water storage and distribution system infrastructure including:

(a) 19 major dams;

(b) 63 weirs and barrages;

(c) 80 major pumping stations;

(d) more than 2500 kilometres of pipelines and open channels; and

(e) 730 kilometres of drains.

In total, SunWater estimates that it manages approximately 50,000 water assets pertaining to the thirty irrigation service contracts relevant to this price review.

Classification

Bulk water assets are typically storages, such as dams, weirs and off stream storages, which underpin the WAE prescribed for each WSS (as described in, and regulated under, the relevant WRPs, ROPs and ROLs).

Distribution system assets typically include those used for the transmission, reticulation, or treatment of water, usually through open channels and pipelines.

In some schemes, distribution system assets provide a dual function, delivering water to channel segments as well as supplementing streamflows. These assets could be regarded as both (or either) distribution system or bulk water assets. Such assets include the following:

(a) the Callide Diversion Channel in the Callide Valley WSS, which transports water from Callide Dam to Kroombit Creek and Kariboe Creek to recharge underground water for medium priority entitlements;

(b) the Haughton Main Channel in the Burdekin-Haughton WSS, which supplements the Haughton River and Giru groundwater area;

(c) the Redgate Relift system in the Barker Barambah WSS, which diverts water from Silverleaf Weir and supplements supply to other WAE holders;

(d) the Yarramalong Pump Station and Pipeline in the Upper Condamine WSS, which supplements WAEs on the North Branch part of the scheme; and

(e) the Youlambie Channel in the Three Moon Creek WSS diverts water from the Youlambie Weir, which enhances groundwater recharge for WAEs.

To resolve the classification of these assets, the Minister for Natural Resources, Mines and Energy and Minister for Trade identified those assets which are to be regarded as bulk assets. A copy of that advice is on the Authority's website.

2.8 Organisational Restructure 2006-11

In 2005-06, Indec Consulting Pty Ltd (Indec) reviewed the scope for SunWater to achieve cost savings from efficiency improvements. It identified potential annual savings increasing to 7.1% of total annual controllable costs (or $3 million) by the end of the 2006-11 price paths, excluding electricity, insurance, council rates and land tax.

At that time, SunWater was a highly regionalised organisation, with 561 full time equivalent (FTE) employment positions across six regional business centres and its Brisbane head office.

Indec recognised that considerable effort would be required over a period of time to achieve the potential savings. Accordingly, finalised costs for each WSS included a specified productivity adjustment to reflect these savings.

However, SAHA (2011) found that, between 2006-07 and 2008-09, SunWater's costs increased to $10 million per annum above the annual cost targets agreed as part of price negotiations in 2005-06. To address this and to accommodate other changes, SunWater undertook an organisational restructure.

Specifically, SunWater implemented a new organisational structure in 2007-08 to address:

(a) findings from an internal review, which identified that its organisational structure was creating a silo effect between major divisions; and

(b) to accommodate the Government's new institutional arrangement for water supply in South East Queensland. As part of this reform, the bulk supply entity (Seqwater) took control of five SunWater WSSs and 35 personnel.

In 2009-10, despite the above changes, SunWater's projected staff numbers increased from 526 (2005-06) to 636 FTEs, which was now well above the staffing level agreed as part of 2005-06 price negotiations (despite the loss of 35 staff to Seqwater).

SunWater advised that this was due to the duplication of regional and Brisbane head office business structures (SAHA, 2011). In July 2009, therefore, SunWater instigated a significant review known as the Smarter Lighter Faster Initiative (SLFI), which identified that SunWater's costs could be reduced by $10 million per annum. SLFI was primarily focused on centralising/consolidating regional and head-office functions.

The key elements of SLFI were:

(a) six business centres to be replaced by four regional depots;

(b) regional customer service functions transferred to a customer support team in Brisbane;

(c) asset management engineering functions in regions to be replaced by 'Centres of Excellence' focussed on a specific asset group and located according to skills centres;

(d) all human resources, procurement and financial reporting centralised to Brisbane; and

(e) to identify Brisbane head office efficiencies where possible.

Approximately 75% of savings were to be achieved through reducing labour costs, for example, a review of temporary staff requirements, re-deployment and a freeze on vacant positions. In addition, 25% of savings were to be achieved by reducing non-labour costs, for example, vehicle fleet, internet and communication technology, and travel and accommodation.

Deloitte Touche Tohmatsu (Deloitte, 2011a) confirmed that SunWater had achieved a reduction in annual costs of $9.8 million between 1 July 2009 and 30 June 2011. This was achieved primarily as a result of delivering voluntary redundancies to 100 FTE staff. By 30 June 2012, at SLFI's completion, SunWater expects a further $0.3 million of costs savings.

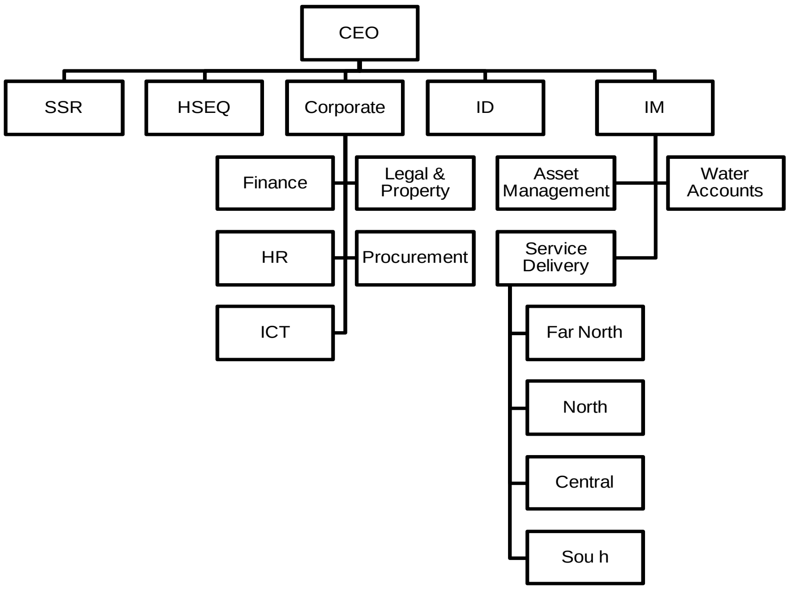
2.9 Organisational Structure

SunWater's organisational structure consists of its Brisbane Head Office, which includes the majority of corporate and specialised services and four major regional service centres at Clare (Far North), Eton (North), Bundaberg (Central) and Toowoomba (South).

The regional service centres are supported by additional depots in Ayr, Mareeba, Emerald, Moranbah, Maryborough, Biloela, Mundubbera, Theodore, Goondiwindi and St George.

A summary of SunWater's key business units is provided in Figure 2.2, with a brief description of the nature of their activities in Table 2.2.

Figure 2.2: SunWater Organisational Chart



Source: Deloitte (2011a)

Table 2.2: Summary of Functional Groups

Functional group	*Description*
CEO Office	Includes the CEO and SunWater Board.
SSR – Strategy and Stakeholder Relations	Water planning, corporate relations and business strategy. SSR is also responsible for strategic external communications such as website and advertising.
HSEQ – Health, Safety, Environment & Quality	Workplace health and safety (WHS), environmental issues and quality assurance.
ID –Infrastructure Development	New infrastructure projects carried out both internally to SunWater and with external clients, project management and project proposals and business development.
Corporate	
Finance	Accounts payable and receivable, finance reporting and analysis, cash and funds management; and budgeting and planning.
Human Resources	Workforce planning, recruitment and exit, training, leadership development, performance management, payroll services, remuneration advice, and industrial relations.
ICT– Information Communication Technology	Network infrastructure including business systems analysis, infrastructure support (IT and phone), information governance (hard copy and library function) and IT service desk.
Procurement	Undertaking major purchases (minor purchases undertaken by relevant cost centres).
Legal and property	Legal issues and managing property (housing and land-based issues).
Infrastructure Management (IM)	
Asset Management	Strategic asset management (including strategy, planning, and performance).
Water Accounts	Water accounting, ROP/ROL compliance, and customer service.
Regional Service Delivery	WSS operations and maintenance. Includes regional service centres located in Clare (Far North), Eton (North), Bundaberg (Central) and Toowoomba (South) and depots.

Source: Deloitte (2011a)

2.10 Subsidiaries

SunWater owns three subsidiary companies (not subject to this review):

(a) Eungella Water Pipeline Pty Ltd owns pipelines servicing mining customers (drawing from Eungella Dam);

(b) North West Queensland Water Pipeline Pty Ltd owns pipelines servicing urban customers (drawing from Julius Dam); and

(c) Burnett Water Pty Ltd owns Paradise Dam and Kirar Weir near Bundaberg (plus unsold WAEs associated with these storages).

2.11 Prices

Under the Ministerial Direction, the Authority is to establish prudent and efficient cost-reflective prices. SunWater categorises its costs into either renewals expenditure (Chapter 5) or operating expenditure (Chapter 6).

SunWater has proposed for 2012-17 prices that, for each major cost category, direct costs be allocated to service contracts wherever a clear link can be established between those costs and a particularly service contract.

SunWater also proposed that the balance of costs be allocated to service contracts using the direct cost of labour (as opposed to direct total costs used for 2006-11 prices) as the means for their allocation. These costs are defined by SunWater as either overhead costs or indirect costs (see Chapter 6), and are collectively referred to as administration costs.

3. REGULATORY FRAMEWORK

The Ministerial Direction requires that, in general, prices should recover efficient operational costs and expenditure on renewing and rehabilitating existing assets. The Ministerial Direction also requires the Authority to recommend appropriate regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with allowable costs outside the control of SunWater. In addition, in considering tariff structures, the Authority is to have regard for the fixed and variable nature of the underlying costs.

Primarily, the risks associated with the recovery of allowable costs relate to unpredictable or unexpected changes over the regulatory period in the level of demand for, or supply of, water and associated costs.

Short term volume risks are associated with existing infrastructure, while long term volume risks relate to the augmentation of supply (that is, planning and infrastructure risks). Cost risks relate to changes in market conditions for inputs (including those related to the maintenance and renewal of infrastructure) or as a result of regulatory imposts (such as changes in legislation, taxation and technical or economic regulation).

The appropriateness of the allocation of risks is typically determined by the ability of the respective parties to manage (control) the risks, and the implications of the allocation when assessed against the relevant regulatory objectives – in this case – economic efficiency, revenue adequacy and public interest considerations (particularly those relating to customers).

Table 3.1: Summary of Risks, Allocation and Authority's Recommended Response

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

Source: QCA (2011).

3.1 Background

Ministerial Direction

The Authority has been directed by the Minister for Finance and The Arts and the Treasurer (the Ministers) to recommend irrigation prices for water supply delivered from 22 SunWater bulk water schemes and eight distribution systems and for distribution system water harvesting and drainage (where relevant). A copy of the Ministers' Referral Notice forms **Appendix A.**

The Ministerial Direction requires that, in general, other than for certain nominated schemes which do not currently recover their efficient costs, prices should recover efficient operational costs, expenditure on renewing and rehabilitating existing assets through a renewals annuity, and a rate of return on, and of, new capital expenditure for augmentation.

The Ministerial Direction also requires the Authority to recommend appropriate regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with allowable costs outside the control of SunWater.

The Ministerial Direction also notes that, in considering tariff structures, the Authority should have regard to the fixed and variable nature of the underlying costs.

Relevant Risks

The nature of the risks associated with allowable costs needs to be considered in order to establish whether they are outside the control of SunWater. Regulatory arrangements for managing such risks can include a means for avoiding, reducing or ameliorating their effect, or compensating SunWater.

Primarily, the risks associated with recovery of allowable costs relate to unpredictable or unexpected changes over the regulatory period in the level of demand for, or supply of, water and associated costs.

Volume risks can be categorised according to their short or long term nature, as well as whether they are driven by demand or supply. Short term volume risks are associated with existing infrastructure, while long term volume risks relate to the augmentation of supply (that is, planning and infrastructure risks).

Cost risks relate to changes in market conditions for inputs (including those related to the maintenance and renewal of infrastructure) or as a result of regulatory imposts (such as changes in legislation, taxation and technical or economic regulation).

The appropriateness of the allocation of risks is typically determined by the ability of the respective parties to manage (control) the risks, and the implications of the allocation when assessed against the relevant regulatory objectives – in this case – economic efficiency, revenue adequacy and public interest considerations (particularly those relating to customers).

These risks are typically allocated according to a choice between different forms of price control[4] – often complemented by a range of other mechanisms.

[4] The form of price control refers to where a direct control form of regulation is implemented, and the decision then becomes whether to apply price caps, revenue caps or hybrid and other caps. The form of regulation refers to the choice between direct control (rate of return and incentive regulation), negotiate/arbitrate, yardstick regulation, price monitoring and all the variations in between – that is, referring to the extent of regulatory intervention.

Forms of Price Control

Common forms of price control include revenue and price caps. Often, there is some variation to the nominated approach to address particular risks relevant to prevailing circumstances.

Typically, the regulator establishes maximum allowable revenue (MAR) according to an assumed level of forecast demand and estimated efficient costs.

Under a standard revenue cap:

(a) the service provider receives the MAR irrespective of market conditions or sales;

(b) the service provider has an incentive to manage (and reduce) costs, at least until revenues are reset in the future, as the service provider typically keeps any cost savings; and

(c) customers' prices vary during the regulatory period according to changes in volumes.

There are a range of variations to the standard revenue cap such as side constraints and unders and overs accounts, which can limit price movements and impact the extent of revenue recovered.

Under a standard price cap:

(a) the service provider does not receive the MAR irrespective of market conditions as sales can vary from those initially envisaged;

(b) the service provider has an incentive to reduce costs, and increase sales, at least until prices are reset in the future; and

(c) customers' prices are certain and stable.

Under both a revenue cap and a price cap, cost risk (as distinct from volume risk) can be addressed by some form of cost pass through, with or without thresholds, for cost variations outside of an entity's control.

To assist in reviewing these options, the Authority commissioned NERA (2010a) to prepare an Issues Paper. The Issues Paper can be found on the Authority's website.

Previous Review

For the previous price review, each scheme was given the option to select either a revenue or price cap to apply over the five-year price path. Three schemes opted for a revenue cap while the remaining schemes chose a price cap.

Under the revenue cap regime, annual revenues were set at the start of the price path for each scheme. Adjustments for under- or over-recovery (including cumulative finance charges) were proposed to be incorporated into the next price path (2012-17). The three schemes choosing a revenue cap were:

(a) Bowen Broken Rivers WSS: under-recovery of $30,000 (due to lower than expected sales) is proposed to be recovered in 2012-17 prices;

(b) Cunnamulla WSS: over-recovery of $12,000 (due to higher than expected sales) is proposed to be offset against 2012-17 prices; and

(c) Macintyre Brook WSS: under-recovery of $72,000 (due to lower than expected sales) is proposed to be offset against 2012-17 prices.

Under the price cap regime, there are no adjustments for under- or over-recovery of operating expenses arising from short term volume risks or changing operating costs. As at 30 June 2010, SunWater has under-recovered in the majority of price cap schemes by approximately $7.4 million and it is not seeking to recover that short fall.

Under both arrangements, individual prices were set for the five-year period based on agreed demand forecasts, with annual price adjustments set according to changes in the CPI. The tariff structure varied between schemes but in many cases was set at 70:30 where the Part A tariff accounted for 70% of total costs and the Part B tariff (30%) reflecting variable costs and the balance of fixed costs.

Cost Risks

As part of the development of prices for the period 2006-11, the Tier 1 group considered the issue of how to handle the cost risk arising from SunWater's cost estimates varying from actual costs during the price path due to uncertain or unforeseen events.

The three options that the Tier 1 group identified to deal with cost risk were:

(a) costs are agreed at the start of the price path, with no changes in costs during the price path;

(b) pass through arrangements are established that enable tariffs to be adjusted, either during or at the start of the next price path, to deal with material changes in costs; and

(c) material changes to agreed cost items trigger a tariff change during the price path.

Option (a) was ultimately chosen and SunWater bore all cost risk during 2006-11.

3.2 Stakeholder Submissions

Volume Risks (Short Term)

SunWater

SunWater (2011a) noted that the water planning processes that formally established WAEs[5] accounted for variation in availability (that is, the probability of delivery) by setting water allocation security objectives (WASOs). Subsequently, WAE holders are responsible for managing their own demand-supply balance and in doing so are responsible for supply risks.

SunWater submitted that, as its role is to store and transport available water to customers under these WAEs, it should not bear the risk of water availability. SunWater considered that this position was consistent with the broader policy statements on the assignment of supply risks to entitlement holders under the NWI (Council of Australian Governments (COAG), 2004, paragraph 48). Under these provisions,

> *Water access entitlement holders are to bear the risks of any reduction or less reliable water allocation, under their water access entitlements, arising from reductions to the consumptive pool as a result of: (i) seasonal or long-term changes in climate; and (ii) periodic natural events such as bushfires and droughts.*

[5] The term WAE has been adopted by SunWater to reflect the new national terminology in lieu of the term 'water allocation' adopted in current Queensland legislation.

SunWater further noted that volume risk is asymmetric as water sales are capped in accordance with users' entitlements – no more than 100% of a scheme's nominal allocation can be made available in any year.

SunWater proposed that, to manage these volume risks, tariffs should be set such that consumption charges recover the variable costs of supply (identified as electricity for pumping) with the balance (being fixed costs) recovered in a fixed charge. Under this approach, the risk of forecasting errors is removed and the form of regulation would become less relevant as the tariff structure itself would deal with these risks. It would also meet the revenue adequacy objectives of the referral notice and send efficient price signals to customers.

SunWater submitted that, if its proposed tariff regime is not accepted by the Authority, then a revenue cap should apply. The rationale for this is that, where a regulated entity has limited ability to either increase or decrease sales, then revenue adequacy becomes a key consideration for determining the form of regulation. A revenue cap accords with this lack of control over sales and would delivery revenue stability for the regulator.

Other Stakeholders

<u>Support for price cap</u>

Bundaberg Regional Irrigators Group (BRIG, 2010a) considered that there would not be sufficient interest within the Bundaberg WSS to adopt a revenue cap. BRIG (2010b) noted that it prefers a price cap, noting that should the fixed costs be matched to a Part A charge and variable costs to a Part B charge then much of the debate relating to different levels of water use (availability and sale) is removed.

Bundaberg Fruit and Vegetable Growers Cooperative Limited (BFVG, 2010) submitted that it supports the current price cap arrangement as tariffs are stable throughout the regulatory period, whereas under a revenue cap arrangement prices could be adjusted frequently leading to greater price volatility which may be disruptive and distort the planning of cropping cycles for irrigators.

Mackay Irrigation Stakeholders (MIS, 2010) submitted that, in principle, they support the continuation of the price cap as a form of price control (but provided no basis for this contention).

The Mareeba-Dimbulah Irrigation Area Council (MDIAC, 2010) submitted that SunWater needs to better manage for the impact of demand variability on revenue through the implementation of efficiency measures to reduce variable costs. Further, providing SunWater with a risk-free revenue stream will discourage them from implementing efficiency measures to reduce their costs, which will shift the risk solely onto irrigators. MDIAC recommend the continuation of the current price cap as it provides stable tariffs allowing irrigators to plan their crop rotations and forecast their irrigation costs with some degree of certainty.

The Queensland Farmers' Federation (QFF, 2010a) also supported the application of price caps (see below).

<u>Do not support revenue or price cap</u>

Dawson Valley Irrigators Group (DVIG, 2010) submitted that, instead of choosing between a price cap and a revenue cap, irrigators should have the option of running the distribution system themselves.

Maryborough Sugar Factory (MSF, 2010) submitted that it understands that revenue adequacy is a requirement to ensure the ongoing viability of SunWater and the provision of water supply services. MSF submitted that irrigation customers also need to be viable into the future.

MSF further submitted that, from the NERA Issues Paper (2010a), it does not appear that the choice between a revenue or price cap is that great. It stated that the most important thing is to align tariffs with costs, which in turn requires transparency in the costs that SunWater incurs in supplying water to customers. MSF concluded that, if SunWater is to have revenue certainty by increasing fixed charges or applying a revenue cap, then this should be reflected in lower water pricing.

Relationship between form of price control and tariff structure

QFF (2010a) submitted that pricing reform needs to reflect the significant risk faced by customers in meeting high fixed costs in schemes where water supply is variable and difficult to forecast within seasons and from season to season.

QFF submitted that, when determining the price structure, the Authority should consider whether the form of price control:

(a) encourages customers to improve water use efficiency on farms despite the impediments imposed by supply scheme arrangements;

(b) encourages SunWater to achieve savings in operating costs;

(c) delivers price paths that do not significantly distort signals to customers in regards to the current and future cost of providing water services; and

(d) delivers water prices that are competitive with other states, particularly New South Wales (NSW), that do not have to pay a rate of return on past scheme investments.

QFF (2010b) also submitted that SunWater is able to spread the risk of variable water availability across its portfolio and recommended that:

(a) the form of price control should be a price cap which is set to encourage SunWater to better manage for the impact of demand variability and drop in service quality on revenue;

(b) tariff structures should reflect fixed and variable costs for each scheme and the implications of a rate of return in Part A tariffs should also be assessed; and

(c) SunWater must establish a clear determination of its role as a service provider to manage its own risk.

Impact on Customers

Isis Sugar Partnership (ISP, 2010) submitted that, while there had been a high degree of focus on the impact of various alternatives on SunWater as a provider of services, very little effort had been directed towards examining price stability and impacts of alternative approaches on customers.

ISP further submitted that, given tariff structures and long term extraction patterns, it is disappointing that the magnitude of revenue risk (surplus or deficit) across all schemes and within each scheme is not explored. It recommended that the form of regulation should provide sufficient incentive to SunWater to pursue efficiencies in its variable cost base.

The Proserpine District Canegrowers Cooperative and Proserpine Co-Operative Sugar Milling Association Limited (PDCCL and PCSMAL, 2010) submitted that the form of price control should encourage SunWater to better manage for the impact of demand variability on revenue. Given the variability of supply in the area, there should be explicit consideration of the trade-off between risk to customers and risk to SunWater.

Volume Risk (Long Term)

SunWater

SunWater (2011a) submitted that supply or demand risks associated with spare capacity are not relevant as WAEs in its supply schemes have been fully allocated. Further, in schemes where SunWater holds a portion of the WAE issued, it bears the holding costs of this entitlement in the same manner as other users. SunWater also noted that it, not existing customers, would bear the holding costs of any new WAE generated as a result of investment in additional capacity.

SunWater further submitted that it does not actively manage to mitigate future supply risks nor incur costs or charge customers in relation to such measures. For example, SunWater does not develop drought management plans (DMPs) under the *Water Supply (Safety and Reliability) Act 2008*. Only where customers do not hold WAEs do service providers, such as SunWater, have to prepare drought management plans. SunWater's customers hold their own WAEs, so drought management plans are not required. SunWater holds some unallocated WAEs and distribution loss WAEs. SunWater also holds some WAEs for trading purposes. Nevertheless, these WAEs are allocated to customers when sold and SunWater is therefore not required to prepare drought management plans for these WAEs.

Under the planning framework, it is the responsibility of WAE-holders to manage their own supply (and demand) risk. Further, during extreme droughts, SunWater operates under critical water sharing arrangements (CWSA), which it prepares for DERM's approval. At such times, the WAE framework is suspended.

Other Stakeholders

QFF (2010a) submitted that pricing regulation needs to encourage SunWater to invest in the efficiency and sustainability of schemes. Further, the form of regulation should deliver price paths that do not significantly distort signals to customers as to the current and future cost of providing water services.

Cost Risks

SunWater

SunWater (2011a) proposed that the regulatory arrangements allow for a (within period) pass through of costs arising from events that were unforeseen or pre-approved events that were identifiable but uncertain. Events considered by SunWater to be outside of its control are:

(a) annual changes to regulated electricity tariffs;

(b) the possible removal of regulated electricity tariffs[6] which could have a significant impact on the cost of electricity;

(c) the introduction of regulatory measurement standards that require upgrades to meters;

[6] As recommended in: Queensland Competition Authority. *Review of Electricity Pricing and Tariff Structures – Stage 1*. (September 2009), p6.

(a) the introduction of water planning and management charges in respect of SunWater's distribution loss entitlements for distribution systems[7];

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

(c) the ongoing availability of key chemicals for channel weed control;

(d) impacts from the basin-wide water plan for the MDB, in relation to SunWater schemes captured under that plan; and

(e) schemes relating to the reduction of greenhouse gases that may have implications for electricity prices.

SunWater submitted that no materiality thresholds should be applied. However, in the event that the Authority applies a threshold, it should be set for each bulk water and distribution scheme segment.

SunWater submitted that there is a need to implement specific regulatory arrangements to respond to changes in electricity prices over the regulatory period. SunWater proposed that annual cost pass-through arrangements be established that allow for water charges to reflect actual electricity prices (that is, franchise tariffs), in order to avoid windfall gains or losses arising from forecasting errors of franchise tariffs.

SunWater also supports the application of an 'efficiency carry-over' mechanism to its operating expenditure to provide the necessary incentive to pursue efficiency gains.

In a supplementary submission on review and adjustment triggers, SunWater (2011f):

(a) noted that there appears to be limited ability to apply within-period price changes where Government policy imposes a price floor or price ceiling (as the Ministerial Direction does not permit real price decreases and limits real price increases for certain schemes to a pace consistent with that set for 2006-11);

(b) submitted that, where these do not apply, the Authority should provide for within-period adjustments to account for increased operating costs on a net present value (NPV) neutral basis; and

(c) submitted that, for renewals, no price review is proposed but rather an adjustment be made in the following period.

Other Stakeholders

QFF (2010a) questioned the implications of indexing price by CPI to reflect cost increases in items such as electricity.

Pioneer Valley Water Co-operative Ltd (PVWater, 2011a) submitted that there should not be any mechanism to support price resets. This would prevent cost blow-outs being passed on to customers. In the event of major unforseen cost increase events, PVWater submitted that SunWater should consult with customers to develop strategies including future funding arrangements to address such costs.

[7] National Water Commission. Australian Water Reform 2009. Second Biennial Assessment of progress in implementation of the National Water Initiative. (September 2009), p178.

Cotton Australia/QFF (2011a) noted that electricity costs comprise only 0.5-5% of total costs in the Nogoa-Mackenzie WSS and Emerald Distribution System (and advised that electricity should not be subject to pass through arrangements).

3.3 Other Jurisdictions

Volume Risks (Short Term)

Australian Competition and Consumer Commission (ACCC)

The ACCC has been responsible for developing rules to apply in regulating water service providers within the MDB.

Part 6 of the *Water Charge (Infrastructure) Rules 2010* (WCIR) provides for price approvals or determinations for non-member owned operators that provide services in relation to more than 250 GL of entitlement.

As part of the process, the ACCC has prepared draft pricing principles to provide a basic level of regulatory certainty and consistency in approach while providing the regulator with an appropriate level of discretion to deal with pricing issues on a case-by-case basis.

Under Part 6, a regulator will be responsible for approving or determining the maximum regulated charges that Part 6 operators may charge. In addition, Part 6:

(a) outlines a price cap form of control whereby maximum charges are approved or determined for a defined regulatory period of up to four years; and

(b) incorporates a demand adjustment mechanism that allows the regulator to account for unanticipated changes in demand resulting from unpredictable inflows.

The ACCC notes that, if charges are determined across a number of years and demand is variable and uncertain, there is a risk that the actual level of demand will differ significantly from the forecast level. Given the high variability in rainfall in Australia and the limited ability of operators to influence the supply of water, this is a key issue in the rural water sector. An annual review process (Division 3 of Part 6) will ensure that operators recover sufficient revenue in the presence of uncertain and highly variable rainfall whilst maintaining relatively stable prices.

NSW

In NSW, the Independent Pricing and Regulatory Tribunal (IPART) determines the maximum prices that State Water Corporation (State Water) and the Water Administration Ministerial Corporation (administered by the NSW Office of Water) may levy for bulk water services.

In its 2010 price determination for State Water, IPART (2010a) noted that a significant portion of its forecast revenue requirement (approximately 60%) is subject to risk from differences between forecast and actual extractions. To reduce this risk, IPART proposed a new approach for forecasting extractions using a 20-year moving average of historical Integrated Quantity and Quality Model (IQQM) and actual extractions data.

Under this approach, prices are set to generate the total target revenue, in NPV terms, over the course of the determination.

However, IPART also noted that State Water would still be exposed to a degree of revenue risk due to annual variations in water availability. It decided that the best approach to manage this risk is to incorporate a volatility allowance in the notional revenue requirement.

IPART considered that a revenue volatility allowance would:

(a) provide State Water with revenue to recover the holding costs required to borrow funds to conduct its business in years of revenue shortfalls;

(b) address revenue risk in a more cost-effective manner than increasing the rate of return or recovering the holding costs through an ‘unders and overs’ account; and

(c) comply with the NWI principles which state that users should bear the risks of any reduction in, or less reliable, water allocations arising as a result of seasonal or long-term changes in climate and drought (COAG, 2004, p.8).

The volatility allowance – calculated as the mean of the absolute differences between the 20-year average of extractions and actual extractions – measures the degree to which extractions have fluctuated over the last 20 years, rather than using the assumption that the worst case scenario repeats itself. Since the determination required high security users to pay a premium for their entitlements, the revenue volatility allowance would be recovered from general security users only.

In its 2010 price determination for the NSW Office of Water (NOW), IPART (2011) again noted that differences between forecast and actual extraction volumes create a revenue risk for the business. IPART decided to mitigate revenue volatility by setting prices so that the forecast increase in bills is capped at 20% a year (for forecast usage) in real terms.

IPART considered that the decision to include a price cap achieved an appropriate balance between allowing NOW to gradually transition towards higher levels of cost recovery, while also mitigating the impact of changes in prices on water users. However, in this instance IPART concluded that a revenue volatility allowance for NOW would not be justified since it is not exposed to the same level of revenue volatility as State Water (IPART estimated that approximately 80% of user share of revenue is tied to NOW’s fixed charges, compared to around 40% for State Water).

Victoria

In Victoria, the Essential Services Commission (ESC) (2008) stated that the revenue requirement established in a pricing review is a benchmark used solely to assess whether prices will result in businesses earning sufficient revenue to deliver services and meet any obligations imposed by regulatory agencies. Once prices are set, they are not normally adjusted during the regulatory period to reflect differences between actual and forecast costs, or divergences between actual and forecast demand levels. The ESC considers that this approach provides businesses with an incentive to manage their costs efficiently during the regulatory period (typically five years).

However, the ESC recognised that there is uncertainty surrounding required outcomes, costs and demand levels, the nature and magnitude of which varies across businesses. It proposed three main mechanisms for dealing with this uncertainty:

(a) a hybrid form of price control for the urban businesses, that combines individual price caps with opportunities for businesses to adjust their tariff strategies (and/or rebalance prices) at the time of the annual price review, and revenue caps for the rural businesses;

(b) end-of-period adjustments during the subsequent price review process for unforeseen changes in legislative and other Government-imposed obligations during the period; and

(c) within-period adjustments including pass throughs for uncertain capital projects, licence fees and catastrophic events, and within-period review of differences between actual and forecast demand levels.

Individual price caps were approved for all of the urban businesses. These businesses would be able to apply during the regulatory period to adjust their tariff structure under the hybrid form of price control.

Revenue caps were approved for Goulburn-Murray Water (GMW), Lower Murray Water's rural services and Southern Rural Water's (SRW) services excluding recycled water and fee-based (diversions) applications. However, an adjustment mechanism was included for GMW and SRW to account for uncertainties regarding the scope and funding arrangements for various projects in operation over the regulation period. At the end of the first regulatory year (2008-09), these businesses were required to resubmit amended forecasts for the remainder of the regulatory period (2009-10 to 2012-13) accompanied by a detailed explanation of their calculations and evidence of consultation with customers.

Western Australia

In its inquiry into tariffs of the Water Corporation, Aqwest and Busselton Water, the Economic Regulatory Authority (ERA, 2009) noted that its approach differed from other jurisdictions where tariffs are calculated for a designated 'regulatory period', typically three to five years. ERA advised that the Western Australian State Government is provided with annual updates on capital expenditure in the preceding year and forecasts of capital and operating expenditure for the coming 10 years. Any under- or over-recovery of past expenditure due to short term supply variations is accounted for by making adjustments to future prices. ERA contended that this approach removes demand risk from the utilities and places the risk associated with incorrect demand forecasts with the customers. It allows any under- or over-recovery of past expenditure to be accounted for in the following year.

Australian Capital Territory (ACT)

The Independent Competition and Regulatory Commission (ICRC, 2008) applied an end-of-period dead-band adjustment factor to provide compensation for the regulated entity, Australian Capital Territory Electricity and Water (ACTEW), or customers, if revenue was sufficiently different from that forecast in its current decision. This mechanism applies if revenues are more than 3% different from the forecast across the first four years of the regulatory period. The ICRC considered that a wider dead band of 10% would mean an excessive level of risk being faced by ACTEW.

The ICRC also applied a second adjustment mechanism to allow the resetting of prices in the fourth and fifth years of the regulatory period. Should water revenue be more than 7% different from that forecast over the first 2.5 years of the regulatory period, the ICRC will revisit the usage forecasts for the remaining two years of the regulatory period and adjust tariffs if necessary.

Volume Risk (Long Term)

South Australia

In *Water for Good*, South Australia's recently released water security plan (Office for Water Security, 2010) seeks to manage long term volume risk by ensuring that decisions relating to future demand and supply are cost-effective and timely. The Government's plan outlines the conditions that need to be achieved before augmentation of the existing assets is required.

Cost Risks

ACCC

Part 6 of the WCIR includes a measure to allow for operators to request that an approval or determination be reopened (Division 4 of Part 6). However, a regulator must not vary an approval or determination unless it is satisfied that:

(a) an event has occurred during the regulatory period that materially and adversely affects the operator's water service infrastructure or otherwise materially and adversely affects the operator's business and the operator could not reasonably have foreseen the event;

(b) the total additional expenditure required during the remainder of the regulatory period to rectify the material and adverse effects of the event will exceed 5% of the value of the applicants regulatory asset base (RAB) as at the beginning of the regulatory period;

(c) the updated total forecast expenditure for the regulatory period is reasonably likely to exceed the total forecast expenditure as estimated at the start of the regulatory period for the same regulatory period; and

(d) the operator has demonstrated that it is not able to reduce its expenditure to avoid the consequences of the unforeseen event without materially and adversely affecting the ability to comply with the regulatory or legislative obligations.

Victoria

In its Final Decision (ESC, 2008), the ESC recognised that certain aspects of water businesses' activities are subject to a relatively high degree of uncertainty during the regulatory period. It considered that variations from the assumptions used in determining prices should be considered in totality, rather than taking account of each change separately. It noted that, in some cases, positive and negative changes may offset each other, resulting in little impact on businesses' costs or revenues overall and requiring no price adjustment. In other cases, a number of small changes may add up to a significant impact, either in one year or taken together over a series of years during the regulatory period.

The ESC considered that defining materiality thresholds would reduce businesses' and the Commission's flexibility to make appropriate adjustments for uncertain and unforeseen events. The Final Decision included a mechanism that allowed for businesses to apply for an adjustment to the scheduled prices and/or the revenue requirement to reflect increased/decreased costs incurred as a result of events that were uncertain or unforseen at the time of the Decision.

Under an "uncertain or unforeseeable events" clause, the ESC determined that the matters that may (at the discretion of the Commission) be taken into account included:

(a) material differences between the forecast demand levels and the actual demand levels in one or more years of the regulatory period;

(b) changes in the timing or scope of expenditure on major capital projects; and

(c) changes to government legislation or regulatory principles resulting in material differences in licence fees or contributions payable, or the proposed outcomes and forecasts of operating and capital expenditure used to calculate the revenue requirement.

The ESC noted that it would not accept an uncertain events application for events that the Commission considered:

(a) are or should be within the control of the business;

(b) were, should have been known or could have been reasonably forecast by the business at the time the determination was made;

(c) should or should have been planned for or managed by the business; or

(d) reflect inefficient expenditure by the business.

South Australia

The Essential Services Commission of South Australia (ESCOSA, 2010) noted that regulators can incorporate pass-through provisions in a price determination to deal with uncertainty or unforeseen events. However, allowing for a pass through of costs arising from an event within the business' control would lead to consumers facing the risk of such an event even though that risk is best able to be managed by the business. In order to maintain the appropriate incentives for efficiency, ESCOSA noted that it is desirable that the types of pass-through events are predetermined and are caused by factors that are outside the business' control.

ESCOSA suggested one option for addressing uncertainty is to incorporate actual capital expenditure at the time of the next price review so that the risk of incurring materially different capital expenditure is only faced during the price path period. However, it was noted that the appropriateness of this approach would depend on the extent to which the business has a sufficient incentive to incur efficient capital expenditure.

3.4 Authority's Analysis

The Authority notes several references in the Ministerial Direction which indicate that Government policy aims to provide price certainty over the regulatory period, wherever possible. These include requirements to:

(a) recommend irrigation prices for the regulatory period;

(b) maintain water prices in real terms if current prices are already above the level required to recover costs;

(c) set irrigation prices for certain schemes (or scheme segments) to increase in real terms at a pace consistent with the 2006-11 prices or until such time as prices are sufficient to recover costs;

(d) consider the need to implement a price path that moderates price impacts on irrigators where price increases for irrigators are higher than the Authority's measure of inflation.

Volume Risk (Short Term)

Volume risk in a short term context refers to the risks associated with existing assets. They include both demand and supply risks.

Demand Risk

Demand risk occurs when customer demand for water is uncertain and can result in variations between actual and forecast revenues. For SunWater, demand risk can fluctuate according to:

(a) changes in crop composition or acres irrigated due to a change in commodity prices;

(b) changes in on-farm costs;

(c) rainfall and changes in rainfall patterns (as the availability of water on-farm can affect the demand for SunWater's water);

(d) customer access to alternative supplies; and

(e) the price of water obtained from SunWater.

It is not possible to forecast demand over the five-year regulatory period with certainty as the drivers of demand variability above are largely exogenous (that is, they are impacted by global commodity markets and climatic conditions, with the exception of water prices, which are set by Government).

There are also significant limitations on SunWater's ability to manage demand (or supply) risks by changing its storage or delivery capacity. These constraints, associated risks and the implications for the form of price control are addressed below (see Volume Risk (Long Term)).

Further, SunWater has no capacity to impact demand through pricing changes as prices for water provided by SunWater are set by Government over the regulatory period or in schemes where water is traded, by the market. As SunWater has very little, if any, capacity to influence demand risks, an issue arises as to whether SunWater can manage the attendant revenue risks.

The standard river supply contract gives WAE holders a right, but not an obligation to take water. That is, SunWater is required to deliver water according to customer demand, subject to water availability.

SunWater is not able to decrease its asset base or reduce all of its costs in response to a forecast or actual decrease in demand. SunWater must therefore incur certain (fixed) expenses to maintain service capacity irrespective of demand.

Therefore, SunWater is unable to fully manage variations in revenue due to changes in demand.

Also, as noted above, SunWater (2011a) does not seek to influence the demand for water during droughts as customers are responsible for managing the demand-supply balance.

At the same time, the Authority recognises customer concerns that the impact of water scarcity on customers must also be taken into account. In the current context, individual customers, to some extent, are able to meet their demand requirements through sourcing additional WAEs through either temporary or permanent trade or accessing alternative supplies. Alternatively, customers can potentially reduce their own demand by modifying the type of crop or area under cultivation.

Notwithstanding these (often limited) options for customers, revenues must cover the (efficient) cost of service provision to enable the service provider to continue their provision. If not, in a commercial context, a service provider would cease the delivery of those services.

Short term demand risks will therefore need to be managed, and their cost borne, by customers.

Neither revenue adequacy, efficiency, nor the public interest can be served where a service provider cannot at least cover efficient operating costs. Where there are overriding matters of public interest there may be exceptions but, under current arrangements these considerations fall within the prerogative of Queensland Government policy.

A standard revenue cap would provide certainty for SunWater that it can manage all demand risks not within its control. However, price stability is best served by a price cap.

As noted previously, both price and revenue caps provide SunWater with an incentive to reduce costs although price caps will also provide an incentive to increase sales. Neither form of regulation alone provides all the necessary incentives for SunWater to pursue efficiency opportunities. Accordingly, the Authority considers that other complementary arrangements are required (these are addressed in subsequent chapters).

The revenue cap could be amended to incorporate set prices (and be accompanied by an end-of-period adjustment for under- or over-recovery of costs). Alternatively, a price cap could be set with an end-of-period adjustment for over- or under-recovery of revenues.

Establishment of a cost-reflective tariff structure, with all fixed costs recovered through fixed charges and with variable charges aligned to variable costs, would align costs associated with changes in water use with the revenue from volumetric charges. This would avoid the need for further regulatory intervention. It is therefore considered the most appropriate mechanism for this purpose.

The Authority notes the ACCC's position that volume risk may be managed through annual adjustment to prices in response to demand fluctuations. Such an approach does, however, reduce price certainty. The Authority considers that, for SunWater, a cost-reflective tariff structure will provide stable prices over the five-year regulatory period and also minimise regulatory costs.

In response to QFF's submission that SunWater's water prices should be competitive with other States, the Authority notes that, to compensate State Water for volume risk, IPART included a volatility allowance which is recovered through (higher) total prices. The Authority also notes that irrigators are, like those in NSW, not required to pay a rate of return on past scheme investments.

Supply Risk

SunWater's ability to supply water depends on the availability of water in its storages, which is in turn dependent upon rainfall and hydrology. Supply risk arises wherever water availability is uncertain.

In preparing the DERM's Regional Water Supply Strategies, climate change models were provided by the Queensland Climate Change Centre of Excellence (QCCCE) which produced a wide range of potential forecasts for rainfall. The modelling indicates more periods of lower rainfall.

Climate change has the potential to change the timing, frequency, magnitude and duration of stream-flows as well as reduce groundwater levels. QCCCE states that climate change impacts are projected to intensify in Queensland with, inter alia, less rainfall. Projected impacts are likely to include severe droughts, occurring with increasing frequency.

However, the future variability of rainfall under natural climate variation is not possible to be forecast with any certainty, and water availability cannot be predicted. Supply risk can be expected to be significant in these circumstances.

SunWater cannot influence water availability in the short term in that it cannot influence rainfall or hydrology.

Again, as noted above, SunWater does not develop drought management plans under the *Water Supply (Safety and Reliability) Act 2008* to adjust supply under normal drought conditions.

The Authority therefore concludes that, as for demand, SunWater cannot, of its own volition, manage short-term supply risks.

Strategic reserves identified in WRPs are not available to SunWater unless it complies with the approval process relating to changing its storage or delivery capacity which is addressed below (see Volume Risk (Long Term)).

There is a quantity of water that SunWater does hold within existing infrastructure that has not been allocated to customers and does potentially provide SunWater with additional sales revenue. However, SunWater has advised that the quantity of water in this category is minimal.

SunWater's customers have some, albeit limited, scope to manage supply risks. Users of irrigated water can manage their water supply risks by holding surplus entitlements with SunWater, sourcing alternative supplies (e.g. groundwater) and using temporary trade markets. NERA (2010a) has, however, noted that there may be limitations to a customer taking up these options and that the availability of options may vary between schemes. Indeed, NERA (2010a) has also noted that entitlement trading is only a relevant option if irrigators face differing weather conditions and the scheme is not over-allocated.

Notwithstanding the above, the standard supply contract between SunWater and its customers requires SunWater to only supply water to customers to satisfy customer requirements when there is a sufficient level of water availability. Section 12.1(d) of the standard supply contract allows SunWater to suspend or restrict releases of water from its storage infrastructure due to force majeure, which includes drought. Therefore, the standard water supply contract also attributes supply risk to WAE holders.

In response to SunWater's submission that paragraph 48 of the NWI ascribes short term volume risk to customers, the Authority considers that paragraph 48 of the NWI relates to long term supply risk. Specifically, the paragraph refers to permanent reductions in water allocations (for example, WAE) caused by a change in government water planning regimes.

At the same time, the Authority accepts that supply risk cannot be influenced by SunWater and that, while there are some opportunities for customers to manage such risks, they may in many instances be limited.

Therefore, as with demand, short term supply risks will need to be managed, and their cost borne, by customers.

Such an allocation of risks is consistent with arrangements that would prevail commercially, with current standard contractual arrangements and the requirements of the NWI. That is, the service provider does not bear such risks.

IPART (2010a) recognised the historical variation between forecast and actual supply and ascribed this risk to WAE holders through a revenue volatility allowance. The Authority does not recommend this approach as, in SunWater's circumstances, such an approach could increase prices unnecessarily. There is no certainty that historical variation in supply will be repeated in the future and the Authority prefers a mechanism that addresses actual variations, rather than anticipating a historical average.

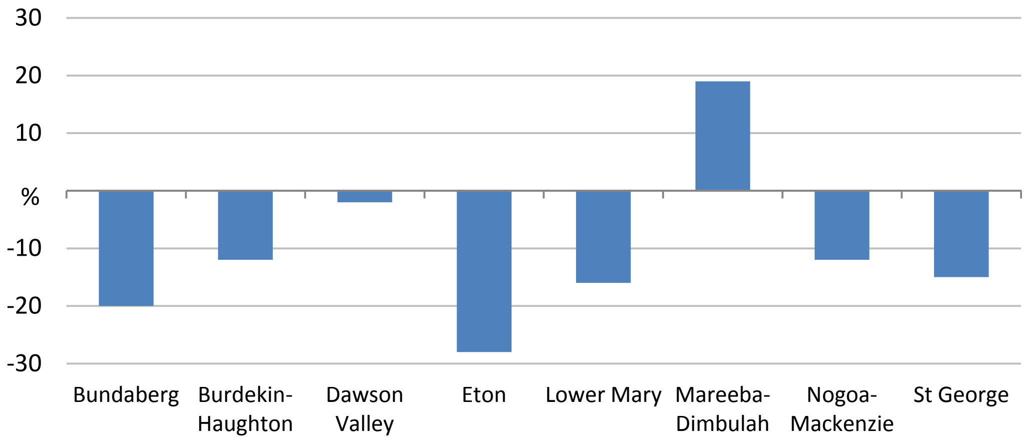
Similar price control arrangements and tariff structures are available to ensure revenue adequacy for SunWater.

Materiality

Demand and supply variability will combine to change the quantum of water used by SunWater's customers. In some years, water usage will be more influenced by demand and in other years it will be limited by supply.

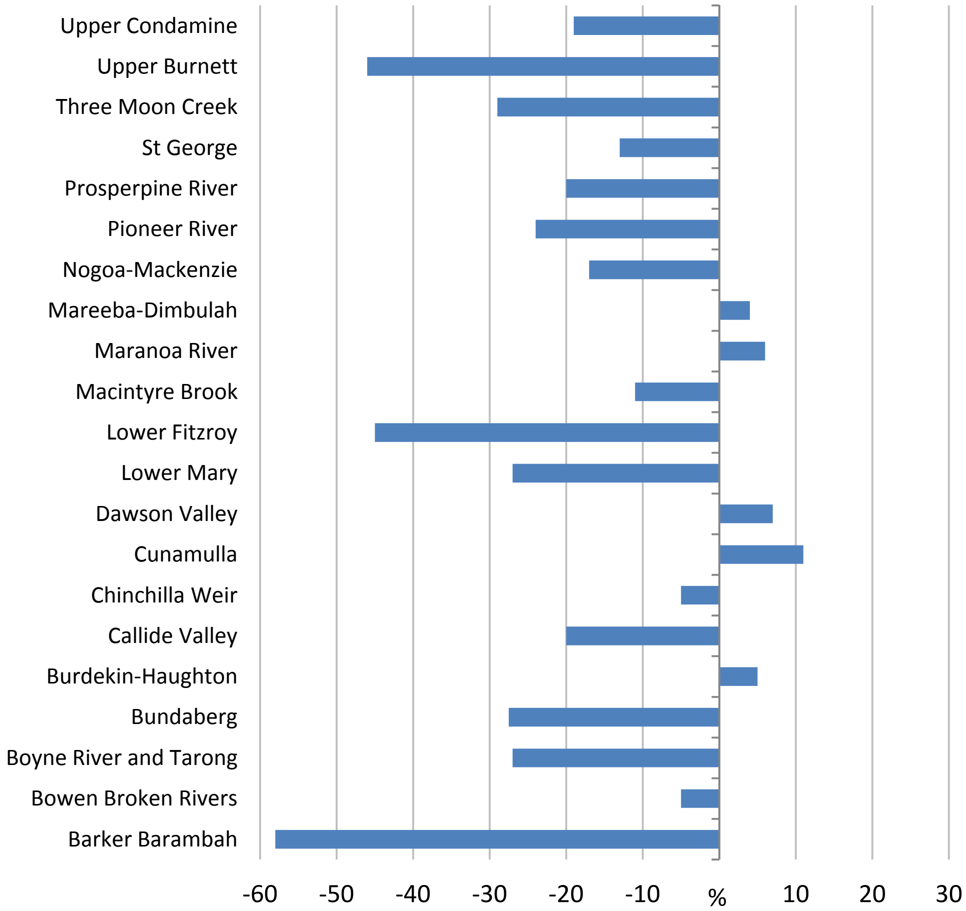
The extent of this variability in water usage is significant. The variation between forecasts established for the last price path and actual usage in the distribution and river segments is shown in Figures 3.1 and 3.2.

Figure 3.1: Percentage Variance in Actual Distribution System Water Use Compared with Forecast (2006-07 to 2009-10)



Source: SunWater (2011e).

Figure 3.2: Percentage Variance in Actual Water Use in River Schemes Compared with Forecast (2006-07 to 2009-10)



Source: SunWater (2011e).

Achieving revenue adequacy is particularly important in these circumstances, since the Ministerial Direction precludes SunWater from realising any further return on, or of, the existing asset base. That is, there are minimal retained earnings available to fund revenue shortfalls.

Conclusion

It is concluded that SunWater cannot manage short term demand risks, either due to their nature (being driven primarily by customers requirements) or as a result of the legislative framework (which requires SunWater to respond according to the agreed WAEs).

SunWater cannot manage water supply risks in the short term as it cannot influence rainfall or the assessed hydrology. This is recognised by the legislative framework which specifically allocates such risks to customers.

Customers are the beneficiaries of the water supply schemes and, as SunWater cannot manage the relevant risks, short term volume risks should be assigned to customers.

Furthermore, revenues must cover the efficient (fixed and variable) cost of service provision to enable continued water delivery.

Such an allocation of risks is consistent with arrangements which would prevail commercially, with current standard contractual arrangements and the requirements of the NWI.

The Authority proposes that volume risk be addressed through a tariff structure that recovers all fixed costs through fixed charges based on the WAEs and variable costs through volumetric charges. Such an approach would avoid the need to address under- or over-recovery of revenues resulting from changes in supply by other, more intrusive regulatory means and promote price stability over the regulatory period.

Recommendation:

The Authority recommends that short term volume risks should be assigned to customers through a tariff structure that recovers fixed costs through fixed charges and variable costs through volumetric charges.

Volume Risk (Long Term)

Long term volume risk is sometimes referred to as planning and infrastructure risk (QCA, 2005). It refers to the risks associated with planning and modifying infrastructure in response to changes in the demand-supply balance.

Bulk

If demand is forecast to be greater than current supply levels, then it may be prudent to expand the scheme, or to reduce water losses. If a service provider underestimates demand for new infrastructure, the major risk is that it would not have the infrastructure capacity to meet future demand. Conversely, where future demand is overestimated, the major risk is that it may be left with substantial excess capacity.

The legislative framework within which SunWater operates includes the *Water Act 2000*, *Water Regulation 2002*, various WRPs, ROPs and SunWater's ROLs. These documents provide limited scope to meet growth in future bulk water demand through an increase in storage capacity. The ROP specifies the number of WAEs that can be supplied and the ROL specifies the extent to which the infrastructure operator can interfere with natural flows.

In order to increase SunWater's current storage capacity or to access any strategic reserve, ROPs and ROLs would need to be amended. WRPs may also need to be amended where they do not make provision for strategic reserves. This would require DERM to undertake planning, modelling and policy work to ensure change would not impact on the environmental flow objectives and water allocation security objectives of the WRP.

The *Water Act 2000* specifies that a WRP can only be amended or replaced through Ministerial approval. As a WRP is subordinate legislation, it must also go through the legislative process and be tabled in Parliament. Additionally, the *Water Act 2000* specifies that the Chief Executive of DERM may amend the ROP and the ROL.

SunWater can request DERM to change the WRP, ROP and ROL. However, there is no formal process to do this. The process of achieving such change demands significant resources, time and the outcome is highly uncertain.

Essentially, SunWater has no ability to expand its bulk water supply without DERM introducing changes to the WRPs, ROPs and ROLs. SunWater could, with DERM approval, decommission or reconfigure bulk supply infrastructure if it could still meet its WAE supply obligations (although no such prospect is currently envisaged).

In addition, SunWater could, without DERM's approval, decommission or reconfigure distribution system infrastructure provided it could still meet its WAE supply obligations. This is discussed further in Chapter 5.

Upon modification of a WRP, SunWater may be able to increase bulk supply. This would create WAEs above those already assigned. If the newly created WAEs were not sold to customers, then SunWater would have excess capacity in the dam and bear the associated costs.

While a price cap can provide SunWater with the incentive to increase capacity and increasing sales, it also allocates the risks of doing so to SunWater. However, NERA (2010a) has noted that the opportunity for significant new infrastructure is thought to be minimal and the legislative framework restricts SunWater's ability to undertake the capacity augmentation of bulk infrastructure.

Incentives to undertake such risk are therefore unlikely to be effective. Essentially, under the current legislative framework, the augmentation of bulk infrastructure is a responsibility of government.

Distribution

In distribution systems, the ROP specifies a quantum of WAEs to account for distribution losses in the distribution system. If SunWater can demonstrate to DERM that it has permanently reduced the amount of water loss, then these distribution loss WAEs can, under certain conditions, be traded as general use WAEs, increasing the water available to customers from the bulk scheme.

This gives SunWater some ability to respond to higher demand.

SunWater has prepared modernisation plans that assess options to increase efficiency in its distribution systems. These plans, completed in 2009-10, identified potential areas for water savings and were submitted to the Commonwealth under the "Irrigation Modernisation Planning Assistance" program. SunWater received $500,000 to improve eight distribution systems by reducing water loss from open channels and to develop strategies for improving the efficiency of water delivery.

Further opportunities to provide an improved quality of service or additional supplies should be pursued where commercially viable. SunWater needs to be provided with an incentive to seek out such opportunities and upgrade and modernise distribution systems (such as through channel lining to reduce losses) when the benefits of saved water outweigh the expenditure required.

The risks associated with such improvements should be borne by SunWater as SunWater is best able to manage them. Price caps can provide an inherent incentive for increased sales. However, similar objectives could be achieved with a revenue cap by excluding the proceeds from sales from the MAR.

The exclusion of such proceeds from the MAR and their retention by SunWater should provide sufficient incentive for SunWater to pursue such opportunities. Such arrangements, once established, should not require further regulatory adjustment within the regulatory period. It would be essential to ensure that any such arrangements prohibit SunWater from 'double charging' through annual water charges. The appropriate tariff arrangements are addressed further in Chapter 4 (Pricing Framework) relating to tariff structures.

Conclusion

Long term volume risks are primarily associated with augmenting current infrastructure or reducing distribution losses to address future water supply needs.

SunWater has no effective means of increasing storage capacity of its own accord, as augmentation of bulk infrastructure is the legislative responsibility of the Queensland Government. However, SunWater does have some capacity to manage distribution system infrastructure and losses provided that it maintains the ability meet its obligations in respect of the delivery of WAEs.

At the same time, there are opportunities for SunWater to increase saleable WAEs by reducing distribution losses. SunWater has identified potential modernisation plans to increase the efficiency of its eight distribution systems by reducing water loss from open channels.

To provide a clear incentive for SunWater to reduce distribution losses, the Authority recommends that the proceeds from the sale of new WAEs (i.e. previously distribution loss entitlements) be retained by SunWater and excluded from estimates of its MAR.

Any such arrangements must prohibit SunWater from ‘double charging’ through annual water charges (see Chapter 4 –Pricing Framework).

Recommendation:

The Authority recommends that SunWater bear the risks, and benefits, from the revenues associated with reducing distribution system losses.

Other long term volume risks should not be the responsibility of SunWater.

Cost Risks

Cost risks occur when actual expenses change compared to forecast expenses. The risk can arise from unpredicted changes in the price of inputs due to market variations or one-off events (e.g. natural disasters). Such risks can also arise when governments impose certain performance demands leading to substantial new costs being incurred by the service provider.

If actual costs increase markedly after prices are set using forecast costs, the service provider is likely to receive inadequate revenue.

Market Conditions

There is a risk that a change in costs will impact on SunWater’s revenues. The risk can arise as a result of market conditions such as a short supply of, for example, key chemicals for channel weed control. They can also arise as a result of a poor management practices that allow costs to increase beyond levels considered to be efficient. Labour costs are typically cited as such a cost.

It can be difficult to establish the source of changes in costs and whether these are controllable or not. Furthermore, a reduction in costs may be the result of a decrease in service rather than an increase in efficiency.

The current service standards are described in the Water Supply Arrangements and Service Targets (also referred to as SunWater Rules) that are found on SunWater’s website for each scheme. The standard supply contract allows SunWater to make and amend the SunWater Rules concerning the regulated area. The SunWater Rules describe, inter alia, the process for ordering water and delivery times, circumstances that require suspension or restriction of supply and the duration and frequency of shutdowns.

The success of either revenue or price caps will depend on the service standards being precisely defined and monitored. SunWater's current performance regime, being based on delivery response to requests from customers, could prove ineffectual if SunWater can fail to meet the service standards without penalty or change the standards unilaterally.

The current approach to monitoring of service quality should be reviewed, in consultation with customers, before the next pricing review period.

In a lower bound cost environment, any variation in costs may impact significantly on SunWater's ability to fund its operations. Therefore, where significant changes are expected to be encountered, and particularly where the changes are likely driven by external factors beyond the influence of the service provider (uncontrollable costs), a suitable means for reviewing costs and resetting revenues and prices needs to be established.

To achieve revenue certainty under a regime of stable prices, there are a range of mechanisms that could be adopted. In determining the appropriate adjustment mechanism, the competing objectives of price stability and revenue adequacy need to be balanced. The mechanisms include:

(a) End of regulatory period revenue adjustment. An ex-post adjustment would allow SunWater to recover under-recovered costs outside SunWater's control in the next regulatory period. A case for such an adjustment would be required from SunWater. Ex-post adjustments would also apply to renewals expenditures – but, as with other such costs, should only be accepted where they were not able to be managed by SunWater and represent efficient costs;

(b) Price review trigger. Review triggers within a regulatory period prompt an unscheduled review. The trigger is generally initiated by reference to a provider's revenues or costs, arising from events which cause costs to diverge significantly from initial forecasts.

    In response to PVWater's submission that cost increases should be managed in consultation with irrigators, the Authority considers that SunWater and customers should consult more fulsomely in relation to material forecast expenditure and changes in previously approved costs. The Authority's recommendations relating to enhanced consultation are documented in a subsequent chapter. Consistent with the general approaches of the ESC and ESCOSA, the Authority only proposes to consider an application from SunWater for such a purpose if they arise from:

    (i) material differences between forecast costs and actual efficient costs which are unable to be managed by SunWater; and

    (ii) costs which could not have been reasonably forecast (or managed), even if they were foreseeable, by the business at the time prices were set.

    It is not proposed to pre-define a threshold for this purpose as there is insufficient information available about the magnitude of the cost variances which SunWater is unable to manage.

    Another instance where the Authority would consider it appropriate to trigger a price review during the regulatory period, arises where the ex-post adjustment that would be needed at the end of the regulatory period would be excessive for customers to manage or where costs have fallen (and thus should be passed onto customers to improve their competitiveness). In these circumstances, and provided that the changes were material and demonstrably unable to be managed by customers, an application for a review could be considered by the Authority.

It is not considered appropriate to adopt review triggers to allow for prices to reflect changes in electricity prices or other specific costs as this implies the need for an unnecessarily expensive review for a relatively straight-forward matter. Rather, other mechanisms – such as cost pass through may be more suited to this purpose;

(c) Cost pass through. Such mechanisms potentially allow automatic adjustments to prices during a regulatory period resulting from a change in a discrete cost item.

A cost pass through may be appropriate when the nature of costs can be reasonably foreseen (but not quantified in advance) and the cause of the subsequent change and its magnitude (once it has occurred) are unambiguous.

A cost pass-through mechanism would allow SunWater to pass through the exact costs incurred in running the business – with adjustments proposed to occur at the commencement of the next year.

It is not evident that this mechanism would be suitable for many costs especially given that there are other mechanisms available, as outlined in (a) and (b).

SunWater (2011b) initially submitted that changes in electricity costs are not within its control and should be acknowledged as a cost pass-through item upfront where the change was above the 2.5% per annum which it had provided for.

SunWater (2011ak) more recently submitted that the average increase in the Benchmark Retail Cost Index (BRCI) over the period 2007-08 to 2011-12 of 10.5% be applied each year to its franchise tariffs, rather than its initial 2.5%, during 2012-17 regulatory period.

SunWater also proposes an additional increase of 10% for 2012-13 to accommodate the introduction of a carbon tax, basing this figure on the Australian Government forecast impact on retail electricity prices in 2012-13 and for 2015-16 an additional 1% to address the commencement of carbon trading (Table 3.2). SunWater retains its preference for any variation between its electricity cost forecast and actual costs to be addressed via an annual cost pass through arrangement.

Table 3.2: SunWater's Forecast Electricity Price Increases (%)

	2011-12	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
BRCI Increases	6.6	10.5	10.5	10.5	10.5	10.5
Carbon Pricing Impact	0	10.0	0	0	1	0
Total Increase	**n.a.**	**20.5**	**10.5**	**10.5**	**11.5**	**10.5**

SunWater has also previously advised that it has reviewed its electricity purchasing arrangements for 2012-17, including opportunities for contestable tariffs, and concluded that there are significant uncertainties arising from the Authority's current review of electricity franchise tariffs and the proposed introduction of a price on carbon from 1 July 2012.

Given the uncertainties, it is not considered appropriate to approve automatic pass through of actual electricity costs where they exceed the Authority's forecasts (see chapter on operating costs). Whether it is appropriate to approve a pass through, or an automatic pass through in the future, within the 2012-17 regulatory period will depend upon consideration of the following criteria:

(i) whether the impact of the change in costs on either the service provider or the customer is material;

(ii) whether the change in costs could have been anticipated and thus managed or avoided by the service provider; and

(iii) the extent to which allowing recovery of unanticipated costs would reduce incentives to pursue efficiency;

(d) Efficiency Carry-over Mechanism (ECM). ECMs allow the regulated firm to retain efficiency savings for a reasonable period of time.

In order to provide incentives to increase efficiency, SunWater needs to expect to benefit from increased efficiencies to some extent. Without any particular mechanism to do so, the strongest incentive to reduce costs is typically in the first year of a regulatory period, so that cost savings can then be retained for the remainder of the period.

Further, because the observed costs of a regulated firm are generally an important input to setting future prices, this reinforces the incentive to defer cost savings until the following period.

The effectiveness also depends upon the service standards being precisely defined and a detailed understanding of the nature of costs and the basis for any changes. It is considered at this stage that the costs of implementing such a regime through the regulatory framework may exceed the benefits. Instead, broad efficiency targets are considered more suitable and are detailed further below.

However, the Authority notes that SunWater has an incentive to rationalise its infrastructure assets wherever it does not compromise its delivery of WAEs. No price reset mechanisms are proposed over the initial regulatory period, as to do so would compromise SunWater's incentives to pursue such opportunities. However, in subsequent periods, irrigators would benefit from the lower estimates of costs.

Regulatory Imposts

SunWater is exposed to risk associated with government and regulatory imposts beyond its control. These include changes driven through amendments to the *Water Act 2000*, WRPs and ROPs and ROLs.

These costs are generally considered to be outside the control of service providers and are generally passed through to customers where the service provider does not have meaningful scope to choose an alternative (QCA, 2005). Whether they should be passed through within the period or ex-post, depends on their materiality and would follow consideration by the Authority of an application from SunWater or customers.

The standard river supply contract requires customers to bear the risk associated with any action taken under a State Direction.

In addition, section 122A (4) of the *Water Act 2000* states that, when an allocation is granted, the WAE holder is bound by the contract that covers that area. The contract allows SunWater to make and amend the water supply arrangements which specify SunWater's obligations to its customers.

Risks emanating from an improved knowledge of the sustainability of extraction levels (paragraph 49 of the NWI) are also relevant in this regard. Under the NWI (paragraph 50), governments have also agreed to bear the risk associated with less reliable supply arising from a change in government policy.

Conclusion

SunWater faces cost risks due to market conditions for inputs and regulatory imposts.

To achieve revenue certainty under a regime of stable prices, there are a range of mechanisms that could be adopted. Recommended mechanisms are as follows:

(a) end of regulatory period revenue adjustments which would then impact on future prices. Only efficient costs beyond the ability of SunWater to manage would be eligible, on receipt of a relevant submission from SunWater;

(b) price review triggers to allow a review of costs (and prices) during the regulatory period. The Authority only proposes to initiate a price review if SunWater demonstrates that material differences between forecast costs and actual efficient costs are unable to be managed by SunWater and the cost changes could not have been reasonably forecast (even if foreseeable) or managed at the time prices were set.

    The Authority does not propose to pre-define a threshold for a review trigger (given that lack of information relating to the magnitude of the cost variances which SunWater is able to manage until the next price reset) but rather proposes to make an assessment on application from SunWater or customers; and

(c) cost pass-through mechanisms to potentially allow automatic adjustments to prices during the regulatory period. A cost pass through may be appropriate when the nature of costs can be reasonably foreseen and the subsequent change unambiguous. Government imposed regulatory imposts are relevant here.

Most costs variations are expected to be most appropriately resolved through end-of-period review adjustments.

Recommendation:

The Authority recommends that:

(a) **end-of-period adjustments, price review triggers or cost pass-through mechanisms be used to manage risks due to market conditions for inputs and regulatory imposts; and**

(b) **the current approach to monitoring service quality should be reviewed, in consultation with customers, before the next pricing review period.**

3.5 Summary

To establish the appropriate regulatory arrangements, including price review triggers and other mechanisms, and to manage the risks associated with allowable costs outside the control of SunWater, the Authority has examined the nature of the risks involved.

Table 3.3: Summary of Risks, Allocation and Authority's Recommended Response

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

Source: QCA (2011).

The risk analysis suggests that tariff structures, the preferred form of regulation and the discount rate all need to be consistent to ensure risks are appropriately allocated and managed, and parties appropriately compensated. The nature of the appropriate tariff structure is outlined in more detail in a Chapter 4 – Pricing Framework.

In this instance, the Authority has characterised the form of price control as an adjusted price cap, as prices are to be stable over the regulatory period. It could be characterised as an adjusted revenue cap, although fewer of the features of a standard revenue cap are evident. In either case, it is the allocation of the particular risks and the nature of regulatory arrangements necessary to respond that are important (rather than the characterisation of the form of price/revenue control).

Because the nature of the risks is essentially the same in each scheme, the same regulatory arrangements are recommended to apply to all schemes.

The Authority also notes that the general regulatory framework cannot always address every regulatory objective – other complementary detailed arrangements are required for those purposes. For example, efficiency reviews and specific incentives (such as efficiency targets) are typically used to further promote efficiency gains. Measures deemed relevant for this purpose are addressed in subsequent chapters.

4. PRICING FRAMEWORK

Under the Ministerial Direction, the Authority is required to recommend SunWater's irrigation prices (incorporating tariff structures) to apply from 1 July 2012 to 30 June 2017 for each of SunWater's proposed tariff groups.

In the previous chapter, the Authority concluded that a two-part tariff was appropriate, with fixed costs recovered through a fixed tariff and variable costs recovered through a volumetric tariff. Such a tariff structure would be regarded as cost-reflective.

Two-part tariff regimes have been endorsed by the Commonwealth and State Governments and by the Authority in previous reports as well as by the Tier 1 Group for the purposes of the 2006-11 price paths.

SunWater's termination fee should recover 20 years of fixed distribution system costs, discounted to present values using the Authority's recommended weighted average cost of capital (WACC), with no recovery of such costs from other users. This approach recovers at least 62% of SunWater's fixed distribution costs and results in a termination fee multiple of 13.8 times fixed costs when GST is added (while GST is not payable on annual charges, it is payable on termination fees).

Prudent and efficient bulk costs associated with distribution loss WAEs should be recovered from high and medium priority distribution system customers, but distribution system customers should not pay for distribution loss WAEs held by SunWater in excess of that needed to meet actual loss releases required by SunWater. Where it becomes evident that there is a sustained difference between the loss WAEs and actual losses, the loss WAEs should immediately be reviewed by DERM.

Pre-existing rights to free water should be maintained where they continue as part of current legislation, agreement or Government policy. Neither SunWater nor customers with pre-existing right to free water should bear these costs.

Drainage charges should recover actual drainage costs. However, in the absence of this data, current drainage charges in distribution systems should be maintained in real terms and the revenue be treated as an offset. A review of drainage charges should be initiated immediately upon completion of the current price investigation to allow cost reflective costs in the next regulatory period.

Current drainage diversion charges should be maintained in real terms and be treated as a revenue offset.

Distribution system water harvesting charges should reflect the applicable distribution system volumetric charge plus the DERM water harvesting charge per ML of water delivered. The lease fee, if any, should be determined in the market and the revenue be retained by SunWater.

Storage rental fees should not be levied by SunWater, contingent upon the adoption of cost reflective tariff structure, which will provide the appropriate incentives.

4.1 Introduction

Under the Ministerial Direction, the Authority is required to recommend SunWater's irrigation prices (and tariff structures) to apply from 1 July 2012 to 30 June 2017 [the 2012-17 regulatory period] for each of SunWater's proposed tariff groups.

SunWater provides bulk water storage and distribution services and a range of other services for WSS, or segments of a WSS. For relevant WSSs, SunWater provides carry-over or storage rental services. For relevant distribution systems, it provides drainage, drainage diversion and water harvesting services. SunWater also holds WAEs for distribution system losses, to help ensure delivery of customers' distribution system WAEs.

All these services are relevant to the current investigation. In addition, consideration is given to instances where SunWater provides free water.

The water planning framework distinguishes between high and medium priority WAEs. Accordingly, the Authority is to propose prices (and tariff structures) for medium and high priority irrigation WAEs for each relevant tariff group.

There are also requirements under the Ministerial Direction relating to prices not decreasing in real terms and to the pace at which significant price increases (if any) may be introduced. These are addressed in a subsequent chapter.

Some SunWater activities do not provide a benefit to irrigators and are not included in SunWater's or the Authority's cost estimates or included in irrigation prices. Such activities include professional consultancy services provided to external parties, non-irrigation commercial business development projects, operations and maintenance contracts with external parties, hydro power generation facilities and water trading activities associated with SunWater's WAEs.

In the previous pricing review, each WSS was offered the option of a drought tariff. Only two WSS chose this option and both have been transferred to Seqwater, which is not subject to this review. Drought tariffs are not being proposed by SunWater. However, there is a case for these, and other pricing initiatives which could serve the needs of SunWater and its customers, to be considered prior to the commencement of the next pricing review.

To assist in reviewing the pricing framework, the Authority commissioned PricewaterhouseCoopers (PwC, 2010a) to prepare an Issues Paper on tariff structures. This can be found on the Authority's website.

4.2 Bulk and Distribution System Tariff Structures

Ministerial Direction

Under the Ministerial Direction, the Authority is required to recommend tariff structures for each of SunWater's 22 bulk water schemes and eight distribution systems. The tariff structures are to have regard to the fixed and variable nature of SunWater's underlying costs.

Previous Review

Tariff Structure

For bulk water services, two-part tariff structures were generally applied (except for Mareeba-Dimbulah where a multi-part tariff was applied and for Maranoa and Lower Fitzroy where a fixed tariff was applied).

The decision to apply a two-part tariff was based on the following criteria:

(a) efficiency: the tariff structure should provide adequate signals to encourage efficient water use and delivery;

(b) flexibility: the tariff structure should allow individual customers to adapt to the ongoing development and maturation of water markets;

(c) equity: the costs of water delivery services should be paid for by those who are responsible for causing those costs, or who benefit from the infrastructure and services it provides. Specifically, there should not be cross-subsidisation between customer sectors or between tariff groups;

(d) financial viability and revenue stability: tariff structures must yield sufficient revenue to ensure the minimum financial viability of SunWater;

(e) ease of implementation;

(f) simplicity: relatively simple tariff structures provide more transparent and accountable outcomes; and

(g) fairness: the tariff structure should have the capacity to be applied across all schemes and over time (for example, drought and reliability of supply) (SunWater, 2006a).

The Tier 1 group considered two-part tariffs, peak flow pricing, segment pricing, multi-part tariffs, average cost pricing, declining block tariffs, inclining block tariffs, marginal cost pricing, tariff baskets and Ramsey pricing.

The Tier 1 group endorsed the two-part tariff structure but noted there may be some difficulty in determining the relative proportion of the fixed and variable components. Tier 1 also noted that a high fixed charge may be appropriate as water supply infrastructure costs are largely fixed over time, but that there is an apparent inequity in paying relatively high charges when there may be no or little water use. The fixed and variable components were derived at a scheme level.

Where distribution system services were also provided, distribution system prices were bundled with bulk prices. Again, two-part tariff structures were generally applied.

Some key features of the past approach were that:

(a) the volumetric charge (previously referred to as the variable charge) was not directly linked to variable costs. Rather, it reflected variable costs together with the balance of fixed costs not recovered by the Part A tariff. The proportion of the fixed charge reflected in Part B was determined in negotiations with customers; and

(b) for many schemes, a 70% fixed (Part A) and 30% variable (Part B) tariff structure was considered appropriate because it reflected the existing (past) tariff structures and negotiations with SunWater relating to estimates of water usage.

As a result, where actual water use is less than negotiated water use forecasts, SunWater under-recovered those fixed costs contained in the Part B tariff. For schemes where a price cap applies, SunWater permanently foregoes this revenue. In determining prices for 2012-17, where revenue caps applied, an adjustment is required for under- or over-recovery during the 2006-11 period. The tariff structures agreed for 2006-11 varied considerably between WSS (Table 4.1).

Table 4.1: Tariff Structure 2006-11

Water Supply Scheme	*Tariff Group*	*Part A %*	*Part B %*
Barker Barambah	Redgate Re-lift	54	46
Barker Barambah	Regulated	70	30
Bowen Broken Rivers	River	81	19
Boyne River & Tarong	River	70	30
Bundaberg	River	52	48
Bundaberg	Distribution system or watercourse supplemented by a distribution system	70	30
Burdekin-Haughton	Burdekin River	17	83
Burdekin-Haughton	Burdekin Distribution system	61	39
Burdekin-Haughton	Giru Groundwater Area	61	39
Callide Valley	Surface Water (Callide & Kroombit Creek)	32	68
Callide Valley	Callide Benefited Groundwater Area	32	68
Chinchilla Weir	River	65	35
Cunnamulla Weir	River	70	30
Dawson Valley	River	62	38
Dawson Valley	Dawson Distribution system (Theodore and Gibber Gunyah)	74	26
Dawson Valley	Dawson River at Glebe Weir	70	30
Eton	Distribution system	80	20
Lower Fitzroy	River	100	0
Macintyre Brook	Macintyre Brook	80	20
Maranoa River	River	100	0
Mareeba	River (Supplemented streams & Walsh River)	67	33
Mareeba	River (Tinaroo/Barron)	28	72
Mareeba	Distribution system (outside a re-lift up to 100ML)	65	35
Mareeba	Distribution system (outside a re-lift 100 - 500ML)	70	30
Mareeba	Distribution system (outside a re-lift more than 500ML)	70	30
Mareeba	Distribution system (re-lift)	70	30
Mary River	Lower Mary River (Tinana Barrage & Teddington Weir)	70	30
Mary River	Lower Mary River (Mary Barrage)	66	34
Mary River	Lower Mary Distribution system	70	30
Nogoa-Mackenzie	River	47	53
Nogoa-Mackenzie	Distribution system	63	37
Pioneer River	Pioneer Valley Water Board	70	30
Proserpine River	River	59	41
Proserpine River	Kelsey Creek Water Board	66	34
St George	Distribution system	70	30
St George	Regulated Section (Beardmore Dam or Balonne River)	85	15
St George	Regulated Section (Thuraggi Watercourse)	85	15
Three Moon Creek	River	70	30
Three Moon Creek	Groundwater	70	30
Upper Burnett	Upper Burnett (Regulated section of Nogo/Burnett River)	70	30
Upper Burnett	John Goleby Weir	51	49
Upper Condamine	North Branch	70	30
Upper Condamine	Sandy Creek or Condamine River	67	33
Upper Condamine	North Branch - Risk A	0	100

Source: SunWater (2006b)

Water Use Forecasts

During the 2006-11 price path process, water use forecasts played an important role in the determination of the tariff structure and prices.

To forecast water use for 2006-11, the Tier 1 state-wide stakeholder group (consisting of SunWater and customer representatives) determined a preliminary set of scheme based water use forecasts based on:

(a) the assumptions adopted for the previous price review;

(b) subsequent data on nominal irrigation water allocations, announced allocations and water delivered to irrigators in each scheme; and

(c) direct input and feedback from consultation with customers.

Subject to the availability of historical data, long-term trends of 10, 15, 20 and 25 years were also examined, taking into account scheme, industry or climatic developments over the relevant period.

Stakeholder Submissions

SunWater

SunWater (2011d) submitted that the current tariff structure does not provide any meaningful information for irrigators as the consumption charge does not reflect any particular cost.

SunWater proposed that the tariff structure be revised so that the fixed charge recovers fixed costs and the consumption charge recovers variable costs – noting that the Ministerial Direction requires the Authority to have regard to the fixed and variable nature of SunWater's underlying costs.

SunWater submitted that for all bulk and distribution schemes:

(a) fixed charges should be set to recover fixed costs levied per unit of nominal WAE; and

(b) variable charges should be set to recover costs that vary with volume delivered. This would only apply for tariff groups incurring pumping costs as these are the only costs that vary with output. Essentially, only electricity costs are considered (by SunWater) to vary with usage.

In the distribution systems, tariffs currently incorporate bulk water and distribution cost recovery into a bundled two-part tariff. SunWater (2011i) proposed to unbundle these charges so that the recovery of distribution costs are separated from bulk water costs.

In relation to water use forecasts, SunWater (2011d) submitted that it should not bear demand risk, nor does it intend for irrigation prices to recover the costs of any capacity augmentations. Accordingly, demand forecasts are not relevant for price setting under SunWater's proposed tariff regime.

Nonetheless, SunWater provided water usage forecasts to facilitate tariff setting [if required]. The forecasts were made having regard to historic averages and the usage forecast applied for the current price path. SunWater noted that PwC supported the use of historic averages as a reasonable basis for forecasting future demand for irrigation water.

SunWater proposes that the Authority must set water tariffs for high (and medium) priority WAE.

Other Stakeholders

General Principles

QFF (2010a) noted that customers face significant risk in meeting the high fixed costs of water supply in schemes where supply is variable and difficult to forecast. Subsequently, when determining tariff structures, the Authority should examine the implications of:

(a) extended periods of low or no supply;

(b) improving low usage rates;

(c) achieving water use efficiency gains;

(d) competitive outcomes; and

(e) consistency across schemes.

QFF further submitted that:

(a) securing a risk-free revenue stream through higher fixed tariffs or other measures to cap revenue would only discourage SunWater from improving its level of service to better manage demand variability. This outcome will limit customers' capacity to manage for the risk of variable water supply and cost on farm;

(b) the tariff structure must not impede the implementation of seasonal transfers and carry-overs, assessment of termination (exit) fees and conversion factors, and all other scheme rules that may apply; and

(c) fixed tariffs should only recover lower bound costs in poorly performing schemes.

Relative share of fixed and variable cost

BRIG (2010b), MIS (2010) and MDIAC (2010) support a two-part tariff structure where the Part A charge reflects the fixed costs of the scheme and the Part B charge reflects the variable costs. BRIG further noted that, by aligning charges with the nature of costs, the need to accurately predict water availability and use is diminished.

NS Baldwin (2010) submitted that irrigators would be comfortable with a reasonably high fixed component in a water charge if good supply security could be achieved in most years.

MSF (2010) submitted that it would prefer greater consumption based pricing to provide incentives for water use efficiency. At present, the 30% variable charge does not influence its decision to apply irrigation water or not.

D McColl (2010b) submitted that the Authority should take into consideration customers who use distribution system water for domestic use only. More specifically, a different pricing structure should be introduced for customers with usage under 5 ML per annum, recognising the lower level of service required from SunWater.

CANEGROWERS (2010), Cotton Australia (2010) and QFF (2010a) consider that the fixed charge should be payable in arrears.

Specific Tariff Structure

In the Mareeba-Dimbulah WSS, Tableland Canegrowers Ltd and Mareeba District Fruit and Vegetable Growers Association (2010a) support the retention of the current Part A/Part B tariff structure and the continuation of 'amount of allocation' based tiered pricing (wherein the charge decreases with higher WAEs and fixed costs are allocated in part on a customer rather than a WAE basis – effectively a declining block tariff) for both allocation and usage charges in the channel system. Central Highland Cotton Growers and Irrigators Association (CHCIA, 2010a) favoured the retention of the 70:30 tariff structure in the Nogoa-Mackenzie WSS.

BRIG (2010a) submitted that the three-part declining block charge system used in the Mareeba-Dimbulah area (gravity channel) is more transparent and allocates more equitably the administrative costs between large and small consumers.

Michael and Kerry Hetherington (2010) submitted that being forced to pay fixed charges before receiving any water means that many farms are left with insufficient funds to draw the water to which they are entitled. A pricing system with a minimum number of ML and a per ML charge would be more realistic and would improve productivity. Cooinda Cotton Co (2010) noted that Part A charges must be paid in advance, regardless of whether the water is delivered or not, which is an unsustainable charging policy in the St George WSS.

Peter Enkelmann (2010) submitted that setting water prices based on full allocation and then fixing Part A regardless of SunWater's ability to deliver is unrealistic. This will lead to excessive prices in low rainfall years, at the very time the farmers are least able to manage. SunWater is in a much better position to manage this risk as it owns dams State-wide which will have varying volumes. Consequently, prices should be mainly volumetric, with minimal fixed charges. In this way, water would go to the higher return crops, give the greatest community benefit, and SunWater would also have an incentive to maximise the water delivered.

QFF (2010a) submitted that the tariff structure must not impede the assessment of exit fees.

Water Use Forecast

QFF (2010a) submitted that, in order to recommend water usage forecasts for the next regulation period, customers need to be able to review the forecasts used for the current price path with updated historical use estimates. If alternative approaches are to be considered, this should be done on a scheme-by-scheme basis. Consideration should also be given to variations in usage between different industries.

QFF (2010b) also noted that forecasting water usage is of limited value (relevance) if the tariff structure is set so that the Part B charge reflects marginal costs. However, it proposed that water usage over the last 10 years should be used as a basis for setting demand.

MSF (2010) support using historical water use data to derive future water use forecasts but would prefer a longer period than proposed by SunWater.

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

Peter Enkelmann (2010) submitted that it is unrealistic to set water prices on the basis of full allocation and then have a fixed Part A charge regardless of SunWater's ability to deliver. Further, using long term history to base a fixed Part A charge of such a high proportion is unacceptable. In terms of efficient water use, the charges should be based on usage, with minimal fixed charges.

Other revenue

Several stakeholders noted that SunWater receives revenue from other charges, such as infrastructure land leases, meter reading, transfer adjustment fees and termination (exit) fees, and requested that these revenue streams be taken into account when establishing the tariff structure (BRIG (2010b); CHCGIA (2010a); DVIG (2010a)).

Other Jurisdictions

Tariff Structure

IPART (2010a), in the Determination of bulk water prices for State Water, identified the following mechanisms to mitigate the risk of revenue volatility when setting prices:

(a) given that State Water's costs are largely fixed, an efficient level of cost-recovery would be achieved by aligning the fixed charge with fixed costs; and

(b) recognising that long term data may not be a reliable indicator of water availability, reducing the risk of error in forecasting water sales by basing forecasts on more recent averages.

State Water proposed two pricing options: a 40:60 fixed entitlement charge to usage charge ratio, which was consistent with that adopted in the 2006 Determination and a 90:10 fixed entitlement charge to usage charge ratio.

Under the first option, a higher rate of return was considered appropriate to compensate State Water for the high risk of revenue volatility. The alternative option did not include this premium on the rate of return as the revenue risk is much lower when 90% is derived from fixed entitlement charges.

State Water noted that, as many customers would strongly oppose prices being set to recover 90% of its revenue requirement from the fixed entitlement charge, it did not favour this approach.

IPART (2010a) determined that a two-part tariff with a 40:60 fixed entitlement to usage charge ratio represented a continuation of the existing price structure and thereby gave customers a considerable degree of control over the size of the bill that they pay to State Water. IPART allowed State Water to recover a revenue volatility allowance (see previous chapter) to account for this risk.

In determining unregulated water charges, IPART (2010b) set a two-part tariff comprising a fixed and a usage charge (at a ratio of 70:30) for all metered users, and a one-part tariff for users without a meter.

In 2008, Murrumbidgee Irrigation Limited reviewed the share of fixed and variable charges that applied to its scheme and concluded that the revenue collected from fixed and variable charges should reflect the cost structure. On this basis, the two-part tariff has a fixed to variable charge ratio of approximately 75:25. (PwC, 2010a)

In Victoria, SRW estimates that its costs are approximately 90% fixed and 10% variable, in a normal year. In two of the three pricing districts, all costs are recovered through a fixed charge. In the third district, costs are recovered by a two-part tariff which recovers approximately 80% of costs through the fixed charge with the remainder recovered through a variable charge (PwC, 2010a).

In South Australia, the Central Irrigation Trust (CIT) sets the tariff structure to reflect the cost structure. CIT employs a two-part tariff with a 15:67 fixed entitlement to usage charge ratio with the balance collected through separate charges (National Water Commission, 2008).

In Western Australia, ERA was directed to determine ‘the most appropriate level and structure of bulk water storage charges to the South West Irrigation Cooperative (Harvey Water)’. This was the first independent evaluation of dam water storage charges in Western Australia.

ERA noted that the water storage costs incurred by the Water Corporation are, by nature, largely fixed and therefore are generally independent of the volume of water. Moreover, once the dam and catchment have been established, the cost of supplying an additional ML of water is dependent on rainfall rather than on any significant production process. Hence, the marginal cost of storage is very low.

Increasing the usage charge relative to the fixed charge would affect the amount of water used by farmers because the cost-effectiveness of implementing on-farm measures to save water would increase. However, if there is an effective water trading market operating, a farmer’s decision to implement water efficiency measures will be influenced by the price on the water trading market and not just the price of the water from the dams. ERA concluded that it is likely that the structure of water storage charges is not relevant for ensuring water is allocated to its most valued use because an effective water trading market would achieve this result.

ERA also concluded that the mix of fixed and variable charges is primarily a commercial issue to do with managing the volume risk of uncertain annual streamflows and, therefore, recommended that it is probably unnecessary for the Government to prescribe the structure of charges that apply to Harvey Water.

Water Use Forecasts

In Queensland, the Authority (2010) recommended that Gladstone Area Water Board’s (GAWB) water use forecast should reflect the existing contracted volumes, anticipated contracted volumes and a component to reflect long term growth.

As part of the 2010 bulk water review, IPART (2010a) used a 20-year moving average of historical IQQM and actual extraction data. IPART believes that a 20-year moving average strikes a balance between maintaining price stability over consecutive determinations and using current, updated data that incorporates recent trends to forecast future extractions.

Murrumbidgee Irrigation does not undertake formal water use forecasting but sets prices on the basis of water use over the past year (PwC, 2010a).

In Victoria, SRW does not undertake water use forecasting on the basis that its costs are not significantly influenced by changes in water use across its three water districts (PwC, 2010a).

In South Australia, the Renmark Irrigation Trust estimates water usage based on historical information. CIT does not forecast usage as water use does not fluctuate significantly. Further, fixed costs are fully recovered through the fixed water charges (PwC, 2010a).

In Western Australia, Harvey Water sets prices on the basis of historical demand patterns (PwC, 2010a).

Authority's Analysis

The Case for Two (or Multi) Part Tariffs

In considering SunWater's future bulk and distribution irrigation tariff structures, the Authority has been directed to have regard to the fixed and variable nature of the underlying costs.

In the previous chapter, the Authority concluded that, for the purpose of managing the volume risks related to SunWater's provision of services, a tariff regime with the fixed component reflecting fixed costs and the volumetric component reflecting variable costs should be adopted.

Nevertheless, there are additional matters requiring consideration in relation to the adoption and implementation of an appropriate tariff structure for bulk and distribution customers, as well as a number of additional pricing matters which require attention.

Two-part tariff regimes have generally been approved by the Australian and State Governments in that:

(a) the Intergovernmental Agreement on a NWI (COAG, 2004) establishes principles and guidelines to increase the productivity and efficiency of Australia's water use. The NWI requires that water pricing arrangements promote economically efficient and sustainable use of water resources and water infrastructure. Additionally, water pricing is to facilitate efficient water use through consumption based pricing and full cost recovery; and

(b) the NWI Pricing Principles (COAG, 2010) specify that two-part tariffs should be used by urban water businesses. COAG (1994) also previously required the implementation of two-part tariffs specifically for urban water services where cost effective.

As noted above, there is a general commitment to the application of two-part tariffs across Australian regulatory regimes. The Authority (2002) has also previously recommended the application of two-part tariffs in its review of GAWB.

The Authority (2000) has considered the basis for, and matters relevant to, the setting of two-part tariffs in considerable detail in its *Statement of Regulatory Pricing Principles for the Water Sector*. International support for the adoption of two-part tariffs is also identified in that report.

Of particular relevance, the rationale for using a two-part tariff is that the volumetric charge should, when set to equal the anticipated costs of using an additional unit of water (the marginal cost), promote informed decisions by users. Customers will irrigate until the marginal benefit of irrigation outweighs SunWater's variable cost. That is, it makes clear the cost of supplying the additional unit of water and requires customers to establish whether the benefit of using it exceeds its cost (PwC, 2010a).

The fixed charge ensures revenue adequacy by collecting any residual costs not recovered through a volumetric charge.

The Authority notes that other jurisdictions have in the past deviated from the approach proposed by SunWater (and accepted by many irrigators) to setting tariffs – that is, for the fixed component of the charge to reflect fixed costs and the volumetric charge to reflect variable costs. For example, IPART previously determined that 90% of costs were fixed but the pricing structure recovers 40% of revenue through the fixed charge. This method was used to continue past practice, give customers considerable control over the size of their bill and to address water scarcity pricing – but also incorporated higher costs in the form of a revenue volatility allowance. More recently, there is evidence in other jurisdictions of closer adherence to the adoption of tariff structures which more closely align with fixed and variable costs.

The Authority notes that in eight of the 22 bulk water schemes unused water can be carried over from one water year to the next, subject to certain hydrological constraints. In five schemes, storage rental fees apply to provide a disincentive for frivolous carry-over applications. Aligning the tariff structure with the cost structure will not distort the incentive for carry-over arrangements as a customer will use water when it is most profitable to do so, while SunWater will maintain its ability to recoup costs. This issue is discussed in more detail in a section of this chapter on Storage Rental Fees.

Relevant to the issue of determining fixed and variable costs is also the issue of unbundling of tariff structures.

In the distribution systems, tariffs currently recover bulk water and distribution system costs into a bundled two-part tariff. SunWater (2011i) proposed to unbundle these charges so that distribution system costs are recovered separately from bulk water costs. SunWater submitted that the ACCC considers the unbundling of tariffs to increase trading opportunities and potentially speed up trade approvals.

On this basis, SunWater (2011d) submitted that distribution system tariff groups recover only the costs of the distribution system. Customers within distribution networks will also pay bulk water charges that recover only bulk water costs.

The Authority accepts SunWater's proposal to unbundle bulk and distribution systems tariffs. In addition to SunWater's reasoning for unbundling, the Authority considers that unbundled tariffs will signal to customers the relevant bulk and distribution system costs that will encourage efficient levels of water use in the bulk and distribution systems. The unbundled tariffs will provide efficient price signal to customers as they considering enterprise (farming) options, levels of water use, on farm investments, permanent and / or temporary water trading, and exit from or entry into distribution systems.

The Authority therefore considers that, in general, aligning the bulk and distribution tariff structure with fixed and volumetric costs will better manage volume risk and send efficient price signals.

The Authority also recognises and endorses the general rationale for the adoption of two-part tariffs enunciated as part of the 2006-11 price review.

As noted further below, there are also a number of institutional arrangements in Queensland which either complement or, in some instances, inhibit the impact of two-part tariffs in the allocation of water resources.

Volumetric Charge

To be effective, the volumetric charge should reflect at least its marginal cost[8]. Typically, this is measured by reference to those costs which vary with usage (variable costs).

[8] The marginal cost of water supply can be considered as a short run or long run concept. Short run marginal cost (SRMC) is the change in total costs when an additional unit of output is produced, in a period in which at least one factor of production is fixed. Typically, capital costs are unable to be altered in the short run, and are considered fixed. Under SRMC few costs are variable. Labour, facilities and capital costs for SunWater's WSS could be regarded as largely fixed and not able to be altered in the short term. Long run marginal cost (LRMC) is the change in total costs when an additional unit of output is produced, and where all inputs are adjusted optimally. LRMC therefore includes a component for the unit capital costs of expansion. LRMC assumes that all factors of production are variable and is the sum of the SRMC and the cost of future infrastructure investment. For GAWB, the Authority considered that, from an efficiency perspective, the LRMC pricing approach was most appropriate as it is signals the full economic cost of future consumption.

There are, however, a number of concerns which arise from the prospectively low volumetric charge in view of SunWater's submissions (2011h) which only identify electricity pumping costs as being volume (usage) related.

(a) The Nature of Variable Costs

While all costs can vary over the long term, the issue arises as to the appropriate timeframe to define costs as either variable or fixed. Most typically, a one-year period is adopted, to align marginal costs with usage. This time period typically reflects the most readily available estimate of marginal cost (that is, annual accounting information) and is very relevant where annual resets of prices are adopted.

In the current circumstances, a key reason for the adoption of two-part tariffs is to manage volume risks over the 2012-17 price path. It is noted that the Ministerial Direction requires the Authority to recommend irrigation prices to apply over the five-year price path (rather than undertaking annual reviews). It is therefore considered that, to manage the volume risks over the five-year price path, it is more appropriate to define variable costs in terms of those costs which can be expected to vary with water usage over the five years of the proposed price paths.

The Authority's analysis of costs which constitute fixed and variable costs, and the basis for their allocation, appears in subsequent chapters. In general, the analysis results in relatively low variable charges in most schemes.

(b) Impact of a Low Volumetric Charge

Once long life infrastructure which does not deteriorate significantly with usage is installed, it is generally in both the commercial and public interest to effectively utilise the capacity. Key considerations raised by stakeholders during Round 1 and 2 consultations include:

(a) volumetric charges higher than variable costs should be applied to promote environmental or conservation objectives. Under the institutional arrangements in Queensland, the establishment of the quantum, and allocation of water, between environmental and consumptive use is the responsibility of DERM and other (than pricing) institutional arrangements are relevant for this purpose. For example, the WRP, ROP, and ROL processes are in particular directed to the distinction between environmental and consumptive uses of water in a catchment. The Authority has been required to establish prices to recover SunWater's efficient business costs – to seek to achieve other broader goals would require a very clear specification of those goals to enable the Authority to respond with relevant pricing recommendations; and

(b) volumetric charges based on variable costs may be too low to ensure SunWater has an incentive to supply.

    In a commercial environment, a service provider will continue to increase supply until the marginal cost and marginal revenue are equal. In a regulatory environment with the volumetric charge set to equal variable costs, the incentive to increase supply only occurs where the service providers envisages that cost per unit may decrease with increased supply, or where further cost savings are identified as being feasible.

    Notwithstanding the characteristics of the variable costs in particular instances, the Authority notes that, under the prevailing legislative framework and contractual arrangements, SunWater has an obligation to supply existing customers with water under the announced allocation. The key issue therefore, if volumes are considered to be too low in particular schemes, would more likely be whether the standard of service is specified appropriately and the nature of the sanctions for non-compliance. This is an issue which warrants further attention by DERM.

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

If volumes supplied were considered to be too low, there are a number of pricing options.

It may be appropriate in some circumstances to increase the volumetric charge by including in it the costs of future augmentation as a means for promoting the incentive for SunWater to increase supply (as sales will increase revenues above immediate costs).

It is noted, however, that DERM is responsible for planning and augmentation of infrastructure for SunWater's schemes and values reflected in water trades may provide a better indicator of the value of water as a basis for planning than estimates of LRMC. In this regard, PwC (2010a) has noted that there are significant practical difficulties associated with the estimation of LRMC for rural water schemes. In particular, these relate to the collection of sufficient information to accurately calculate LRMC due to the unpredictability of future supply and demand.

Moreover, no augmentation of bulk infrastructure is being proposed by SunWater. Therefore, LRMC pricing is of limited or no relevance for bulk irrigation supply.

SunWater may be able to reduce distribution losses, and therefore increase supply, through investment in distribution systems. As noted in a previous chapter, it is proposed that SunWater retains the proceeds from such initiatives to provide an incentive to pursue these opportunities, rather than attempting to reflect prospective costs related to highly uncertain initiatives in the volumetric charge through LRMC pricing.

As an alternative, it may be considered appropriate in some circumstances to increase the volumetric charge by establishing a subjective margin over the variable costs in setting the volumetric charge for each scheme.

Putting in place scheme-specific incentives to reduce costs, rather than business wide incentives may introduce unacceptable arbitrariness at the scheme level. In responding to these scheme-specific incentives, SunWater may reduce costs in a manner which reduces the standard of service at the scheme level (for example, by reducing numbers of on-ground staff to meet efficiency targets).

Not only may it be more efficient to reduce centralised administration costs, it may avoid the loss of local services. Therefore, the Authority considers that, if incentives apply, they should be applied at a whole-of-business level. Consequently, SunWater would have the option of curtailing centralised costs whilst leaving resourcing at a scheme level largely unchanged.

As noted, SunWater has an obligation to supply and, even if further tariff structure changes were possible, it is not considered that they are appropriate in the context of the current arrangements;

(c) where a volumetric charge is relatively low (or zero) and, as a result, fixed costs are high, it is noted that there are incentives for customers to utilise all of an announced allocation and this may be considered to be 'excessive'. The Authority noted above that it is generally beneficial from a commercial and public interest perspective to utilise all water capacity available for consumptive purposes.

The total cost of water supply to an individual customer will, however, include on-farm and other related costs and these costs will also be determinants of total water usage as will market conditions for the relevant crops.

That is, what is 'excessive' can only be determined by a consideration of all relevant costs – water will generally be directed to its highest and best use by a customer as a result of normal commercial profit motives. This will be best reflected in the value of water trades (rather than estimated values).

As indicated in Table 4.2 and Table 4.3, permanent water trading has occurred in 12 schemes while temporary trades have occurred in 21 of SunWater's 22 schemes, allowing water to be allocated to its highest and best use.

Essentially, tariff structures are only part of a mix of institutional arrangements in Queensland designed to direct water to its highest and best use from the overall community perspective.

Put another way, as noted by ERA (2007), the structure of water storage charges (that is, particularly for bulk water) is not (solely) relevant for ensuring water is allocated to its most valued use.

Table 4.2: Volume of Permanent Water Traded for SunWater Schemes (ML)

Water supply scheme	*2002-03*	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*Total WAE*
	(ML)	*(ML)*	*(ML)*	*(ML)*	*(ML)*	*(ML)*	*(ML)*	*(ML)*	*(ML)*
Barker Barambah	0	0	0	175	230	730	25	148	34,315
Boyne River and Tarong	0	0	0	0	0	3,421	600	460	44,799
Bundaberg	213	1,631	1,515	4,682	5,403	1,615	654	1,574	236,329
Dawson Valley	375	0	678	1,385	287	390	340	0	61,937
Eton	0	0	0	587	456	80	152	1,063	63,263
Lower Fitzroy	0	0	0	2	140	0	24	0	28,621
Macintyre Brook	0	0	0	0	0	15	175	260	24,997
Mareeba-Dimbulah	0	0	25	484	2,492	2,409	280	815	204,424
Nogoa-Mackenzie	0	985	3,397	213	2,890	3,987	1,814	2,769	235,323
Pioneer River	0	0	0	255	511	139	208	206	78,110
Upper Burnett	0	384	10	1,348	896	509	496	679	28,890
Upper Condamine	0	0	0	0	0	0	0	25	33,797

Source: Queensland Valuation Services (2010)

Table 4.3: Volume of Temporary Water Traded for SunWater Schemes (ML)

Water supply scheme	*2002-03*	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*Total WAE*
Barker Barambah	5,691	2,351	4,090	3,277	1,029	257	931	220	34,315
Bowen Broken Rivers	922	1,025	5,337	6,899	4,083	395	197	484	38,930
Boyne River and Tarong	1,935	1,388	981	5	114	244	1	144	44,799
Bundaberg	16,101	5,523	5,649	6,410	18,285	10,836	12,200	37,262	236,329
Burdekin-Haughton	103,858	65,940	81,194	22,687	27,665	17,926	8,680	24,960	1,079,592
Callide Valley	345	504	541	162	378	254	11	28	24,283
Chinchilla Weir	30	180	479	501	545	277	823	958	4,049
Cunnamulla Weir	421	165	259	974	898	843	826	470	2,612
Dawson Valley	2,788	7,950	7,125	7,324	9,925	4,829	6,711	10,493	61,937
Eton	11,433	9,094	4,934	5,095	599	223	349	649	63,263
Lower Fitzroy	1	36	13	4	91	83	6	160	28,621
Lower Mary River	3,463	2,012	2,091	1,659	5,183	606	163	259	34,497
Macintyre Brook	3,571	3,033	9,885	16,068	5,199	11,809	6,337	2,560	24,997
Mareeba-Dimbulah	27,041	16,787	10,171	9,689	16,608	13,206	14,351	11,620	204,424
Nogoa-Mackenzie	42,904	29,883	31,276	46,905	33,876	29,801	94,532	57,795	235,323
Pioneer River	2,064	6,608	2,358	10,998	12,478	537	509	495	78,110
Proserpine River	9,331	1,275	4,162	4,960	9,290	700	850	240	60,075
St George	8,301	5,191	10,797	9,585	12,446	6,799	12,054	8,501	84,575
Three Moon Creek	649	390	757	397	601	126	123	125	15,141
Upper Burnett	1,800	2,107	4,007	3,207	1,351	1,046	2,166	1,899	28,890
Upper Condamine	2,845	0	1,925	1,925	1,875	5,445	0	0	33,797

Source: SunWater Annual Reports (2001), (2002), (2003), (2004), (2005), (2006), (2007), (2008), (2009), (2010g)

The Authority also notes submissions by the (Mareeba-Dimbulah) Tableland Canegrowers Ltd (2010) and Mareeba District Fruit and Vegetable Growers Association (2010) supporting the retention of the current tariff structure which differentiates the volumetric component according to the size of the allocation – but which does not reflect a difference in costs. Such a cost structure is sometimes referred to as a declining block tariff.

The Productivity Commission (2011) found that inclining block tariffs lead to inefficiencies and inequities and do not support such an approach as inclining block tariffs necessarily require a departure from pricing at marginal cost. For similar reasons, declining block tariffs are not supported unless they reflect discernible differences in the marginal cost of supply.

Whether there are other valid mitigating considerations in a particular instance needs to be considered in the context of a particular scheme.

Accordingly, in the current circumstances, the volumetric charge should cover all (and only) variable costs associated with the delivery of water services. Such an approach differs from the pricing arrangements established under the previous review wherein the volumetric component also incorporated a share of fixed costs negotiated between the relevant parties (these fixed costs did not reflect the cost of future augmentation).

All things being equal, customers would use more irrigation water if only variable costs were incorporated in the volumetric charge. That is, where volumetric charges reflect only the marginal cost of delivery, customers are more likely to irrigate to the point where the marginal benefit equals the actual variable irrigation costs. This would increase the likelihood of WAEs being put to productive economic use, rather than the situation under 2006-11 prices where irrigation is likely to cease earlier because the marginal benefit must equal the variable cost of delivery plus an arbitrary portion of fixed costs.

Fixed Charges

It is a requirement of the Ministerial Direction for irrigation prices to provide a revenue stream that allows SunWater to recover efficient operational, maintenance and administrative costs; prudent and efficient expenditure on renewing and rehabilitating existing assets through a renewals annuity; and a commercial return of, and on, prudent capital expenditure for augmentation commissioned after 30 September 2011.

This Ministerial requirement is consistent with NWI (COAG, 2004) agreements which require prices to collect sufficient revenue to allow efficient delivery of the required services. PwC (2010a) also noted that water prices (and therefore tariff structures) should seek to achieve revenue adequacy by allowing recovery of the costs of water service delivery.

Accordingly, if the volumetric charge recovers all variable costs, it follows that the fixed charge must recover all fixed costs.

(a) Bulk Water

Many of the concerns related to high fixed fee tariff structures have been addressed above in the context of low volumetric charges.

An additional concern raised by irrigators during consultation is whether a high fixed fee structure provides incentives for least cost service provision.

It is generally recognised that a monopoly service provider (that is, in the absence of competitive pressures) may not have the appropriate incentives to further reduce costs once approved by an independent regulator. To promote least cost provision of services, regulators therefore typically establish incentive mechanisms for this purpose (such as efficiency targets for the total costs of an organisation).

It has already been noted in an earlier chapter that to increase the volumetric component above variable costs would impose volume risks that SunWater is not able to manage, and in response to which SunWater may seek to reduce costs at the scheme level unnecessarily when viewed against a desired level of service. Moreover, such risks may be exacerbated when the approach is adopted on a scheme-by-scheme basis given the uncertainty associated with forecasting scheme water usage.

Having regard to the centralisation of many of the costs of service delivery by SunWater, organisation-wide efficiency targets, if considered necessary, would seem more appropriate – and would provide SunWater with the maximum flexibility necessary to achieve cost savings. The need for, and appropriate nature of any such initiatives relevant to SunWater, is addressed in a subsequent chapter.

As noted in submissions identified above, another concern of many customers relates to circumstances where fixed costs are payable by customers but not all (and in some cases very little) water identified under the WAEs is supplied.

Under current legislative and contractual arrangements (and the Ministerial Direction), customers must bear all the costs of water supply incurred by SunWater, irrespective of whether it is made available or not (provided the costs of supply are efficient and prudent).

Only Government can vary these obligations. That is, where it is considered that there are particular difficulties for some schemes as water is not made available in accordance with the WAEs (particularly over a sustained period), then any case for amending these arrangements needs to be referred to, and considered, by Government.

Some customers have questioned whether they are obliged to pay fixed charges where they have not signed contracts with SunWater. Bulk water services are provided in accordance with the Standard River Supply Contract. Section 122A (4) of the *Water Act 2000* specifies that the standard contract is to apply unless a different contract is in place. Under this provision, a contract does not need to be signed, but SunWater and customers are deemed to be covered by the contract.

The contract requires customers to pay a fixed charge based on either a regulated charge which reflects the customer's allocation (the nominal allocation or WAE) or one which is consistent with any statutory regime for prices oversight.

Should SunWater's annual fixed charges not be recouped annually, under the current arrangements (and the Ministerial Direction) these costs would need to be recouped at the end of the regulatory period (with costs capitalised to ensure all of SunWater's costs are met in a NPV neutral manner).

Further, basing fixed charges on estimates of forecast water use over the regulatory period, given the evidence of the previous chapter on the inability to forecast water usage, could be expected to result in substantial ex-post adjustments in order for SunWater to recover its allowable revenue.

For these reasons, the Authority considers that for the purpose of establishing efficient cost-reflective tariffs, fixed charges should be based on an estimate of annual fixed costs.

On the timing of payments, the Authority does not see any difference in terms of efficiency as a result of a change in the timing of fixed charges.

(b) Distribution Network

Similar issues generally arise in relation to fixed costs for distribution schemes as with bulk schemes.

In respect of the obligation to make payment for fixed costs where contracts have not been signed, it is noted that distribution system services are provided in accordance with the Standard

Distribution System and Pipeline Supply Contract. Similar to the River Contract, the standard contract is to apply unless a different contract is in place and customers are deemed to be covered by the contract. Under these contracts, SunWater is entitled to recoup its prudent and efficient costs of service delivery.

Recommendation:

The tariff structure should consist of a volumetric charge which should cover all (and only) variable costs associated with the delivery of water services. The fixed charge should reflect the balance of revenues required to maintain SunWater's revenue requirement.

Variable costs should reflect those costs which are expected to vary with water usage over the five-year regulatory period.

The appropriateness of current legislative and contractual arrangements, insofar as they relate to schemes where water deliveries fall below expectations for a sustained period due to a lack of supply, is a matter for Government.

4.3 Termination (Exit) Fees

Background

It is SunWater's current practice to charge termination fees when a distribution system WAE is permanently transferred to the river (or in some cases to scheme sub-systems).

In some schemes, SunWater also applies termination fees for permanent trades from one bulk tariff group to another.

Without a termination fee, SunWater would forego revenue intended to cover fixed costs associated with the traded WAE, or the remaining customers would face the likelihood of higher prices to ensure SunWater's revenue adequacy.

Termination fees can represent a substantial payment by exiting customers to SunWater and can serve as a disincentive to exit.

SunWater does not impose termination fees in all cases of permanent trading, as customers have the option of not paying a termination fee, but instead continuing to pay annual fixed distribution system charges (for example, Part A). In this way, customers can retain their access to the distribution system.

Stakeholder Submissions

SunWater

SunWater has confirmed that it charges the exiting user the present value of 10 years of annual fixed distribution charges. The annual fixed distribution charges exclude GST. However, GST is payable on termination fees. In the past, SunWater derived the present value using the 10-year bond rate as a discount rate. However, as SunWater's standard distribution system supply contract stipulates the use of the bank bill swap rate (180 day) to determine termination fees, SunWater has applied this rate to calculate its 2011-12 termination fees. [This results in a termination fee that recovers from exiting users about 43% of the fixed cost of providing the service in perpetuity when the Authority's recommended WACC is used as the discount rate].

Once a termination fee is calculated, SunWater applies GST.

For 2011-12, SunWater applied this methodology incorporating the Government's interim price increases – resulting in termination fees (including GST) that are 9.4 times the annual fixed distribution charge.

SunWater treats such fees as revenue offsets. After 10 years, the revenue shortfall is recovered from remaining customers.

Currently, where bundled tariffs apply, SunWater calculates the fixed distribution system cost by subtracting the bulk Part A tariff from the distribution system Part A tariff (which includes the bulk Part A tariff), to ascertain a notional fixed cost per ML for distribution system customers.

Other Stakeholders

Cotton Australia/QFF (2011a) expressed concern about the impact on farm values of higher exit [termination] fee charges. QFF (2010a) submitted that the tariff structure must not impede the assessment of exit fees.

Other Jurisdictions

The ACCC developed guidelines on termination fees (2008a) and concluded that, from an economic efficiency perspective, it is desirable for operators to rationalise their network operations where it is efficient to do so and that such rationalisation is best achieved through negotiated or regulatory mechanisms. The ACCC noted that, in setting the termination fee, it attempts to strike a balance between the need to provide certainty for service providers and irrigators to undertake efficient investments, against encouraging service providers to achieve allocative efficiency in the provision of access services.

The ACCC also concluded that fully compensating operators using a NPV approach for calculating maximum termination fees (that is, basing the exit fee on the NPV of unavoidable costs) would not be appropriate as it would not provide any incentive for operators to rationalise distribution networks, to reduce costs or to improve efficiency over time.

The ACCC also noted that the NPV is highly sensitive to the discount rate adopted and that there is no clear basis for selecting the discount rate (for example, irrigator's borrowing rate or WACC, operator's cost of debt or WACC, or the risk-free rate).

The ACCC argued that the most effective way of facilitating efficient rationalisation and cost reductions over time is to provide operators with incentives through setting termination fees at a level below the NPV of operator's streams of unavoidable costs. However, the ACCC also concluded that there is no obvious basis on which to set the termination fee multiple, other than to consider a trade-off between balancing incentives for facilitating the efficient functioning of water markets and providing efficient investment incentives.

Prior to the ACCC's involvement in this matter, the Schedule E Protocol to the MDB Agreement allowed for a multiple of up to 15 times the fixed distribution component. The ACCC engaged Frontier Economics to examine the impact of its decision to cap the multiple at 10 times the nominal fixed annual distribution system charge, by modelling the impact of the change on the fixed costs, production costs and profitability of a range of crops and locations in the MDB.

Frontier Economics (2008) found that the adoption of 10 as the multiple would lead to increases in the access fees [fixed annual water charges] for remaining irrigators. However, the ACCC concluded that this is unlikely to have a bearing on irrigators' financial viability or investment decisions.

The ACCC (2008a, 2008b) ultimately recommended a maximum[9] multiple 10 times the nominal fixed annual distribution system charge, as it was thought likely to provide sufficient revenue to recover the initial capital cost for most foreseeable investments. Under the ACCC's arrangements, there are mechanisms for the termination fee multiple to exceed the cap where approved by the ACCC.

The Commonwealth Minister for Climate Change and Water, on the basis of the ACCCs advice, made rules under section 92 of the *Water Act 2007 No. 137* (2007), specifying that a fee imposed by an irrigation infrastructure operator must not (without approval) exceed a multiple of 10 times the actual access fee (excluding GST). The ACCC's amended guidelines (2011) allow the addition of GST and a termination fee multiple of up to 11 times (including GST).

The National Water Commission (2009) found that termination fees limit, or have the potential to limit, the ability of markets to reallocate water efficiently.

Authority's Analysis

The Authority notes that, in setting a termination fee, the ACCC sought to balance the financial cost to a service provider or remaining customers of a transfer out of a system against the desirability of providing an incentive to the service provider to rationalise or reduce costs in a network.

The Authority also notes that, in setting a termination fee, the ACCC considers a trade-off between balancing incentives for efficiently functioning water markets and providing efficient investment incentives. The Authority is also cognizant that termination fees impact on the water trading market.

The geographical scale of the MDB, and the fact that its many customers (and stakeholders, including governments) continue to provide a strong demand for water, are relevant to the ACCC conclusions.

In Queensland, however, most of SunWater's WSS are outside the MDB. SunWater schemes are characterised by smaller disconnected catchments. It is not evident therefore, that SunWater can effectively manage all the risks involved in attracting additional customers or reducing the largely fixed costs associated with these schemes.

Moreover, SunWater's current approach recoups more than the value to it of the exiting customer's fixed charges in perpetuity. This occurs because SunWater's exit fee (10 years of fixed charges discounted at the bank bill swap rate) exceeds the value to SunWater of 10 years of fixed charges discounted at SunWater's WACC (which represents its time value of money). SunWater then recoups all fixed costs post year 10 from the remaining customers through higher fixed charges. This raises two issues, namely:

(a) why should the remaining customers bear these costs as the decision to exit a distribution system is a decision made by the exiting party; and

(b) why should SunWater's termination fee exceed the value to it of the fixed charges forgone while SunWater bears no revenue risk post Year 10.

Furthermore, as a result of SunWater's current approach, SunWater faces no incentive to reduce costs as the result of customers exiting. In this regard, however, not all fixed costs are, or need to be, maintained in perpetuity if customers exit. In the extreme case, where all customers exit a scheme, potentially no fixed costs should be incurred in a distribution system. There is a wide

[9] The only specific provision noted by the ACCC for charging less than the 10-times multiple (excluding GST) is where termination fees are included as part of an existing contract and are less than the 10-times multiple.

range of scenarios possible for each scheme as to which fixed costs can be avoided as this can depend upon the location of the departing customer within a distribution system and the possibility of attracting an alternative user.

To more closely reflect the cost of exiting, it would seem more appropriate to base termination fees on the present value of fixed costs over a longer than 10-year period of time, but not the entire NPV of fixed costs – as some fixed costs may be avoidable in the long term. A period of 20 years (the current renewals planning period recommended by the Authority) of fixed costs, using an appropriate discount rate would seem more appropriate to allow sufficient time for SunWater to rationalise its distribution system, reduce fixed costs and secure new distribution system customers.

The appropriate discount rate is the post-tax nominal WACC recommended by the Authority for SunWater, on the basis that it represents the opportunity cost of such funds to SunWater. This results in a multiple of 12.5 times the fixed costs (excluding GST) or 13.8 times the fixed costs once GST is applied.

The Authority's approach would initially more fully compensate SunWater than at present, recovering approximately 62% of SunWater's unavoidable costs as a portion of the revenue requirement calculated in perpetuity. However, the Authority recommends that SunWater must bear the remaining unrecovered share (some 38%) of fixed costs. The 38% share of fixed costs not recovered by SunWater via the Authority's recommended termination fee is not to be recovered at any time from remaining customers, including beyond Year 20.

By not recouping a portion of its fixed costs, SunWater will have an incentive to rationalise scheme infrastructure, reduce fixed costs and/or secure new customers.

This proposal notionally imposes higher termination fees than at present on customers choosing to exit, when compared to SunWater's current approach. Whether this will be the case in practice will depend, however, on the overall findings of this pricing review. The net effect for a particular scheme will depend on the Authority's findings related to the prudency, efficiency and allocation of costs and the resultant fixed charges (see scheme reports).

The ACCC also considers a trade-off between balancing incentives for efficiently functioning water markets and providing efficient investment incentives as being relevant to its recommendation of a multiple of 10 times fixed charges (11 times after GST is included).

Trading is an important mechanism to facilitate the transfer of water to its highest and best use. However, the net benefit must take into account all costs – the cost of exiting is one such cost. The impact of the Authority's recommendation on the market value of WAEs and trading is addressed in a subsequent chapter, Draft Prices.

It is also noted that:

(a) after receipt of a termination fee, another user may transfer its WAE from the river to the distribution system; and

(b) similarly, after receipt of a termination fee, where SunWater holds a bulk WAE, SunWater can sell the WAE to another customer seeking access the distribution system.

If in scenario (a) or (b) above, a new WAE is transferred into the distribution system (within 20 years of a customer paying a termination fee), then SunWater will receive distribution system revenue exceeding its fixed costs. The Authority considers that, on the basis that SunWater bears the risk of the 38% of unrecovered fixed costs (above), SunWater should in the above scenarios retain the additional revenue.

This would provide SunWater with a revenue incentive to attract customers into distribution systems from which customers have exited.

Such a benefit to SunWater would offset the risk that SunWater is unable to rationalise scheme costs or secure additional WAEs in the distribution system, and so recover only 75% of future fixed costs (see earlier discussion).

Conclusions

The Authority's approach allows 62% of fixed costs to be recovered by SunWater from exiting customers compared with SunWater's 43%. The Authority's approach also prevents SunWater from recovering the exiting user's unrecovered share of fixed costs post Year 20 from remaining customers. Allocating responsibility for this to SunWater, provides SunWater with a new incentive to rationalise distribution systems, reduce fixed costs and/or attract new entrants.

In 2011-12, SunWater's termination fees (including GST) generally represent a multiple of 9.4 times fixed charges. By way of comparison, the Authority's approach allows a maximum multiple (including GST) of 13.8 times fixed costs, compared with ACCC's maximum multiple of 11 (including GST).

If accepted, the Authority's recommended approach should apply in the seven SunWater distribution systems outside the MDB (that is, excluding the St George Distribution System). However, the Authority notes that it would be at SunWater's discretion to also seek to apply the Authority's recommended approach within the MDB (that is, St George Distribution System).

It is noted that SunWater would need to apply for ACCC approval in any relevant MDB scheme if, in adopting the Authorities approach, a termination fee (including GST) exceeds a multiple 11 times fixed charges.

Recommendation:

SunWater's termination fees should be calculated as the present value of up to 20 years of fixed costs discounted at the Authority's recommended WACC for SunWater.

SunWater should not recover the balance of the shortfall by adjusting future water charges.

The above approach to termination fees should apply to SunWater schemes outside the MDB [SunWater may seek to adopt the new approach in the MDB but would require ACCC approval].

4.4 Tariff Groups

The Authority received numerous submissions on the issue of nodal pricing, particularly in reference to the Bundaberg WSS. However, the Ministerial Direction specifically directs the Authority to adopt the tariff groups as proposed in SunWater's NSPs.

The previous SunWater Irrigation Price Paths Final Report (2006b) nominated 52 tariff groups across 27 SunWater schemes (which included the South East Queensland schemes). In 2010-11, SunWater did not propose any change to the 2006-12 regulatory period tariff groups. Accordingly, the Authority has adopted the tariff groups identified in SunWater's NSPs.

While the Authority is seeking to set prices for tariff groups on the basis of cost and other supporting data, where this data is not available, the Authority must set prices according to available cost information. This may result in some tariff groups having similar (or the same) prices as other tariff groups in that scheme segment, where cost information is only provided by SunWater on an aggregated basis.

Recommendation:

The Authority must adopt the tariff groups identified in SunWater's NSPs.

4.5 Distribution Losses

Background

SunWater was granted WAEs by DERM to account for losses involved in delivering water to customers in the distribution network (referred to as distribution loss WAEs). As water needs to be stored for this purpose, the charge to distribution customers, per delivered quantity of water, is higher than if there were no distribution losses.

Stakeholder Submissions

SunWater

For its eight distribution system service contracts, SunWater (2011p) has indicated that distribution losses arise from operational factors including pipe leakage, distribution system or balancing storage seepage, evaporation losses from balancing storages and systems losses such as distribution systems overflows or releases of water from distribution systems to allow for maintenance. Under its ROP and ROL, SunWater must account for these losses to DERM.

The quantum of medium and high priority distribution loss entitlements currently held by SunWater is identified in Table 4.4, which also presents the annual (eight year) average volume of loss WAEs realised.

Table 4.4: High and Medium Priority Distribution Loss WAE 2009-10 and Average Losses

Distribution System	*High Priority WAE for Distribution Losses (ML)*	*Medium Priority WAE for distribution losses (ML)*	*8 Year Average Actual Distribution Losses (ML per annum)*
Bundaberg	16,080	25,440	9,383
Burdekin-Haughton	16,260	190,477	107,743
Emerald	6,840	22,490	14,381
Eton	3,089	6,295*	5,666
Lower Mary	324	4,588	265
Mareeba-Dimbulah	8,000	37,000	31,225
St George	3000	6,701	10,105
Theodore	600	3,405	1,767

*Note: * High Priority B*

Note: SunWater is not able to disaggregate total actual water losses between the different priorities of water delivery.
Source: Various SunWater NSPs (2011) and SunWater (2011p)

SunWater submitted that distribution loss WAEs should be treated on the same basis as other types of WAEs due to the need to store these entitlements. Further, it submitted that these costs should be recovered from customers of the distribution system (by including them in that system's revenue requirement) on the basis that they are required for the distribution service.

SunWater anticipated that the Authority may wish to consider whether SunWater is delivering distribution water (including losses) at least cost. SunWater submitted that it could explore holding less permanent loss WAEs and, instead, access the temporary water trading market if additional WAEs were needed to meet loss requirements. SunWater noted that there were risks associated with this approach, particularly at times of scarcity. It submitted that this approach would come at a cost, which was not incorporated in the NSPs, and recommended that it not be adopted

SunWater notes that if it improved water delivery efficiency in its distribution systems, reducing actual losses, it would be able to hold less WAEs for this purpose. However, SunWater submits that it has no control over the allocated WAEs as they were conferred by DERM. It also notes that its ability to reduce its holding of loss WAEs (by selling them) is constrained by the attached conditions such as the [assumed] need to demonstrate investment in efficiency measures, and the need for DERM's approval to convert them to saleable WAEs.

SunWater also submitted that medium priority WAE holders in distribution systems continue to pay up to 100% of the costs associated with high priority loss WAEs (in addition to those costs associated with medium priority loss WAEs). SunWater's proposal to have medium priority WAE holders pay up to 100% of the costs associated with high priority loss WAEs is consistent with its submission that 100% of high priority distribution losses are forecast to be used each year [even where there are no high priority distribution system WAE customers]. [The high priority loss WAE is used to fill the distribution system at the commencement of each irrigation season prior to water delivery recommencing.] SunWater advised that this is necessary because, prior to the irrigation season, distribution system maintenance requires the distribution system to be emptied. SunWater advised that this use of high priority loss WAE is necessary to deliver medium (and high) priority WAEs in distribution systems and is endorsed by DERM.

Other Stakeholders

CANEGROWERS (2011a) submitted that calculating distribution charges based on the full distribution loss WAE will unfairly have a major impact on the distribution systems share of bulk costs. At the very least, the extra allocation of costs should reflect actual losses not allocations.

In subsequent presentations, CANEGROWERS noted that, for the 2006-11 price path, total bulk costs were divided by total WAE (customer WAE plus loss WAE) to determine a per ML recoverable bulk charge. CANEGROWERS suggested an alternative would be to divide bulk costs by customer WAE plus actual losses (smaller denominator); driving the price per ML upwards, increasing the share of costs paid by river customers.

CANEGROWERS (2011a) also submitted that it would be appropriate not to allocate costs for distribution losses since river losses are ignored. The distribution losses are for a range of items including seepage in distribution systems, evaporation in distribution systems, meter inaccuracies and distribution system overflows. In some schemes, including the Burdekin-Haughton and Mareeba-Dimbulah, there are large end of distribution system overflows which flow into waterways, and end up being environmental flows. It is difficult to understand why growers in distribution systems should pay extra for these environmental flows but bulk water users are not asked to pay for environmental losses in the river.

Cotton Australia (2011a) submitted that SunWater has no incentive to reduce distribution losses if bulk charges for loss allocation are charged. SunWater has submitted that losses can only be quantified if meters are replaced. Cotton Australia questions how SunWater knows what loss allocation is being used.

Cotton Australia notes that SunWater submitted that the NWI requires that costs associated with distribution losses be recovered. Cotton Australia has questioned whether this is a NWI requirement as DERM/Government do not recover bulk water charges from their own systems which has to be allocated out of the storages each water year, the same as are SunWater's distribution losses.

Cotton Australia stated that loss allocations were issued to SunWater as best guess numbers to ensure they had the ability to deliver WAEs within their networks. It was not intended that losses allocation could be traded unless it was clearly identified and proven that water savings have been made within the sections that the losses were allocated.

Other Jurisdictions

The ACCC's Water Market Rules (2008b) noted that most operators do not have a separate distribution WAE. When operators do not hold a distribution loss WAE, irrigators accept that part of their WAEs will be lost because of evaporation and seepage while in transit to their properties.

Irrigation schemes, particularly those in NSW, appear to have been designed around an assumption of socialised transmission losses. This means that irrigators in these schemes accept that water will be lost while in transit to their properties and that these losses will be shared equally regardless of an individual irrigator's distance from the extraction point (similar to the approach adopted in Queensland).

The ACCC recommended that a distribution loss WAE be held by the operator.

Authority's Analysis

The Authority accepts that loss WAE are a valid consideration in establishing the cost of providing distribution services as they relate to the additional storage infrastructure required to ensure the level of supply required by distribution customers.

In respect of:

(a) CANEGROWERS (2011a) proposal that it would be appropriate not to charge for distribution losses on the basis that bulk customers are not charged for river losses (environmental flows). SunWater is not issued WAEs for bulk (storage and transmission) losses but is instead required to comply with operating and environmental management rules established by DERM. It is, however, issued with distribution system loss WAEs. These arrangements reflect the current water and resource management planning framework administered by DERM;

(b) CANEGROWERS (2011a) concern that, in some schemes, there are large end of distribution system overflows which flow into waterways (effectively forming part of environmental flows) and question why growers in distribution systems should pay extra for these, the Authority notes that:

    (i) where bulk losses are set by DERM and required to be delivered through distribution systems, this prescribed volume of water (if any) should not be paid for by distribution customers as they receive no benefit, nor should the customers be responsible for the additional capacity (if any) installed for this purpose; and

(ii) where distribution loss WAE unintentionally overflow into water courses (incidentally enhancing river environmental flows), there is no case to reduce costs allocated to distribution customers as there is no capacity installed for this express purpose.

Actual Distribution Losses

The Authority notes that actual distribution losses have in most cases, in recent years, been below the distribution loss WAEs held by SunWater. The notable exception is St George WSS, where continuous sharing arrangements exist (Table 4.5).

The variation between actual losses delivered and distribution loss WAE is due to two factors:

(a) the management of water releases under a system of announced allocations (except in St George WSS) which leads to actual water use in distribution systems being lower than customer WAE and, accordingly, water delivered to provide for losses being lower than distribution loss WAEs; and

(b) SunWater's apparent excessive holding of distribution loss WAEs in some schemes.

With respect to (a), SunWater periodically announces the portion of WAE available to customers (the announced allocation) based on the level of water in the WSS storages. For example, where there is an announced allocation of 70% for medium priority WAEs, it applies to medium priority WAEs as well as distribution loss WAEs, effectively capping actual deliverable losses at 70% (noting they may be less).

Although both categories of WAEs are treated the same under the announced allocation system, Table 4.5 shows that actual water use as a percentage of WAEs is (for most schemes) higher than delivered losses as a percentage of loss WAEs. Therefore, point (a) only partially explains why actual distribution losses do not equate to distribution loss WAEs. The remainder relates to point (b) SunWater appears to hold excessive distribution loss WAE in most distribution systems.

The total distribution loss WAEs held by SunWater across its eight irrigation distribution systems is 350,902 ML. The eight year total average actual distribution losses released were, by comparison, only 180,535 ML or 51% of distribution loss WAE.

Table 4.5: Total Medium and High Priority Distribution Loss WAE

Scheme	Item	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Burdekin	Loss WAE	206,737	206,737	206,737	206,737	206,737	206,737	206,737	206,737
	Actual Loss	103,044	115,909	128,901	102,659	82,339	85,037	72,235	100,743
	Actual loss as % of loss WAE	50%	56%	62%	50%	40%	41%	35%	56%
	Water use as % of WAE*	106%	95%	104%	77%	85%	66%	55%	79%
Bundaberg	Loss WAE	41,520	41,520	41,520	41,520	41,520	41,520	41,520	41,520
	Actual Loss	8,258	7,647	7,469	11,616	12,566	8,029	7,518	11,963
	Actual loss as % of loss WAE	20%	18%	17%	28%	30%	19%	18%	29%
	Water use as % of WAE*	30%	45%	64%	63%	49%	32%	34%	53%
Mareeba	Loss WAE	63,000	63,000	63,000	45,000	45,000	45,000	45,000	45,000
	Actual Loss	60,613	32,913	36,906	16,386	24,710	22,108	31,566	24,602
	Actual loss as % of loss WAE	96%	52%	59%	36%	55%	49%	70%	55%
	Water use as % of WAE*	75%	50%	61%	54%	68%	60%	53%	76%
Lower Mary	Loss WAE	4,912	4,912	4,912	4,912	4,912	4,912	4,912	4,912
	Actual Loss	342	559	(743)	52	745	191	237	736
	Actual loss as % of loss WAE	7%	11%	-15%	1%	15%	4%	5%	15%
	Water use as % of WAE*	60%	15%	67%	41%	83%	21%	32%	56%

Scheme	Item	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Nogoa-Mackenzie	Loss WAE	32,201	32,201	31,901	31,901	31,901	29,643	29,643	29,643
	Actual Loss	20,544	15,667	13,856	12,762	12,620	8,299	13,608	17,694
	Actual loss as % of loss WAE	64%	49%	24%	40%	40%	15%	46%	60%
	Water use as % of WAE*	103%	58%	89%	81%	60%	48%	65%	100%
St George	Loss WAE	9,721	9,721	9,721	9,721	9,721	9,721	9,721	9,721
	Actual Loss	9,771	13,224	13,172	10,227	7,049	8,462	10,422	8,511
	Actual loss as % of loss WAE	101%	136%	135%	105%	73%	87%	107%	88%
	Water use as % of WAE*	78%	93%	101%	106%	51%	68%	85%	74%
Dawson	Loss WAE	4,005	4,005	4,005	4,005	4,005	4,005	4,005	4,005
	Actual Loss	1,731	1,692	1,862	1,879	1,724	1,462	2,021	NA
	Actual loss as % of loss WAE	43%	42%	46%	47%	43%	37%	50%	NA
	Water use as % of WAE*	69%	86%	70%	93%	62%	50%	83%	NA
Eton	Loss WAE	9,384	9,384	9,384	9,384	9,384	9,384	9,384	9,384
	Actual Loss	10,426	5,562	5,398	8,215	4,812	2,173	4,565	4,179
	Actual loss as % of loss WAE	111%	59%	58%	88%	51%	23%	49%	45%
	Water use as % of WAE*	88%	45%	39%	42%	37%	9%	44%	42%

*Note: * Refers to actual distribution system water use as a percentage of distribution system WAEs.*

Implications of Difference between Loss WAE and Actual Losses

The Authority notes that, for some distribution systems, not all medium priority loss WAEs are required to deliver medium priority WAEs. This means that, by default, excess loss entitlements remaining in storages may be generating a benefit for river and distribution customers as the surplus water may be redistributed in the form of higher announced allocations.

The exception is where storages fill and overflow frequently (for example, in Burdekin-Haughton and Lower Mary WSS) resulting in the benefit of excess losses being lost over the dam wall from year to year. Further, in St George WSS, where continuous sharing is in place, unused distribution losses accumulate and are not redistributed to river customers.

There is an argument that bulk customers in some schemes should therefore contribute towards the cost of storing the excess loss water from which they benefit. However:

(a) where dams fill frequently, distribution loss WAEs are not stored for a long period, so neither bulk nor distribution system users receive any additional benefit;

(b) in schemes where the benefit is not lost, the benefit cannot be estimated with any certainty because it depends on the (varying) difference between distribution loss WAEs held by SunWater and actual distribution losses; and

(c) where low actual distribution losses are caused by low demand for water from distribution system customers, then this too is a risk that should be borne by distribution customers. Bulk customers should not be responsible for paying costs caused by the distribution customers' low usage which in any case would be difficult to assess.

Moreover, the reallocation of the surplus medium priority distribution losses (if any) to customers potentially represents an increase in the reliability of their allocations. An allocation's reliability is termed a WASO, which identifies the long-term expected reliability associated with each priority of WAE (usually expressed as a percentage of the nominal WAE).

However, WASOs were calculated by DERM assuming all loss WAEs are needed and therefore do not change where excess loss WAEs deliver a benefit. That is, customers have no institutional right to the increased availability of supply implied by any excess of losses WAE over actual released losses, although they may receive some (difficult to measure) benefit.

In relation to whether river customers should pay for surplus loss WAE, the Authority concludes that:

(a) the water planning framework prescribes loss WAE needed to deliver the distribution system service; and

(b) the water planning framework does not recognise the benefit to river customers of excess loss WAEs (if any) and accordingly confers no right to this benefit to those customers.

Accordingly, the Authority concludes that river customers should not bear costs associated with distribution loss WAEs (actual or nominal).

There is, however, no contention on the issue of whether distribution (as opposed to river) customers should pay for actual losses. They clearly should do so in accordance with the requirement for losses water to be released as part of delivering water to those customers.

The questions that remain, however, are:

(a) whether SunWater, or distribution system customers, should face the cost of SunWater holding loss WAEs in excess of requirements; and

(b) how to determine the magnitude of those excess loss WAEs.

In response to the above, the Authority considers that, in principle, distribution system customers should not pay for distribution loss WAEs held by SunWater in excess of that needed to meet actual loss releases required as SunWater could benefit from their sale.

The Authority's views on (b) are addressed below (in relation to Ensuring Least Cost Service Provision).

High Priority Loss WAEs

For some distribution systems, for example, St George and Lower Mary, SunWater's data reveals no high priority customers. There are also distribution systems with low volumes of high priority WAEs relative to the volume of high priority loss WAEs. For example, in the Theodore Distribution System there is 11 ML of high priority WAEs and 600 ML of high priority loss WAEs. As noted above, holding high priority loss WAEs incurs bulk costs (as for any WAEs). In such cases, consideration needs to be given to allocating these costs.

SunWater has advised that 100% of high priority losses WAE is currently used each year and that this arrangement will continue. The high priority loss WAE is used to fill the distribution system at the commencement of each irrigation season prior to water delivery recommencing. SunWater advises that this is necessary because, prior to the irrigation season, any major distribution system maintenance work requires the distribution system to be emptied. However, SunWater does not have the data to support this because its metered data does not distinguish between priorities of actual losses.

If 100% of high priority loss WAEs is always required to achieve the required level of service for high priority distribution system customers, with no benefit accruing to medium priority customers, then the Authority would consider it appropriate for high priority distribution customers to incur all the relevant costs and for medium priority customers to pay only for medium priority distribution losses.

However, the Authority notes SunWater's advice that, for example, where there are no (or limited) distribution system high priority customers, SunWater recovers the cost of medium and high priority loss WAEs from medium (and where relevant high) priority customers without distinguishing the costs according to priority group for loss WAEs.

That is, SunWater submits that high priority loss WAEs are routinely used to benefit medium priority irrigators and, accordingly, medium priority distribution system customers should pay for their share of that benefit. Where there are no high priority WAEs in a distribution system, the high priority loss WAEs are used exclusively to benefit medium priority distribution system customers, who SunWater propose should in those instances pay 100% of the cost of high priority loss WAEs.

SunWater has advised that it uses 100% of high priority distribution loss WAEs each year [even where there are no high priority distribution system customers] to fill the distribution system prior to the irrigation season commencing. SunWater submitted that this is necessitated by the fact that prior to the irrigation season commencing, major maintenance work requires the distribution system to be emptied. Further, SunWater submitted that the medium priority loss WAEs would on its own be insufficient to fill the distribution system.

It has been confirmed that SunWater's practice of using high priority loss WAEs to supply high and medium priority customers is consistent with the water planning framework.

Accordingly, where high priority distribution system customers exist, SunWater proposes to charge them the same cost per ML for distribution system losses as it charges medium priority customers. The Authority accepts this approach on the basis of its understanding that the practices referred to are consistent with intent of the water planning framework.

Ensuring Least Cost Service Delivery

To ensure least cost service delivery, SunWater should explore two cost-reducing opportunities:

(a) in respect of SunWater's understanding that it would not be able to convert distribution loss WAEs unless it could demonstrate it had invested in measures to improve distribution efficiencies, the Authority understands that, while investment is not a strict precondition, the demonstration to DERM of permanent efficiency gains is required for the conversion. As noted previously, it is considered appropriate for SunWater to retain the revenues from the sale of additional WAEs. This is consistent with SunWater's previous initiative in the Nogoa-Mackenzie WSS/Emerald Distribution System to invest in channel lining to reduce losses where DERM, as resource regulator, approved the conversion of loss WAEs to enable it to be traded;

(b) SunWater should optimise its portfolio of loss WAEs, that is, explore selling and therefore holding less loss WAEs and when needed, buying WAEs in the temporary trading market. SunWater submitted that use of temporary transfers for this purpose may require consideration of an end-of-period adjustment to prices, which it did not support. The Authority, however, would support such an approach wherever it delivered service at least costs.

Where customers benefit from SunWater reducing its costs based on the permanent sale of some loss WAEs, they may have to, at times, accept an end-of-period adjustment to reflect the cost of temporary trades.

In both instances, it is noted that a demand for additional WAEs would be needed for these arrangements to be effective. It is noted that DERM as resource regulator has progressively confirmed the distribution loss volumes through the water resource planning processes. Nevertheless, where it becomes evident that there is a sustained difference between the loss WAEs and actual losses, the loss WAEs should immediately be reviewed by DERM. Indeed, this seems to be the case in a number of schemes.

In response to Cotton Australia's (2011a) submission that DERM's loss WAEs conferred upon SunWater were approximate and designed to ensure SunWater's ability to deliver water to the distribution systems, the Authority has recommend ongoing review by SunWater (for opportunities) and by DERM (for the appropriateness of previous estimates of loss WAEs).

Also in response to Cotton Australia's (2011a) submissions that it was not intended for loss WAEs to be traded, unless it was clearly identified and proven that water savings had been made, the Authority understands that investment in infrastructure is not a precondition to converting loss WAEs to customer WAEs, but proof is required of permanent efficiency gains.

Recommendation:

The Authority recommends that prudent and efficient bulk costs associated with distribution loss WAEs be recovered from high and medium priority distribution system customers.

The Authority recommends that, to ensure least cost service delivery, SunWater should explore cost-reducing opportunities.

The Authority recommends that DERM immediately review loss WAEs to ensure that distribution system customers do not pay for loss WAEs held by SunWater in excess of requirements.

4.6 Free Water Allocations

Background

In the past, some WAE holders have been exempt from paying storage and delivery charges to SunWater.

During the previous review, government policy stated in the Tier 1 Report (2006) that free water allocations represented pre-existing entitlements and were a condition precedent to the establishment of the schemes in which they occur. Therefore, costs could not be allocated to these WAEs for the period of the price path.

SunWater did not receive CSO payments or any other form of subsidy for providing free water allocations and the costs were shared across the other customers of a relevant scheme. The free water allocations for relevant schemes are identified in Table 4.6.

Table 4.6: Free Water Allocations

Water Supply Scheme	*Free Water Allocation (ML)*	*% of total WAE*
Burdekin-Haughton	185,000	17%
Barker Barambah	1,588	4.6%
Bundaberg	4,512*	1.9%
Upper Burnett	210	0.7%
Dawson Valley	2	0.003%

Source: SunWater (2006a – Working Paper No 14)..

**SunWater has subsequently advised that this WAE is held by the Avondale Water Board. At the time of the 2005-06 price review, there was some uncertainty around the treatment of free allocations for the Board. SunWater concluded that they do not have a basis for receiving free water and then applied the previously estimated prices for all irrigators to Avondale Water Board.*

Stakeholder Submissions

SunWater

SunWater (2011d) submitted that free water allocations should be considered on the basis of their original intent. SunWater proposed the following criteria on which to base the assessment:

(a) legacy contract arrangements: these relate to agreements that were struck at arm's length on a commercial basis with particular water users; and

(b) compensation arrangements: these relate to agreements where an entity held a pre-existing right to water which needs to be preserved as a condition of the storage development or as a legislative or policy requirement.

SunWater submitted that, for legacy contracts, the current commercial arrangement should remain and that it is not seeking to recover any revenue shortfall from other users. However, free water allocations arising from compensation agreements should be considered a cost of the scheme's development. These costs should be dealt with no differently than other compensation arrangements with affected parties such as landholders, railway owners, electricity distributors, and, accordingly, should be recovered from the balance of WAE holders in the scheme.

In applying this principle, SunWater concluded that both the South Burnett Regional Council (SBRC) and the North and South Burdekin water boards received free water allocations as a result of a compensation arrangement, as distinct from a commercially-negotiated water supply arrangement. Accordingly, these free water allocations should be considered as a cost to the respective schemes, and no costs should be allocated to these free water allocations when setting prices to other users.

Other Stakeholders

QFF (2010a) submitted that the State Government should meet any capital and operating costs attributable to free water allocations.

DVIG (2010) submitted that customers receiving free water allocations should pay for the service and not be subsidised by (other) irrigators.

Burdekin River Irrigation Area Irrigators Committee (BRIAIC, 2010) advised that its members contribute to the costs associated with the provision of free water allocations in the Burdekin-Haughton WSS. However, its members are unsure if the costs associated with these provisions are significant and request that more information and discussion take place with stakeholders.

Authority's Analysis

Free water allocations have previously been applied in five WSS. SunWater has advised that free water allocations apply now in Burdekin-Haughton WSS and Barker Barambah WSS.

SunWater's (2011d) proposed criteria are that:

(a) the legacy arrangements [SunWater's commercial arrangements] are proposed to be met by SunWater; and

(b) compensation arrangements [where in the past, Government undertook that free water would be provided] are based on pre-existing rights or a legislative or policy requirement.

With respect to SunWater's proposed treatment of free water allocation, the Authority considers that:

(a) SunWater should continue to meet legacy arrangements as these represent commercially agreed arrangements (a position supported by SunWater). In these circumstances, the costs are borne by SunWater in the form of a diminished revenues; and

(b) for compensation arrangements, the pre-existing rights to free water should be maintained where they are the result of an existing agreement or as part of a current legislative or Government policy.

    In these circumstances, those customers benefitting from the supplemented supply should pay for the costs of that supply. Neither SunWater nor customers with a continuing right to free water should bear these costs.

These matters are addressed in the context of the relevant schemes in Volume 2.

Recommendation:

The Authority recommends that SunWater should continue to meet, and bear the costs of, legacy arrangements.

The Authority recommends that pre-existing rights to free water should be maintained where they continue as part of an existing agreement or as part of a current legislative or Government policy. Those customers benefitting from the supplemented supply should pay for the costs of that supply. Neither SunWater nor customers with pre-existing right to free water should bear these costs.

4.7 Drainage Charges

Background

The Ministerial Direction requires the Authority to review drainage charges.

Drainage charges apply only in certain distribution networks. SunWater provides drainage services to remove water from irrigation properties (both from farm run-off and stormwater) in the Burdekin-Haughton, Emerald, St George, Dawson Valley and Mareeba-Dimbulah distribution networks.

For the 2006-11 price paths, drainage charges were calculated on a scheme basis, replacing the previous average charge. Three options for the recovery of drainage costs were provided to SunWater's customers (Table 4.7), as follows:

(a) a fixed charge per hectare of irrigable land;

(b) a fixed charge based on the nominal WAE; and

(c) a hybrid charge that combines a fixed charge per hectare with a charge per ML of nominal WAE.

Table 4.7: Drainage Charges 2011-12

Water Supply Scheme	*Method for Cost Recovery*	*Drainage Rate*
Burdekin-Haughton	The previous per hectare rate was maintained and the shortfall recovered through an increase in the fixed network service charge.	$22.15 per hectare of irrigable land
Emerald Distribution	Per hectare rate	$22.20 per hectare of irrigable land / $5.50 per hectare of non-irrigable land
St George	Per hectare rate	$22.20 per hectare of irrigable land
Dawson Valley	The previous per hectare rate was maintained and the shortfall recovered through an increase in the fixed network service charge.	$22.20 per hectare of irrigable land
Mareeba-Dimbulah	Recovered in the fixed network service charge	Incorporated in the fixed distribution charge

Source: SunWater Fees Charges Schedule 2011-12

Stakeholder Submissions

SunWater

SunWater (2011d) proposed that the existing drainage tariff groups be retained, with four of the eight distribution systems continuing to receive a separate drainage charge and Mareeba-Dimbulah continuing to recover costs through the fixed charge.

SunWater noted that drainage networks in distribution schemes were part of the land development of irrigation areas. On this basis, SunWater conclude that there is an integrated relationship between water delivery and drainage in the design of irrigation farms to provide a combined service to irrigation farms.

SunWater submits that a single fixed charge (that is, combining the drainage charge and the distribution charge into a single fixed charge, as in Mareeba-Dimbulah) would reflect this interrelationship between the drainage and water supply network infrastructure.

However, SunWater accepts that there is an argument for setting separate drainage system tariffs to send appropriate price signals to users. However, SunWater concluded that significant time and effort would be required to change the current tariff arrangements and, as an interim measure, proposed that drainage and water supply costs in each distribution system be considered in aggregate and recovered through both drainage levies and water supply charges [as is currently the case].

SunWater submitted that the existing drainage prices should be retained for the next pricing period, subject to an annual CPI adjustment. Revenue collected through the drainage charge should be treated as a revenue offset against all (drainage and distribution) costs. Further, this arrangement should be reviewed at the end of the next regulatory period, with a view to incorporating drainage costs into a combined fixed charge for the distribution system.

At the Authority's request, SunWater provided estimated drainage costs (Table 4.8). However, SunWater has noted that these estimates are highly unreliable and that it therefore is not appropriate to establish cost-reflective drainage charges for the 2012-17 regulatory period.

Table 4.8: Drainage Costs by Scheme ($'000 nominal)

Scheme	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Burdekin-Haughton	871	878	897	920	943
Emerald Distribution	320	227	327	289	345
St George	271	245	179	183	188
Dawson Valley	203	189	212	199	204
Mareeba-Dimbulah	64	130	67	119	70

Source: SunWater (Mar 2011)
Note: Includes renewals expenditure

Other Stakeholders

QFF (2010b) submitted that drainage charges need to be reviewed as not all customers need drainage services because they now trap all farm runoff. The effectiveness of current drainage charges in dealing with problems such as salinity also needs to be examined (QFF, 2010a).

CHCGIA (2010a) submitted that the current drainage rates do not reflect the massive changes in land use experienced over the last decade, such as stubble retention, modified irrigation practices and compliance requirements to minimise off-farm impacts. These changes have had a huge impact upon maintenance requirements and a more transparent, user-pays approach should be adopted at a scheme level to account for these changes.

DVIG (2010) submitted that drainage charges should be levied separate to the two-part tariff and be recovered on a per hectare basis.

BRIAIC (2010) was satisfied that the current arrangements for drainage charges is appropriate, and noted that SunWater had lifted its performance in managing the drainage network in the Burdekin-Haughton WSS.

Other Jurisdictions

In NSW, Murrumbidgee Irrigation provides drainage services and recovers these costs through the fixed and variable charges for conventional water supply services (PwC, 2010a).

In Victoria, SRW recovered drainage costs through a separate fixed drainage charge based on per ML of water entitlement (PwC, 2010a).

In South Australia, CIT charges a levy on a per hectare basis for customers without an irrigation connection. For customers with an irrigation connection, drainage costs are recovered through the water supply charges. The Renmark Irrigation Trust recovers costs through access and delivery charges. Non-irrigators who access the drainage system are charged on a per rated area basis. (PwC, 2010a)

In Western Australia, drainage services are provided by Water Corporation. The Government determined that there would be no charge for this service (PwC, 2010a).

Authority's Analysis

To promote efficient use of such services, the drainage price should signal the incremental costs (if any) associated with water use. To ensure revenue adequacy, a fixed charge should recover fixed drainage costs. This approach ensures that the costs associated with the drainage network are recovered without transferring volume and revenue risk to SunWater.

The Authority notes SunWater's submission that drainage networks in distribution schemes were part of the land development of irrigation areas and integrated with water delivery to provide a combined service to irrigation farms.

In submissions, DVIG (2010) and BRIAIC (2010) are supportive of the current drainage charge structure whereas QFF (2011a) and CHCGIA (2011) suggested that some modifications are needed.

It is evident that, in many schemes, substantial changes have occurred with some customers no longer needing drainage services as a result of changes in land use and management related to stubble retention, modified irrigation practices and compliance requirements to minimise off-farm impacts.

Having regard to the costs of providing these services relative to the cost of providing other services (almost 6% in the case of the Burdekin-Haughton Distribution System), and the ability of SunWater to identify related costs, there is a strong case to maintain a separate drainage fee structure, based on the associated costs.

Such a fee structure should be cost-reflective and may include appropriate drainage system termination fees, which would reflect the loss to SunWater of future (fixed-cost related) revenues were a customer to exit the drainage system.

However, the Authority accepts that the drainage cost data provided by SunWater is not a sufficiently robust basis for significant change to distribution system tariff structures at this time. In order to apply cost-reflective tariffs in the future, the Authority recommends that SunWater put in place (from 1 July 2012) processes to record and thus accurately estimate drainage costs in preparation for a subsequent price review.

As distribution charges reflect the total cost of running the distribution system including the drainage network, and costs cannot currently be accurately estimated, revenues from the drainage charges should be treated as revenue offsets.

Due to the degree of complexity and the broader implications which impact on water planning and resource management (the responsibility of DERM), the Authority considers that drainage tariff structures should be reviewed immediately upon the conclusion of the current irrigation price review, to allow sufficient time for relevant matters to be considered prior to a subsequent price review.

In summary, the Authority proposes that the current structure of charges be maintained and that the charges be maintained in real terms.

Recommendation:

The Authority recommends that current drainage charges be maintained in real terms and treated as revenue offsets.

The Authority also recommends that a review of drainage charges be initiated immediately upon completion of the current price investigation. For this purpose, SunWater should identify its drainage system costs from 1 July 2012.

4.8 Drainage Diversion Charges

Background

In Emerald, St George, Theodore and Burdekin-Haughton Distribution Systems, SunWater allows customers to extract tail water[10], and rain and storm run-off from the drainage network. Customers supply their own pump and other infrastructure (for example, sumps and weirs) in drains.

The level of extraction is generally not metered and charges are based on different arrangements across the four distribution systems. The charges, which also vary across the four systems, were implemented in consultation with customer committees and individual customers prior to 2000 and have been carried forward. Charges may include an annual fee for each installation, which may vary on capacity with larger capacity installations paying a larger annual fee.

The amount of revenue collected from these charges is outlined in Table 4.9.

Table 4.9: Drain Diversion Charge Revenue ($000)

Distribution System	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*% of 2010-11 Total Expenditure*
Emerald	56	54	52	51	50	1.9
St George	10	10	10	16	10	0.3
Theodore	5	5	5	4	5	0.2
Burdekin-Haughton	2	2	2	2	2	0.01

Source: Various SunWater NSPs.

[10] Tail water refers to surplus water that flows across an irrigation property (as a result of irrigation) and, if not retained by the soil/mulch/crops, ends up in a drainage system.

Stakeholder Submissions

SunWater

SunWater incurs some additional costs to provide this service. Such costs include additional channel and drainage maintenance, administration, monitoring installations, weed removal and rectification of bank slumping/flood damage caused by extra ponding (water storage).

There is no standard of service ascribed to this product. If water is available in the drainage network, then customers may divert it. SunWater does not make guarantees or schedule availability and is not responsible for arbitration of disputes between neighbours seeking to access a limited amount of water.

SunWater proposed to maintain the current arrangements and charges. Revenue is treated as a revenue offset by SunWater and is assumed to remain constant in real terms over the next regulatory period based on the 2010-11 forecast.

Other Stakeholders

Cotton Australia/QFF (2011a) submitted that distribution customers are required to pay for all distribution losses, according to SunWater's submission. Some of these distribution losses will be lost into the drainage network and resold to customers. Cotton Australia questioned whether it was appropriate for customers to pay for the same water twice.

Authority's Analysis

The Authority accepts that SunWater incurs costs in providing customers with this service. These costs have been assessed for prudency and efficiency as part of the Authority's overall review of operational expenditure, but not in a disaggregated manner.

The Authority considers that SunWater should be able to recover prudent and efficient costs associated with diversion from drains. All costs should be recovered from only the customers that use the service through a cost-reflective charge, where practical.

The data provided by SunWater does not allow diversion from drain costs to be isolated. The activities associated with the drainage network are often required for both maintaining the drainage network and to allow customer diversions. Separating the activities and costs that support each of these functions is not practical or likely to be cost-effective for SunWater, particularly given the modest nature of the expenditure. Annual drainage diversion charge revenue varies between 0.01% and 1.9% of total annual forecast revenue on a scheme basis.

Without having an exact drainage-diversion related expenditure forecast, it is not possible to ensure that drainage diversion charges are cost-reflective. Therefore, given that the current charges are the result of customer consultation and that they are not significant, it is proposed to accept SunWater's proposal to maintain them in real terms.

In addition, as drainage costs and drainage diversion costs cannot be separated, it is proposed that revenues from the drainage diversion charges also be treated as a revenue offset.

Recommendation:

The Authority recommends that the current drainage diversion charges be maintained in real terms and be treated as a revenue offset.

4.9 Distribution System Water Harvesting Charges

Background

The Ministerial Direction requires the Authority to review distribution system water harvesting charges.

Distribution system water harvesting WAEs are currently held by SunWater. Water harvesting is used by customers to supplement the water available under their WAEs.

Water harvesting is the practice of water extraction from a river during authorised or announced high flow periods (for example, flooding) that are specified in the applicable ROP. Distribution system water harvesting occurs in the Burdekin-Haughton and St George WSS, with SunWater delivering water harvesting water through the distribution network.

During the 2006-11 price period, irrigators paid a SunWater Part B water charge for each ML of harvested water delivered plus a lease fee and a DERM water charge (in the case of St George Distribution System).

Table 4.10 shows the annual extraction of water harvested in the Burdekin-Haughton and St George Distribution Systems.

Table 4.10: Distribution System Water Harvested Extractions (ML per annum)

Scheme	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Burdekin-Haughton	24,249	23,442	28,324	15,793	6,374
St George	-	13,656	-	12,473	26,226

Source: SunWater (Feb 2011).

Stakeholder Submissions

SunWater

SunWater (2011d) noted that, under an unbundled pricing regime for the distribution system, user charges are set independently of their access to water. Hence, there is no need to differentiate distribution charges based on the source of water diverted, transported and delivered to a customer's off-take.

SunWater also submitted that the same pricing arrangements for delivery should therefore apply regardless of how a customer has sourced water [Part B tariff].

Further, SunWater has advised that the lease fee relates to access to the entitlement itself and should continue to be set within a market setting and therefore are outside the scope regulatory oversight.

Other Stakeholders

QFF (2010b) submitted that distribution system water harvesting should be based on the variable costs of providing the service.

Other Jurisdictions

In NSW, State Water customers and Murrumbidgee Irrigation are permitted to extract water during flood events when certain conditions are met. These customers pay the variable charge applicable for the scheme and no fixed charge (PwC, 2010a).

Authority's Analysis

The distribution system water harvesting charges can comprise up to three components, depending on the scheme:

(a) DERM's water harvesting charge of $3.80 per ML extracted (which SunWater collects from customers);

(b) a distribution system volumetric charge; and

(c) SunWater's lease fee (which SunWater advises is a return SunWater makes on the value of the water harvesting WAE it holds).

The Authority notes that:

(a) the water harvesting charge represents a pass-through of DERM's charge for the un-supplemented water. Therefore, it is appropriate for SunWater to collect this DERM charge from customers where it applies on a volumetric basis (as it is imposed on the basis of water usage);

(b) in the 2006-11 price paths, the Part B volumetric water charge recovers a portion of fixed costs, thus exceeding the (marginal) cost of supply. As for other distribution delivery services, the Authority considers that the charge for distribution system water harvesting should reflect the marginal cost of delivery;

(c) a question arises as to whether SunWater is entitled to receive a margin over these costs. SunWater considers it should as it is similar to the revenue SunWater received from other leased WAEs or a temporary transfer. The Authority has previously indicated its support for SunWater to have an incentive to sell its other WAEs and retain the revenues received. The price for these WAEs is determined in the (trading) market. Accordingly, the lease fee for water harvesting WAEs should also be set in the market place and therefore the Authority accepts SunWater's submission that the level of the lease fee should not be prescribed by the Authority.

    It is noted that, in St George, under arrangements put in place by the ACCC and supported by DERM, SunWater does not have the right to permanently trade its water harvesting WAEs and will not have the right to temporarily trade them when transferred to customers.

    Currently, Burdekin-Haughton Distribution System customers do not pay a lease fee for water harvesting rights. SunWater advises, however, that it was recently granted water harvesting WAEs and is considering options to introduce lease fees for the Burdekin-Haughton Distribution System. SunWater has further advised that, as the value of WAEs in the Burdekin-Haughton WSS is not as strong as in the St George Distribution System, SunWater is unlikely introduce a lease fee.

    In response to SunWater's submission that its lease fees relate to the market value of WAEs and should be outside the scope regulatory oversight, the Authority considers that the question of whether SunWater seeks to exert any market power that it may have in these water markets could be a matter for subsequent investigation by a relevant agency (including the Authority if so directed).

Recommendation:

The Authority recommends that distribution system water harvesting charges should reflect the applicable distribution system volumetric charge plus the DERM water harvesting charge per ML of water delivered.

The Authority recommends that the lease fee, if any, should be determined in the market and the revenue be retained by SunWater. If, however, during a subsequent regulatory period customers identified possible use of market power by SunWater, this could be a matter for subsequent investigation by a relevant agency (including the Authority if so directed).

4.10 Storage Rental Fee

Background

A carry-over mechanism exists in eight WSS to allow customers to carry over unused water from one year to the next. The ROP outlines the circumstances and restrictions that apply including the maximum collective amount that may be carried over. In three WSS, Callide Valley, Dawson Valley and Nogoa-Mackenzie, storage rental fees are charged. The intent is to provide disincentives for irrigators to carry over water when they do not intend to use the water in the future as the collective amount of carry-over available is capped by the ROP.

Previous Review

The previous review did not review carry-over fees but did require that the expected revenue from storage rental fees be used as a revenue offset. Table 4.11 describes the current carry-over charging arrangements.

Table 4.11: Summary of Storage Rental Fees

Scheme with carry-over	*Storage rental fee 2010-11 ($/ML)*	*Average annual revenue (2006-07 – 2010-11)*
Callide Valley	$5.73	$8,500
Dawson Valley	$2.30	$8,000
Nogoa-Mackenzie	$1.95	$122,000

Source: SunWater (2011o). Note: carry-over was previously available in the Macintyre Brook scheme, until the introduction of continuous sharing. Accordingly, storage rental fees ceased from 2009 and prior to that generated around $15k to $25k per annum in revenue. Likewise, carry-over was available at St George prior to the implementation of continuous sharing in that scheme in the year 2000.

Stakeholder Submissions

SunWater

In preparing NSPs for the three schemes for which storage rental fees currently apply, SunWater submitted that it assumed that storage rental fees would no longer apply. This decision was based on the expectation that bulk water tariffs would be the sole mechanism for the recovery of bulk water costs from WAE holders. However, SunWater indicated that it is not opposed to a charge for storage rental should the Authority recommend these fees be retained.

Other Stakeholders

Peter Enkelmann (2010) submitted that, in the Barker Barambah WSS, there have been instances where the announced allocation has been raised in the last month of the water year, only to see the carry-over mechanism limited or withdrawn.

BRIG (2010a) supported the adoption of capacity sharing (continuous accounting), noting that it would be unfortunate should anything in the new pricing system prevent the adoption of a system that would improve farm productivity.

Other Jurisdictions

In NSW, annual allocation water accounting systems (similar to the continuous accounting arrangements being introduced into Queensland) have been adopted for all high priority and high security access licences. In all larger regulated rivers, annual allocation with carry-over or continuous accounting systems are in place for general security access licences. No charge applies for carry-over.

In Victoria, spillable water accounts (SWAs) were introduced on the major systems (Murray, Goulburn and Campaspe) in northern Victoria. SWAs are a form of annual allocation with a carry-over system. In other regulated systems, rules vary but they generally allow some carry-over. No charge applies for carry-over.

In South Australia, an annual accounting system was implemented, prior to the recent drought. As an interim drought mitigation measure, the Government introduced an annual allocation with a carry-over system. First introduced in 2006-07, the system was refined from year to year until it was abolished in December 2010. No charge applied for carry-over.

Authority's Analysis

Carry-over fees were introduced to provide a disincentive for customers to utilise carry-over when there was little intent of using the water.

The storage rental fee was introduced as a disincentive to carry over water and then not use it. As the total amount of carry-over water is capped, unnecessary carry-over prevents other irrigators who intend to use the water carrying over their water.

With a storage rental fee in place, only those irrigators that intend to use, or trade, the water in the future will pay the fee.

The recommended tariff structure will require total revenue to be mostly recovered through fixed charges in most bulk schemes.

With a high fixed charge, irrigators will have a maximum incentive to sell any WAEs that they do not require. It would be expected that irrigators who hold more WAEs than they need, will trade their WAEs to other users (wherever such trading can occur (which is in most schemes) and provided there are willing buyers) and the issue of carry-over may be partially resolved.

The Authority therefore proposes to accept SunWater's proposal to cease charging storage rental fees, with the relevant costs incorporated in fixed costs. The Authority considers that a cost-reflective tariff structure with high fixed costs will signal the costs of holding a WAE and provides sufficient incentive to minimise the carry-over of water.

Recommendation:

The Authority recommends that storage rental fees not be levied by SunWater, noting that this is contingent upon the adoption of cost reflective tariff structures, which will provide the appropriate incentives.

5. RENEWALS ANNUITY

The Authority has been directed to recommend a revenue stream to recover prudent and efficient expenditure on the renewal and rehabilitation of existing assets, through a renewals annuity approach.

A renewals approach requires ongoing accounting of renewals expenditure and revenues. For this purpose, SunWater maintains an Asset Restoration Reserve (ARR). The opening ARR balance for 2012-17 is based on the opening ARR balance for 2006-11, less renewals expenditure, plus income and interest over the 2006-12 period.

To establish opening ARR balances for 2012-17, SunWater has recognised the need to unbundle the balances for 16 related bulk and distribution service contracts (which have been combined in the past as a whole scheme). In the absence of actual renewals expenditure for 2000-06, the Authority has accepted SunWater's proposed methodology established for this purpose. In addition, the Authority has applied specific and general cost savings arising from a review of past renewals expenditures.

The Authority recommends that a 20-year planning period be adopted for the 2012-17 review.

To establish the prudency and efficiency of SunWater's past (2006-11) renewals expenditures and forecast renewals expenditures relevant to the 20-year planning period, the Authority reviewed in some detail a sample comprising some 18% of SunWater's renewals costs.

As a result of its reviews, the Authority proposes to:

(a) exclude from renewals expenditure all items identified by consultants as not prudent or, in the case of some forecast items, defer these to outside the current planning period. These total approximately $9.1 million;

(b) incorporate all specific efficiency savings identified by consultants. These total approximately $3.5 million;

(c) include sampled items identified by Arup, Aurecon, Halcrow and Sinclair Knight Merz (SKM) as being prudent and efficient in renewals expenditure in full. These total $33.0 million; and

(d) apply a 10% saving to all non-sampled items and sampled items for which there was insufficient information. These total approximately $24 million.

That is, within the period 2006-07 to 2035-36, the Authority recommends a reduction in proposed renewals expenditure of $36.6 million of SunWater's $290 million of past and future renewals expenditure (present value, real terms). That is, about 12.6%.

To improve the rigour of SunWater's long-run forecasting of costs for pricing purposes, the Authority recommends that SunWater undertake high-level options analysis for all forecast material renewals expenditures. The Authority also recommends that SunWater conduct detailed options analysis for all material renewals expenditures forecast to occur within the next five years of each planning period, updated annually.

To increase transparency and to provide customers with a strong basis for constructive engagement with SunWater in the future, the Authority recommends that there be a legislative requirement for SunWater to consult and report to a greater extent. These requirements are also to be outlined in amendments to SunWater's Statement of Corporate Intent.

Under this approach, SunWater should report annually and also enhance its five-yearly NSPs prior to each price review. SunWater's annual and five-yearly reports should provide detailed cost information on past and future renewals, changes to service standards and an explanation of any significant variations from previously proposed material renewals items. The reports should also include the annually updated detailed studies on material items forecast during the subsequent five-year regulatory period and documented high-level options analysis on material items over the 20-year planning period.

The annually updated NSPs for each irrigation service contract should be made public on SunWater's website commencing prior to 30 June 2014, as well as all customer submissions and SunWater's responses and decisions in relation to those submissions.

The Authority recommends the adoption of SunWater's proposed headworks utilisation factor (HUF) methodology to allocate capital costs (renewals expenditure) between medium and high priority customer, subject to a slight amendment to more faithfully reflect the proposed methodology.

In contrast, the Authority recommends that nominal WAEs be used for the allocation of fixed distribution system costs between priority groups. Fixed distribution system charges should also remain with customers if they convert to between priority groups.

The Authority also recommends that, at the conclusion of this review, SunWater commence a review of a more appropriate means of allocating fixed renewals costs in distribution systems.

The Authority has calculated SunWater's renewals annuities by applying an indexed and (annual) rolling approach, as proposed by SunWater, but using the Authority's recommended cost escalation indices. The Authority also considers that the discount rate applied in calculating the renewals annuity should reflect SunWater's opportunity cost of funds. The Authority has recommended a post tax nominal WACC of 7.62% per annum (Appendix C).

5.1 Background

Ministerial Direction

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

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

Previous Reviews

In 1997, Ernst & Young were commissioned by the Standing Committee on Agriculture and Resource Management (SCARM) to prepare guidelines on, amongst other things, the funding of the renewal of water supply assets, the SCARM Water Industry Asset Valuation Study, Draft Guidelines on Determining Full Cost Recovery (SCARM Guidelines).

These SCARM Guidelines were subsequently submitted to, and endorsed by, the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).

SCARM considered that a renewals annuity approach is appropriate for infrastructure assets that are to be continuously renewed. According to the SCARM Guidelines, a typical renewals annuity should include all works (expenditure) needed to maintain the service potential of existing infrastructure services in accordance with the requirements of customers.

Key elements of the proposed renewals annuity approach included:

(a) detailed asset management plans that define the timing of renewals expenditure based on asset condition;

(b) an ARR to manage balances of unspent (or overspent) renewals annuities (including interest). [Where expenditure exceeds revenue collections the ARR balance can be negative]; and

(c) calculating a renewals annuity based upon the present value of proposed renewals expenditure minus the ARR [or plus the ARR if it is negative].

SunWater's prices for 2001-06 reflected the renewals annuity methodology proposed in the SCARM Guidelines. SunWater's 2006-11 renewals annuities were also based on this approach (SunWater, 2006a, Working Paper No. 10) and involved:

(a) establishing the opening value of the ARR for each WSS based on actual expenditures and revenue for 2001-06;

(b) forecasting renewals expenditure over a 34-year period; and

(c) calculating the present value of the forecast expenditure after adjusting it for the ARR balances for each WSS.

For the 2006-11 price paths, SunWater did not create a separate ARR for each bulk and distribution system – rather they were prepared on a whole-of-scheme basis (that is, bulk and distribution segments were 'bundled'). Allocations of renewals expenditures between high priority and medium priority users were based upon conversion factors identified in relevant ROPs and other available information (detailed below).

Renewals Expenditures

SunWater's actual and proposed renewals expenditures for 2006-17 are detailed in Table 5.1. These expenditures reflect total direct and non-direct (indirect and overheads) renewals expenditure for SunWater's irrigation service contracts (all sectors), and are presented in real terms.

Table 5.1: SunWater's Renewals Expenditure 2006-17 (Real $'000)

Cost	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Direct	6,493	7,105	6,579	13,046	11,576	10,250	6,389	5,983	5,968	6,939	12,102
Non-direct	4,788	4,999	4,311	4,981	2,643	4,313	2,611	2,732	2,759	3,085	5,119
Total	**11,281**	**12,104**	**10,891**	**18,027**	**14,220**	**14,563**	**9,000**	**8,715**	**8,727**	**10,024**	**17,222**
Annual change (%)		7.3	(10.0)	65.5	(21.1)	2.4	(38.2)	(3.2)	0.1	14.9	71.8

Source: SunWater (2011x). Note: 2006-11 data is SunWater's actual data and 2012-17 data is SunWater's forecast.

Over the period 2006-17, SunWater's total renewals expenditure averaged $12.3 million per annum. For the current price path 2006-12 (including the year of interim prices), SunWater's total renewals expenditure averages $13.5 million per annum.

For 2012-17, SunWater's forecast renewals expenditure averages $10.7 million per annum. All figures are in real terms in 2010-11 dollars (Table 5.1).

Issues

Issues for consideration in the 2012-17 review include:

(a) whether renewals expenditure in 2006-12 was prudent and efficient. This affects the opening ARR for the 2013-17 regulatory period;

(b) the prudency and efficiency of forecast renewals expenditure (including the appropriate period for calculating annuities);

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

(d) technical matters related to the calculation of the renewals annuities.

The Authority also commissioned SAHA International (SAHA) to prepare an Issues Paper on Renewals Annuity [versus a Regulatory Depreciation Allowance] (2010). This Paper is available on the Authority's website.

5.2 Opening Asset Restoration Reserve for 2012-17

In broad terms, an opening asset restoration reserve (ARR) for 2012-17 is based upon:

(a) the opening ARR as at 1 July 2006;

(b) the difference between prudent and efficient renewals expenditure over 2006-11 (past renewals expenditure) and the renewals annuity received over the same period[11];

(c) interest accrued or paid on balances during 2006-11; and

(d) forecasts of renewals expenditure, interest accruals and renewals annuity revenue for 2011-12.

Opening ARR Balances at 1 July 2006

The 2006-11 price paths were based on an opening balance for the ARR in each scheme at 1 July 2006.

The opening ARR balances in Table 5.2 relate to the irrigation sector only. Further, SunWater did not disaggregate these balances between bulk and distribution segments. The details are only provided as a reference as they had been accepted for the purposes of the 2006-11 price paths which are not subject to the Authority's review.

[11] The Authority notes that SunWater currently accounts for selected operations and maintenance costs (for example, relating to recent flood damage) in its ARR calculations. As this is not renewals expenditure, the Authority has sought further detailed cost data from SunWater and intends to address this issue prior to the Final Report.

Table 5.2: Opening ARR Balances as at 1 July 2006 (Nominal $'000)

Scheme	*Opening ARR Balance*
Barker Barambah	(384)
Bowen Broken Rivers	(116)
Boyne River	287
Bundaberg #	547
Burdekin-Haughton #	(1,186)
Callide Valley	(393)
Chinchilla Weir	51
Cunnamulla	(44)
Dawson Valley #	2,920
Eton #	(188)
Lower Fitzroy	0
Macintyre Brook	336
Maranoa River	(38)
Mareeba Dimbulah #	2,888
Mary River #	(973)
Nogoa Mackenzie #	479
Pioneer River	(247)
Proserpine River	(20)
St George	1,294
Three Moon Creek	(390)
Upper Burnett	80
Upper Condamine	(31)
Total	**4,872**

Source: SunWater (2011c) # WSS combine bulk water and distribution system. Note: Bulk water supply schemes transferred to Seqwater in 2007-08 have been excluded. This required an adjustment to the Mary River opening balance to exclude $744,000 relating to the Upper Mary, now owned by Seqwater.

Prudency and Efficiency of 2006-11 Renewals Expenditure

The difference between prudent and efficient renewals expenditure over 2006-11 (past renewals expenditure) and the renewals annuity received over the same period is an important determinant of opening ARR balances for 2012-17.

In 2005-06, SunWater forecast renewals expenditures with the intention of maintaining the prevailing standard of service, at least over the 2006-11 price paths. SunWater's approach, including its 30-year planning period adopted at the time, had the effect of including in prices the cost of maintaining asset capacity over 34 years.

Renewals expenditure forecasts reflected amounts considered to be required to cover the replacement of individual assets due to anticipated technological change and process redundancy as well as expenditure to improve general business and performance efficiency (for example, the new SCADA[12] system and other operational control assets) (SunWater 2006a, Working Paper 10).

Expenditure to provide new assets and/or to provide enhanced levels of service was excluded from renewals forecasts. SunWater also undertook a review of expenditures at that time to ensure that standard operating activities and activities more closely aligned to corrective and preventive maintenance were not included in forecast renewals expenditure (SunWater, 2006a).

Since then, changes to previously proposed renewals expenditures have been made by SunWater. These reflect reviews of priorities and more detailed analyses.

Stakeholder Submissions

SunWater

SunWater (2011c) advised that actual renewals expenditure incurred during the 2006-11 price paths totalled approximately $66.5 million (2011 real terms, all sectors).

Other Stakeholders

Cotton Australia/QFF (2011a) submitted that large negative ARR balances for 2011 come about through inappropriate renewals expenditures being undertaken by SunWater or insufficient renewals annuities being set aside.

CANEGROWERS (2011a) submitted that:

(a) the opening balances as at 2010-11 are a concern. Renewals expenditure during the 2006-11 regulatory period needs to be justified and benchmarked against efficient costs determined as part of the previous review;

(b) opening ARR balances as at 2005-06 and estimated efficient costs should be provided and compared to actual items and renewals expenditure incurred. The starting balance for all schemes then needs to be adjusted which could mean resetting balances at zero value for a scheme with a negative balance if no justification for historical expenditure is made;

(c) there are significant discrepancies in the renewals data reported historically in SunWater's Annual Reports, leading to doubts regarding the methodology used in their calculation [also noted by BRIAIC (2010)]; and

(d) if previously incurred efficient renewals expenditures are not known, then SunWater's proposed ARR balances are questionable.

G. Kavanagh (2011) submitted that the prudency and efficiency of the Intersafe program (see details below) needs to be assessed as SunWater did not consult with customers prior to undertaking this expenditure.

Authority's Analysis

Actual renewals expenditure during 2006-11 is a key determinant of the opening ARR balance for the commencement of the 2012-17 regulatory period.

To determine the prudency and efficiency of past and proposed expenditure (including renewals expenditures), the Authority initially requested that SunWater:

[12] Supervisory Control and Data Acquisition (SCADA) is a computer system that in SunWater's case monitors and controls water delivery and distribution infrastructure.

(a) provide all relevant information from 2000-01 to 2015-16, including the reconciliation of this expenditure with statutory accounts (April, 2010). SunWater's attention was directed to the criteria and process typically adopted by the Authority when reviewing regulated entities' (capital) expenditure proposals;

(b) note the importance of cost information being made available to support future recommended prices, and provide documentation which demonstrates that proposed renewals expenditure is prudent and efficient (June, 2010); and

(c) provide details and supporting material regarding the determination of historic renewals annuity charges and ARR balances (July, 2010; August, 2010).

The Authority sought to establish the prudency and efficiency of actual renewals expenditure between over 2006-11 by seeking to:

(a) reconcile the difference between forecast and actual renewals expenditure in aggregate terms; and

(b) establishing the prudency and efficiency of individual renewals expenditure items.

Other information requests followed from consultants' reviews of the prudency and efficiency of SunWater's past and forecast renewals expenditures.

Aggregate Analysis of Past Renewals

SunWater was unable to provide details of the renewals expenditure forecasts made at the commencement of the 2006-11 price paths, as it saw no need to retain this information at the time (Halcrow, 2011).

However, details of these forecast renewals expenditures (2005-06 dollars) have been provided by Indec (2011a), who undertook the analysis for SunWater as part of the last price review. In the absence of any better information from SunWater, Indec's data has been used as the forecast expenditure for the relevant period.

Table 5.3 and Figure 5.1 compare the total forecast and actual direct renewals expenditures for all sectors (including irrigation) incurred during 2006-11, in nominal dollars (excludes overhead and indirect costs).

Table 5.3: Comparison of Actual and Forecast Direct Renewals Costs 2006-11 (Nominal $'000)

Expenditure	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*Total*
Forecast Expenditures (Indec)	7,047	7,695	7,727	8,402	7,726	38,596
Actual Expenditures (SunWater)	5,705	5,673	9,033	13,723	15,547	49,681
Difference	-1,342	-2,022	1,306	5,321	7,821	11,085
Difference (%)	-19.0%	-26.3%	16.9%	63.3%	101.2%	28.7%

Source: Actual expenditures provided by SunWater (2011k). Forecast expenditures provided by Indec (2011). Forecast costs were indexed by 4.0%, exclude non-direct costs and were adjusted for Indec's 2005-06 cost savings.

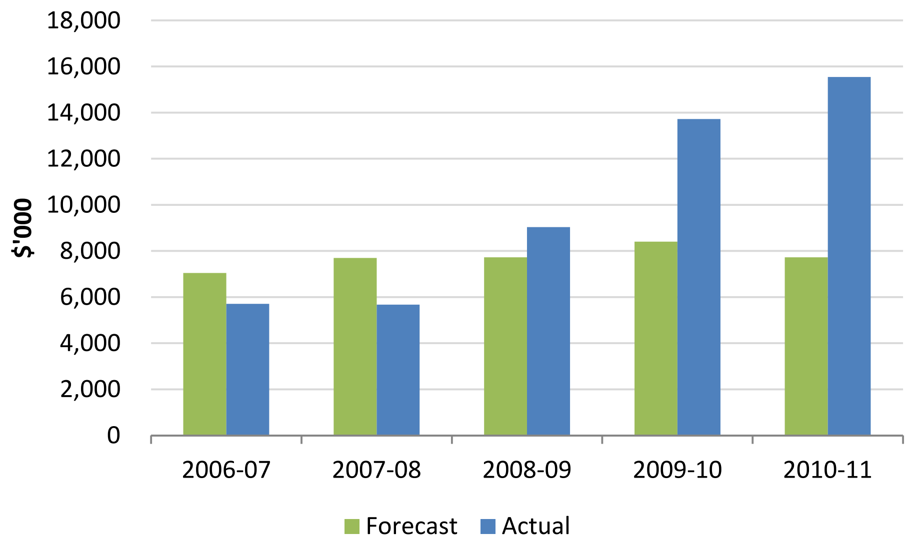
Note: It should be noted that the actual expenditures in Table 5.3 differ from those in Table 5.1. Table 5.1 reflects SunWater's NSP data which is expressed in real terms. Table 5.3 is expressed in nominal terms consistent with Indec's forecasts in 2005-06.

The data in Table 5.3 and Figure 5.1 also excludes any capital expenditure on dam safety upgrades during 2006-11, as the Ministerial Direction requires the Authority not to consider the recovery of these costs through prices. Moreover, during 2006-11, the Government (not customers) funded dam safety upgrades.

It is noted that dam safety upgrade expenditures generally relate to dam spillway upgrades and not expenditure on SunWater's Intersafe Program and Public Safety Strategy (discussed below), which are related to workplace health and safety (WHS) requirements and not funded by Government.

The Authority is currently awaiting a report from Indec which disaggregates and seeks to reconcile past forecast and actual renewals in further detail. The results of that analysis will be taken into account in the Final Report.

Figure 5.1: Forecast vs. Actual Direct Renewal Expenditure for 2006-11 (Real $)



Source: Actual expenditures provided by SunWater (2011k). Forecast expenditures provided by Indec (2011).

Total actual direct renewals expenditure over the period 2006-11 of $49.7 million exceeds total forecast direct renewals expenditure of $38.6 million by $11.1 million (28.7%).

The difference of $11.1 million is attributed by SunWater to the Intersafe Program, Public Safety Strategy and SunWater's fencing policy. The impact of recent floods will be considered after the Draft Report as SunWater has not yet provided this information as it awaits the resolution of insurance claims.

(a) Intersafe Program

SunWater's Intersafe Program (Intersafe) was intended to rectify extreme and high WHS risks in irrigation schemes across the State (SunWater, 2009). Intersafe has involved the supply and installation of 1,430 assets across SunWater's WSSs from 2008-09 to 2010-11.

As the Intersafe assets do not augment capacity and were commissioned and substantially completed by 30 June 2011, they have been treated as past renewals expenditure in the context of the 2012-17 price review.

Intersafe projects were not included in forecast renewals expenditure for 2006-11 price paths.

(i) Prudency[13] of Intersafe Expenditure

SunWater has advised that compliance with the *Workplace Health and Safety Act 1995* (WHS Act) is the driver of the Intersafe project. Under this Act, employers must ensure appropriate workplace health and safety. SunWater's obligations can be discharged through:

- compliance with a regulation or Ministerial notice prescribing a way to prevent or minimise exposure, or a code of practice stating a way to manage the risk[14]; or
- if there are no applicable regulations, Ministerial notices or codes of practice by taking reasonable precautions, and exercising proper diligence, to ensure the obligation is discharged (s. 27(2)).

SunWater (2011ae) has advised there are no applicable regulations, Ministerial notices or codes of practice that specify how irrigation water suppliers should discharge their obligations.

SunWater indicated that the program was first initiated in 2005, when it engaged Intersafe Group Pty Ltd (Intersafe Group) to undertake a pilot study for the Mareeba-Dimbulah WSS's works and operations to identify WHS risks associated with water distribution infrastructure. Intersafe Group identified 43 potentially damaging tasks, of which 27 were deemed to pose high risk of non-fatal permanent damage. Some high risk activities included pulling channel drop boards, operating slide gates, operating valves and lifting scour pit lids.

In 2006-07, an eight-year $0.8 million program was defined to address all identified high risks.

However, due to concerns raised by SunWater's Board of Directors that the proposed response was not sufficiently timely, SunWater resolved to:

- rectify high risk assets in the Mareeba-Dimbulah WSS within three years;
- undertake a sampling of other WSSs; and
- develop a strategy to identify and address risks in its other WSSs.

[13] The Authority considers expenditure to be prudent if it is required as a result of a legal obligation, new growth, renewals of existing infrastructure, or it achieves an increase in the reliability or quality of supply that is explicitly endorsed or desired by customers or external agencies. Capital expenditure is efficient if:

(a) the scope of the works, which reflects the general characteristics of the capital item, is the best means of achieving the desired outcomes having regard to the options available, including a more cost-effective solution having regard to a regional (whole of entity) perspective and the substitution possibilities between capex and opex;

(b) the standard of works conforms to technical, design and construction requirements in legislation, industry and other standards, codes and manuals. Compatibility with existing and adjacent infrastructure is relevant as is the consideration of modern engineering equivalents and technologies; and

(c) the cost of the defined scope and standard of works is consistent with conditions prevailing in the markets for engineering, equipment supply and construction.

[14] Regulations and Ministerial notices must be complied with (mandatory compliance). Codes of practice provide an optional way of addressing a risk but alternative approaches are allowable.

In February 2007, SunWater engaged Intersafe Group a second time to identify risks, consult with staff state-wide and verify findings with a detailed study in the Burdekin-Haughton Distribution System, focussing on the risks of fatal and non-fatal permanent damage. The study confirmed that the risks identified in the Mareeba-Dimbulah WSS existed throughout SunWater's portfolio and that the extent of rectification works was likely to be significant.

In July 2007, SunWater categorised risks according to how they could be addressed, including through corrective maintenance, specialist equipment, and procedural and work practice change. SunWater's Regional Managers were required to implement these actions.

SunWater then initiated a program for WSSs state-wide, aiming to reduce all extreme and high risks to medium risk or lower by:

- developing a standardised risk assessment template based on the SunWater risk assessment methodology AM20;
- training regional staff to undertake detailed risk assessments. Regional staff entered physical characteristics of assets and tasks into the template, which then scored the consequences of risks. Based on the probability of each risk occurring and its consequences, risks were scored as extreme, high, medium or low;
- developing standardised solutions and cost estimates to reduce risks;
- requiring regional staff to select solutions to reduce high and extreme risks; and
- establishing procurement contracts for standardised solutions.

In March 2009, SunWater's Board required these risks to be addressed by June 2011.

(ii) Efficiency of Intersafe Expenditure

SunWater (2011ae) advised that there were in excess of 1000 work sites at bulk and distribution schemes where Intersafe projects are being implemented, including: the installation of gates with walkways and handrails; walkways and/or handrails only; weed or safety screens with walkways and/or handrails; weed or safety screens only; ladders and/or stairs with handrails; and aluminium scour pit lids.

In response to submissions from customers that Intersafe included unnecessary channel fencing costs, SunWater has clarified that all channel fencing is part of SunWater's separate Public Safety Strategy (discussed further below) and not the Intersafe Program.

SunWater (2011ae) separated Intersafe projects into two types of procurement contracts:

- gated. To design, supply and install prefabricated modular gate assemblies (including walkways) to replace existing check and drop board type structures; and
- non-gated. To supply and install miscellaneous metalwork items, including stand-alone walkways, handrails, screens and pit covers (all designed to Australian Standards) for channel structures.

As the gated work required channel shutdowns and specialised expertise, it was released nationally as a publicly advertised open tender. SunWater engaged GHD to review the tender evaluation process, but not the individual tenders submitted, for the gated project.

GHD commented on aspects of the gated and non-gated tenders and on the ability of the project to be completed by the target date.

GHD (2009) stated that all the issues identified had been further developed with definite action and mitigation strategies, which are at various stages of completion. GHD stated that, with proper and timely implementation of these strategies, the completion of the project by the target date (June 2011) would be achievable.

In respect of the tender process followed, GHD noted that:

- SunWater received six tenders for the gated project. All tenders were comprehensively addressed by SunWater using a detailed assessment matrix, interviews and a risk assessment process to identify the best technical solution, proven reliability in service and, hence, the most value for money tender; and

- as a result of the above process, AMWA (a major Australasian suppliers of water control structures) was selected. The contract sum was approximately $8.9 million (including GST, overhead and indirect costs) with an allowance for variations. Post-variations, the revised estimated cost was $9.7 million (including GST, overhead and indirect costs).

So far as the non-gated projects are concerned, GHD was engaged prior to the non-gated projects being finalised, so GHD was unable to comment on the efficiency of the process involved. However, SunWater advised that, consistent with the Queensland Government's procurement policy, the work was put to tender state-wide and regionally, in relatively small parcels suitable for delivery by local companies.

Overall, the cost to reduce all extreme and high risks was estimated by SunWater to be approximately $14.4 million, including 20% contingency (Table 5.4). These costs included SunWater's overhead and indirect costs.

Table 5.4: Intersafe Cost[15] Estimates March 2009 (Nominal $)

Region	*Cost ($)*
Ayr	2,640,819
Bundaberg	756,596
Toowoomba	1,608,750
Mackay	362,389
Biloela	2,103,000
Mareeba	4,546,600
Subtotal	12,016,154
Plus contingency (20%)	2,403,631
Total	**14,421,784**

Source: Sun Water (2009).

SunWater has advised that unit rates for these estimates were developed using market rates from suppliers and SunWater's internal cost estimates.

(iii) Halcrow's Review of Intersafe's Prudency and Efficiency

Halcrow (2011) reviewed Intersafe for the Authority (on the basis of SunWater's February 2011 data) and found that:

- the expenditure was prudent on the basis that SunWater has a legal obligation to ensure the WHS of its employees;
- project costs represent market rates as SunWater went to market and is using contractors to deliver the project. However, as a full breakdown of the works has not been provided, a definitive assessment of efficiency has not been possible; and
- the project was expected to be completed on time and on (if not under) budget ($14.4 million).

In relation to (ii) above, Halcrow (2011) noted that, while detailed risk assessments had been undertaken, in many instances the asset description and its functional location were not identified, but that cost estimates were generally provided (but not in all instances).

SunWater (2011ae) provided further information on Intersafe projects to the Authority. Cost estimates including unit rates and photos of some works were forwarded to Halcrow with a request for further review. Halcrow (2011) advised that:

- it was not possible to correlate costs with the scope of the works using the photos provided; and
- the information provided allowed only a high-level assessment of unit costs.

[15] Includes overheads and indirect costs which are allocated by SunWater on the basis of its cost allocation methodology (discussed in Chapter 6 – Operating Costs).

However, Halcrow concluded again that, based on a high-level assessment, the costs appeared to be of the right order of magnitude, although a definitive assessment [of efficiency] was not possible given the information deficiencies.

(iv) SKM's Review of Intersafe's Prudency and Efficiency

SKM (2011) reviewed the procedures established by SunWater to manage different risks. SKM considered that SunWater's procedures are robust and hence will have lead to the development and implementation of efficient solutions.

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

Given that the risks have been identified through a two-part process – appointment of specialist consultants and through a formal internal mechanism as described above, SKM considered the timing of the works to be prudent. Given the nature of the risks, SKM considered it appropriate for SunWater to develop a program of works to implement the identified solutions as swiftly as reasonably possible.

Therefore, SKM consider both the works and the timing of the works to be prudent.

SKM noted that, given the unique nature of the program, it did not have access to similar programs conducted by other utilities which would allow direct comparison of costs incurred with a comparable project as a means for establishing their efficiency.

In the absence of benchmarking information, SKM reviewed the procurement process undertaken by SunWater in implementing the program of works. SKM noted that the majority of the works under this project had been implemented by contractors that had been selected through either an open invitation to tender process or through invitation to a number of selected contractors.

SunWater issued a state-wide tender as well as tenders in each of the following three regions: Bundaberg region, Mackay region and Ayr, Biloela, Mareeba region.

SKM noted a number of differences in the process and selection criteria used by SunWater in the different regions to assess the tenders. However, SKM considered that the individual contracting parties were been selected using a robust tender evaluation process that evaluated tendering parties against capability and value for money.

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

SKM concluded that SunWater's Intersafe program was prudent and efficient.

(v) Conclusions on Intersafe

On the matter of prudency, the Authority notes Halcrow's and SKM's conclusions and accepts that the Intersafe program expenditure is prudent.

As noted above SunWater's Board-approved budget for Intersafe was $14.4 million (including overhead, indirect and contingency costs/allowances). The Authority notes that the actual total expenditure on Intersafe:

- including overhead, indirect and contingency costs/allowances at 30 June 2011 for the whole of SunWater (2011ae) was $13.6 million (with $13.5 million spent in irrigation service contracts); and
- excluding overhead and indirect costs at 30 June 2011 for the whole of SunWater was $12.5 million (with $12.4 million spent in irrigation service contracts).

The Intersafe Program is practically complete but has not been closed out by SunWater for accounting purposes (expenditure for July and August 2011 was under $0.2 million).

SunWater has advised, however, that the final total spend on Intersafe will be under $14.4 million, that is, within the approved budget.

Accordingly, noting the competitive tender processes adopted by SunWater, the finding of the Authority's consultants and the final cost of delivery, the Authority accepts that the Intersafe program expenditure is efficient.

SunWater estimates that about $12.4 million (of the $13.6 million total expenditure) relates to direct Intersafe renewals expenditures spent in irrigation service contracts. Accordingly, deducting the final actual direct cost of the Intersafe program (that is $12.4 million) from the previously unexplained $11.1 million difference (above), the remaining unexplained difference is a $1.3 million underspend against forecast expected renewals and unexpected, but justifiable, expenditures on Intersafe .

(b) Public Safety Strategy

SunWater has identified potential risks to public safety from its ownership and control of lands and assets for the purpose of providing water infrastructure and supply services. In response, SunWater identified a number of key risk mitigation strategies for implementation that include signage, fencing, management of third party access through contracts and agreements, installation of storage marker buoy systems, and community education campaigns.

SunWater's Public Safety Strategy is an organisational commitment aimed at reducing the risk of injury or damages to people (or property) caused by access to or use of land controlled by SunWater and its water supply infrastructure and assets. SunWater has advised that compliance with the WHS Act is the driver of the Public Safety Strategy.

The objectives of the Public Safety Strategy are:

(i) to identify infrastructure and land assets that present risk, and restrict or limit access to the public;

(ii) to identify SunWater operations that present risk and implement safety measures;

(iii) to raise public awareness of water safety through signage and community education campaigns; and

(iv) to implement policies, standards and procedures that allows SunWater employees to proactively manage risks and hazards for public safety, in a safe environment.

The Public Safety Strategy has a framework that includes:

(i) Hazard Warning Signing Manual;

(ii) Fencing Policy;

(iii) Third Party Land Access and Use Policy;

(iv) Events and Functions on SunWater Land Policy;

(v) Flooding and Inundation of Public Roads Standard);

(vi) Storage Marker Buoy Policy;

(vii) Water Safety Communication Campaign; and

(viii) SunWater Incident Reporting.

During 2006-11, SunWater's total expenditure on Public Safety Strategy was approximately $1.19 million (2010-11 dollars) – not including expenditure on the SunWater's Fencing Policy (see below).

The above information was received in September 2011 with insufficient time for review for the Draft Report.

(c) Fencing Policy

SunWater has a fencing policy that provides guidelines for the use of fencing to prevent public access to SunWater's land and assets. Fencing for other purposes (such as security) is a separate matter. Due to the substantial size and linear configuration of SunWater's land holdings, it is not practical to fence all of SunWater's assets. Therefore, the policy allows a risk based approach when determining the requirement for fencing.

SunWater (2009) considers fencing will be installed where:

(i) an adjoining land owner requests SunWater to contribute to the construction of a dividing fence in accordance with the *Dividing Fences Act 1953*;

(ii) based upon a risk assessment, a risk to public safety has been identified that warrants fencing at a specific location or to surround specific infrastructure; and

(iii) fencing is required to prevent access to SunWater land by persons or livestock in which case the adjoining owner shall share fencing costs.

Generally, storages where recreation activities are permitted will not be fenced for public safety except in specific areas where there are specific hazards such as heights. Other risk mitigation strategies such as signage will be adopted in recreation areas.

This policy is to be fully implemented by 30 June 2012 with higher risk sites prioritised first (e.g. channel systems adjoining residential properties).

During 2006-11, SunWater's total expenditure on the Fencing Policy was $1.2 million (2010-11 dollars).

In the Authority's review of fencing renewals expenditure, the Authority has assumed that half of identified expenditure is funded by adjoining landholders, as per the *Dividing Fences Act 1953*. This approach is also consistent with SunWater's fencing policy as outlined above.

This adjustment was applied in seven schemes where fencing was sampled for review: St George Distribution System; Theodore Distribution System; Burdekin-Haughton

Distribution System; Mareeba-Dimbulah Distribution System; Eton Distribution System; Eton WSS and Callide Valley WSS.

The adjustments reflect the Authority's understanding of the requirements of the *Dividing Fences Act 1953*, but do not take into account the prudency and efficiency of SunWater's fencing policy as details were not available until September 2011. Accordingly, the relevant expenditure has not been reviewed within this broader framework for the Draft Report. Some adjustment to the Authority's findings may therefore be made in the Final Report.

(d) Flood Damage

SunWater advised the Authority that, during price negotiations in 2005-06, it was agreed with customers that forecast renewals expenditure would not make allowance for any potential flood damage that may occur in the 2006-11 period.

The Authority has yet to receive and consider submissions from SunWater regarding the impacts of the 2010-11 floods (including any related insurance revenues). SunWater (2011ao) has advised that it will submit renewals expenditure data relating to flood damage repairs, after the deadline for the Authority's Draft Report.

Conclusions

On the basis of the above analysis, expenditure on items forecast for 2006-11 totalled \$34.9 million (\$49.7 million actual expenditure less expenditure on Intersafe \$12.4 million, Public safety \$1.2 million and Fencing \$1.2 million). In other words, actual direct renewals expenditure for previously forecast individual projects was some 9.5% below forecast (that is, \$3.7 million below the \$38.6 million forecast).

The Authority also notes submissions from customers about renewals data inconsistencies in SunWater's Annual Reports. Specifically, the Authority notes discrepancies in annuity data presented in SunWater's Annual Reports for 2008-09 and 2009-10. An example is presented below in Table 5.5.

Table 5.5: SunWater Annual Report Discrepancies – Burdekin-Haughton WSS (Nominal $'000)

Item	*Annual Report 2008-09 Renewals All Sectors ($)*	*Annual Report 2009-10 Renewals Irrigation Sector Only ($)**
Annuity Collected	2,000	1,900
Renewals Spend	1,250	2,750
Renewals Annuity Balance	1,600	(500)

*Source: SunWater Annual Report 2008-09, SunWater Annual Report 2009-10 (*2008-09 renewals data).*

SunWater advises that the 2008-09 Annual Report renewals data is for all sectors, whereas the 2009-10 Annual Report renewals data is for the irrigation sector only. As irrigators are the target audience for renewals data, SunWater changed its approach to reflect irrigation only data.

Accordingly, the following observations apply for each respective row of Table 5.5:

(a) annuity collected. The \$2 million annuity collected as reported in 2008-09 was for all sectors, whereas the \$1.9 million reported in 2009-10 was for the irrigation sector only.

The latter figure is lower, but not substantially lower, because the Burdekin-Haughton WSS is predominantly an irrigation scheme;

(b) renewals spend. The $1.25 million spend as reported in 2008-09 was for all sectors, whereas the $2.75 million reported in 2009-10 was for the irrigation sector. Somewhat counter intuitively, this shows a significant increase in renewals spend despite accounting for the irrigation sector only.

SunWater has advised that the increase is due to the inclusion of $2.2 million of previously unquantified flood damage costs (all sectors) which, when added to the $1.25 million renewals reported in 2008-09 for all sectors, generates a total renewals of $3.45 million for the WSS. Of this, the irrigation share is $2.75 million, as reported in SunWater's Annual Report 2009-10[16]; and

(c) renewals annuity balances. The changes to the renewals annuity balance reflect the above adjustments.

<u>Prudency and Efficiency of Renewals Expenditure Items</u>

The Authority appointed four consultants to provide an assessment of past renewals (and other costs) taking into account:

(a) the classification of bulk and channel assets as approved by the Queensland Government;

(b) the condition of both bulk and distribution assets;

(c) SunWater's renewals methodology (including past renewals and rehabilitation expenditure and the basis for any associated variations as reflected in the renewals annuity account); and

(d) the appropriateness of renewals annuity balances through time.

The WSSs investigated by each of the Authority's consultants are in outlined in Table 5.6.

Table 5.6: Capex/Opex Consultants

Cluster	*WSS*	*Consultant*
South West	Cunnamulla, Maranoa River, St George, Chinchilla, Macintyre Brook, Upper Condamine	GHD
Central	Boyne River & Tarong, Upper Burnett, Barker Barambah, Lower Mary, Bundaberg	Aurecon
North	Nogoa Mackenzie, Lower Fitzroy, Dawson Valley, Callide Valley, Three Moon Creek	Halcrow
Far North	Eton, Pioneer, Bowen Broken, Proserpine, Burdekin-Haughton, Mareeba-Dimbulah	ARUP

As part of their process, the consultants:

(a) undertook desktop reviews on a range of information provided by SunWater in support of its NSPs and met with head-office staff to obtain more detailed information;

[16] The Authority has not included this unplanned renewals expenditure in its reconciliation of forecast and actual renewal expenditure during 2006-11. At the time of the issuance of the Draft Report, the Authority was awaiting confirmation that this amount has been recouped through insurance

(b) conducted site visits to meet with SunWater operational staff to inspect key elements of each scheme to gain an understanding of the nature and extent of the scheme including operational and maintenance activities;

(c) met with irrigator representatives; and

(d) undertook further reviews of a selection of renewals expenditures to determine the efficiency and prudency of this expenditure.

The consultants also requested from SunWater the previously forecast renewals expenditure by project (as prepared in 2005-06) prior to the 2006-11 price paths. However, as noted previously, SunWater was unable to provide these forecasts.

As a consequence, it was not possible for the above consultants to review in any detail actual renewals expenditure against previously forecast expenditure for the 2006-11 price paths. The nature of the difficulties experienced by the consultants is outlined in more detail in respect of the assessment of the forecast renewals expenditures further below.

SunWater was, however, able to provide details of actual renewals expenditure for all projects above $10,000 for the period 2006-07 to 15 February 2011. The consultants focussed on a sample of projects from this information and sought to understand reasons for variances between budgeted[17] and actual expenditure.

Aurecon (2011) expressed concern about the accuracy of the historical cost data, particularly 2006-07 and advised that it was difficult to make an assessment in the absence of extensive field investigations. Aurecon found that a number of activities did not have either a Board approved budget, or for those that did, exceeded it in some instances.

Aurecon found that that many proposed renewal projects were delayed by SunWater during the 2006-11 price paths, due to a combination of limited funding, emergence of higher priority renewal activities (unplanned), and reassessed effective working lives (for example, extended drought for several years reducing asset wear and tear, and therefore the need for renewal).

Halcrow (2011) also noted that a number of projects undertaken:

(a) were previously approved but significantly exceeded SunWater's renewals budget;

(b) were not approved but occurred anyway (unplanned); and

(c) were previously approved but did not occur (unimplemented).

To the extent that the four engineering consultants were able to review the past renewals expenditures, their findings are detailed in the scheme specific reports (Volume 2) and summarised in Appendix D. GHD reviewed more projects than other consultants but in less detail. The remaining consultants were only able to form opinions on about 15 small projects totalling $1.35 million (out of the $66 million over this period).

The Authority engaged Indec and SKM to provide further analysis as follows.

[17] Budgeted expenditure is approved 12 months prior to implementation, as distinct from forecast expenditure, which is prepared prior to a five-year price path. SunWater undertakes detailed planning of renewals expenditures 12 months prior to implementation and thus compiles budgets at that time for Board consideration.

(a) Indec

Upon receipt of advice from Indec that it had uncovered archived information relating to forecasts of renewals expenditure, the Authority requested Indec to identify material differences between forecast and actual individual renewals expenditure items over 2006 11.

Indec was unable to draw any firm conclusion due to the impact of changes in scope (from the original forecast item) and incorrect matching of renewals expenditure items due to changes in the names or descriptions of the items being compared.

Accordingly, the Authority has had to disregard Indec's analysis of this issue.

(b) SKM

Given the difficulties encountered by the Authority's four consultants with the lack of information available at the time of their reviews, the Authority liaised directly with SunWater to obtain further more detailed information, and commissioned SKM to analyse the more detailed information on a selection of material renewals expenditure items.

Sampling was necessary as SunWater manages about 50,000 assets relevant to irrigators. It is also worthy of noting that some of the assets were renewed during the 2006-11 price paths. Others are eligible for renewal over the 2012-17 regulatory period and, depending on their asset life, some are renewed several times during the Authority's recommended planning period (see below).

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

For SKM's analysis, the Authority defined material items as those renewals expenditures which accounted for more than 5% of the net present value of total scheme renewals costs (over the next 24 years).

The 5% materiality threshold has been used by the Authority as a measure of materiality in previous deliberations and reflects accounting considerations of materiality[18].

SKM was also commissioned to investigate other renewals expenditures identified by customers as being of specific concern. Some of these items were investigated even though they fell below the Authority's 5% materiality threshold.

On the basis of the above criteria, 16 past and 48 forecast renewals items were identified for review. However, only six past and 30 forecast renewals items were able to be reviewed due to timing constraints.

A consolidated list of all past (and future) items reviewed by all consultants forms Appendix D. A summary of findings and conclusions appears in Section 5.4 (see also Table 5.9).

Conclusion

The Authority proposes to accept the findings of the consultants on prudency and efficiency, with the exception of those of GHD. As indicated, GHD's analysis was too high level to be accepted.

[18] Australian Accounting Standard on Materiality (AASC 1031 Materiality)

Unbundling ARR Balances

For 2006-11, there was a single ARR (renewals fund) for each of the 22 WSSs.

In 14 of these, the ARR balance relates only to bulk costs (as these schemes do not contain distribution systems) and therefore the ARR balances for 2012-17 do not have to be unbundled.

However, in the other eight schemes with distribution systems drawing on separate bulk service contracts, the closing ARR balance for the 2006-11 price paths reflects the combined bulk and distribution system renewals cash flows. To create opening ARR balances for 2012-17, these eight WSSs needed to be unbundled into sixteen separate ARR balances, one for each service contract.

Stakeholder Submissions

SunWater

While SunWater had provided the details of actual unbundled renewals revenue and expenditure for 2006-11, it only had a bundled opening ARR balance as at the beginning of the 2006-11 price paths. Therefore, to establish an unbundled ARR balance as at the end of 2011 for schemes with distribution systems, SunWater first needed to unbundle the 2006-07 opening ARR balances for eight schemes (into sixteen ARR balances).

In the absence of a better approach, for the eight bundled schemes, SunWater apportioned the opening 2006-07 ARR balance between bulk and distribution assets on the basis of the NPV of bulk and distribution renewals expenditure incurred during the 2006-11 price paths and forecast to be incurred from 2010-11 to 2034-35 for each of the 16 service contracts.

Prior to adopting this approach, SunWater contemplated using only actual renewals expenditure for bulk and distribution schemes for 2006-11 (five years of historical data only). However, SunWater noted that, due to the long-lived nature of many renewals assets and to the lumpy nature of renewal expenditure in general, a five-year period (2006-11) was simply too short to generate cost reflective unbundled opening ARR balances.

The opening ARR balances for the unbundled bulk and distribution service contracts proposed by SunWater for 2006-11, based on the above methodology, are presented in Table 5.7 (irrigation only).

Table 5.7: SunWater's Unbundled Opening ARR Balances for 2006-11 (Nominal $)

Scheme	*Bulk WSS*	*Distribution System*
Bundaberg	120,000	427,000
Burdekin-Haughton	(302,000)	(883,000)
Dawson Valley	1,086,000	1,834,000
Eton	(85,000)	(103,000)
Lower Mary	(85,000)	(888,000)
Mareeba-Dimbulah	214,000	2,674,000
Nogoa-Mackenzie	242,000	238,000
St George	837,000	457,000

Source: SunWater (2011c).

These estimates include the overhead and indirect costs allocated to the direct cost of renewals items using SunWater's proposed cost allocation methodologies discussed in a subsequent chapter.

Other Stakeholders

Cotton Australia/QFF (2011a) submitted that the methodology adopted by SunWater to allocate the ARR balances between bulk and distribution assets was deficient because SunWater did not base the allocation on actual renewals revenue collected and actual renewals expenditure incurred over time.

Cotton Australia/QFF (2011a) also submitted that the differentiation between bulk and distribution assets should have been a straightforward accounting exercise based on historic and forecast renewals expenditure. SunWater's position that insufficient data was available raises concerns regarding accountability and transparency.

CANEGROWERS (2011a) submitted that:

(a) the methodology adopted to establish the opening balances was deficient given the relationship between renewals expenditure incurred from 2000-06 and from 2007-35 may not be that strong; and

(b) renewals expenditure appears to be variable for some schemes and historic and future renewals expenditure may be very different between bulk and distribution for some schemes. Accordingly, an investigation into the historic renewals expenditure in each of the eight channel schemes should take place to establish appropriate ARR balances. However, in the absence of this investigation, it may be more appropriate to balance the price impacts through agreement between bulk and distribution customers as to what constitutes efficient renewals expenditure.

Authority's Analysis

Methodology

The Authority shares customers' concerns that the methodology adopted by SunWater to unbundle the ARR balances of the eight bundled WSSs is not based on historic renewals expenditure and revenue.

This has been acknowledged by SunWater in its submissions in which SunWater notes that the unbundled 2001-06 data upon which to base its 2006-11 opening ARR balances is not available.

The Authority agrees with SunWater that, due to the typically lumpy nature of renewals capital expenditure and the long-lived assets involved, the five-year period 2006-11 is an insufficient period upon which to establish the opening 2006-11 ARR balances.

The Authority therefore accepts SunWater's recourse to the present value of 24 years of forecast renewals expenditure, combined with the present value of actual expenditure data available for 2006-11.

The Authority is mindful of the potential adverse impacts of adopting 'second best' solutions to address data shortcomings.

In October 2011, Indec advised that it had uncovered actual renewals expenditure for some years between 1999-00 and 2005-06. The Authority has not been able to review this information or quality assure it for the purposes of the Draft Report, but intends to do so for the Final Report.

Recommendation:

The Authority recommends that SunWater's general methodology for calculating opening ARR balances for 2006-11 for the 16 distribution schemes be accepted.

SunWater's Subjective Adjustments

In creating its opening ARR balances for 2006-11, SunWater sought to identify if any of the unbundled balances appeared to be inappropriate. SunWater identified two such WSSs.

For these WSSs, SunWater proposed to subjectively adjust the ARR balances for:

(a) Mareeba-Dimbulah WSS by $100,000; and

(b) Dawson Valley WSS by $800,000.

Both adjustments allocated this amount from the distribution system to the bulk service contract on the basis that not to do so would result in excess accrued funds in the distribution system ARR.

Indec (2011c) considered that the adjustments should be rejected on the grounds that they were not consistent with the general methodology and introduced an unacceptable degree of subjectivity.

The Authority notes that SunWater has sought to transfer funds not required for foreseeable future renewals expenditures in distribution systems to bulk schemes. The Authority considers that such a transfer is inappropriate. Rather, such surplus funds should be returned to the contributing customers unless they wish to maintain those funds in the ARR for future contingencies.

Recommendation:

The Authority recommends that SunWater's judgement-based adjustments to individual WSS's unbundled ARR balances not be accepted.

Closing Balances

SunWater established closing balances for the 2006-11 price paths and rolled these forward to opening ARR balances for 2012-17 by:

(a) adopting the opening balance derived (or accepted for the 14 bulk only WSSs) at the start of 2006-11 for each of the 30 schemes;

(b) adding 2006-11 renewals annuity revenue;

(c) subtracting 2006-11 renewals expenditure; and

(d) adjusting for interest over the period.

To establish closing ARR balances as at 30 June 2012, the Authority:

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

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

(c) adjusted for interest over the year.

At the time of preparing this Draft Report, in the absence of actual data for 2011-12, the Authority used SunWater's forecast data in relation to (a) and (b) above and made adjustments in accordance with the Authority's finding relating to allowable (prudent and efficient) costs.

The opening ARR balances include all overhead and indirect costs and relate to irrigation only. The Authority's estimates reflect the Authority's cost allocation method (see next chapter).

The resulting closing ARR balances for 30 June 2011 become, without adjustment, the opening ARR balances for 1 July 2011.

Based on the Authority's assessment of the prudency and efficiency of past renewals expenditure and costs savings applied to non-sampled projects (see below), and the proposed methodology for unbundling ARR balances, the Authority's recommended opening ARR balances for each of thirty service contracts for 2012-17 are as summarised in Table 5.8.

Table 5.8: Opening ARR Balances for 2012-17 (Nominal $'000)

Water Supply Schemes	*SunWater 2012-13*	*Authority 2012-13*
Barker-Barambah	(1,226)	(1,326)
Bowen Broken Rivers	(1,936)	(2,047)
Boyne River and Tarong	1,084	1,088
Bundaberg (bulk)	(1,686)	(1,505)
Bundaberg (distribution)	2,463	2,255
Burdekin-Haughton (bulk)	972	2,047
Burdekin-Haughton (distribution)	(3,733)	(2,483)
Callide Valley	(383)	(203)
Chinchilla Weir	77	107
Cunnamulla	(42)	(17)
Dawson Valley (bulk)	1,712	3,228
Theodore (distribution)	2,415	1,024
Eton (bulk)	(1,399)	(1,342)
Eton (distribution)	(223)	(80)
Lower Fitzroy	18	(14)
Lower Mary (bulk)	104	174
Lower Mary (distribution)	(1,376)	(1,178)
Macintyre Brook	(1,953)	(1,716)
Maranoa River	(23)	(5)
Mareeba Dimbulah (bulk)	1,333	1,668
Mareeba Dimbulah (distribution)	1,113	(463)
Nogoa-Mackenzie (bulk)	(1,732)	(1,279)
Emerald (distribution)	592	58
Pioneer River	(5,139)	1,509
Proserpine River	17	84
St George (bulk)	(489)	343
St George (distribution)	(2,106)	(1,308)
Three Moon Creek	(313)	(270)
Upper Burnett	385	163
Upper Condamine	(1,049)	(1,170)

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

Recommendation:

The Authority recommends opening ARR balances as presented in Table 5.8.

Discount Rate

SunWater has proposed to apply an interest rate equivalent to its real WACC for calculating the annuity and an equivalent nominal WACC rate to apply to positive and negative ARR balances.

Ernst and Young (1997) concluded that, for those water businesses which manage the ARR internally [as is the case for SunWater], their WACC should be used as the discount/interest rate for the application of interest to both positive and negative ARR balances.

Adopting this approach as part of its pricing determination in 2000-01 and in 2004-05, IPART (2006) required State Water to maintain a renewals annuity program which included the application of a State Water WACC (a 7% discount rate in real terms) to all renewals annuity calculations [including positive and negative renewals fund balances].

In Victoria, SRW (2007b) applied different rates depending on whether the ARR balances were in deficit or surplus. Also in Victoria, GMW applied a 4.0% real discount rate to calculate the renewals annuity; whereas, the cash rate was applied to balances of the renewals fund (GMW, 2010).

BRIG (2010a) submitted that SunWater should not apply a WACC as SunWater should not be seeking a commercial rate of return. BRIG also submitted that a more appropriate rate would be the Queensland Treasury Corporation's (QTC's) lending rate.

The Authority considers that the discount/interest rate applied in calculating the renewals annuity (including the interest rate applied to both positive and negative ARR balances) should reflect the service provider's opportunity cost of funds.

On this basis, the Authority supports SunWater's proposed approach in principle, noting that it accords with Ernst and Young's findings, and therefore SCARM's endorsed view. However, the Authority has recommended a different WACC for SunWater than that proposed by SunWater (see Appendix 1).

5.3 Forecast Renewals Expenditure

Asset Management Planning Methodology

Stakeholder Submissions

SunWater

SunWater (2010f) has advised that its renewals program has been developed in accordance with its Asset Management Planning Methodology under which it:

(a) replaces assets as required to maintain overall system service standards;

(b) refurbishes assets throughout their service lives as necessary to maintain service potential; and

(c) services, monitors and maintains the ongoing operational performance and service capability of assets as close as possible to the design standard.

The type, extent and timing of asset renewal are established by:

(a) determining standard subclasses of assets which have common characteristics as a basis for specific maintenance requirements;

(b) determining the run-to-failure asset life by asset subclasses for typical conditions (assuming a 50% probability that a particular asset will fail prior to reaching standard life);

(c) establishing standard asset condition decay curves based on age, time in operation and number of loading cycles;

(d) establishing failure probability distributions for assets that reflect the relationship between asset life and asset condition;

(e) considering asset failure risk appetite (for example, where the consequences of asset failure are high risk or SunWater would not be able to meet service standards, then asset replacement or repair is prioritised);

(f) combining the standard asset decay curve, standard (low risk) asset life and risk policies (as outlined above) to determine a standard replacement life for each object type; and

(g) determining maintenance regime/refurbishment timing based on available maintenance histories and the engineering and technical expertise of SunWater.

SunWater's Methodology for Assessments of Infrastructure Assets (2008b) outlines the methodology for undertaking risk assessments on assets, which are then used to prioritise renewals expenditure through categorising assets into maintenance types. Asset risk assessment is based on an understanding of the risk of an asset failing to fulfil its defined functional requirements and the consequences of that failure.

SunWater's Asset Condition Assessment Users' Manual (2010h) provides guidance on undertaking condition assessments on mechanical, electrical, civil and headworks assets. Condition ratings range from 1 to 6, with 1 being 'as new' and 6 being 'failed'. SunWater uses condition assessments to determine and adjust the frequency of renewals expenditure.

SunWater's Systems, Applications and Products (SAP) Works Management System (WMS) (2010i) is used to capture asset risk and condition assessments and to schedule renewals expenditure for each asset. Data pertaining to specific renewals costs are also identified in SAP-WMS.

SunWater's Asset Condition Assessment Users' Manual (2010g) notes that knowledge of SunWater's assets, acquired through condition monitoring, condition assessment and risk assessment, is important in prioritising renewals expenditure.

Renewals expenditure forecasts (as outlined in the NSPs) are, in general, generated from SAP-WMS. However, they may also result from studies carried out by SunWater (or its consultants) on ways to improve operations and to ensure compliance with legislative requirements.

Where renewals expenditure exceeds $50,000 (per item) and this expenditure is scheduled to occur within the next 12 months, SunWater undertakes more extensive cost appraisals.

Where renewals expenditure is less than $50,000 (per item), or scheduled to occur beyond the next 12 months, SunWater does not undertake detailed assessments. For renewals expenditure scheduled for beyond the next 12 months, forecast expenditure is based on replacement values, derived using a bill of materials and unit rates for each asset class.

Other Stakeholders

CANEGROWERS (2011a) submitted that:

(a) SunWater's approach, which bases renewals expenditure on the assumed life span of assets with costs determined by full replacement or refurbishment cost, is not realistic. Renewals expenditure should match current best practice not theoretical asset lives;

(b) all of SunWater's proposed renewals expenditure requires review rather than assuming expenditure beyond the five-year regulatory period is prudent and efficient;

(c) SunWater's definition of renewals expenditure should be extended to include all costs (operating and capital expenditure) associated with operating and maintaining a scheme;

(d) a locally managed or more commercially focused scheme would only renew infrastructure if they had no choice or if the benefits outweighed the costs and it would appear this approach is not being undertaken by SunWater; and

(e) any items which are likely to occur should be included in annuity calculations as opposed to SunWater's current approach which includes all items including those that may not occur. SunWater appears to have included items that are unlikely to occur but have been included in the event they are ultimately required.

QFF (2010a) submitted that expenditure associated with regulatory requirements (such as ROPS and WHS) should be treated as renewals expenditure as opposed to new investments.

Other Jurisdictions

New South Wales

In NSW, State Water adopts a risk-based approach to forecasting asset renewals expenditure, that is, it estimates the level of risk (likely need for replacement) and specifies acceptable asset condition depending on estimated asset life.

State Water has scheme specific:

(a) Total Asset Management Plans (TAMPs) which are reviewed every four years and provide for high-level asset management planning and budgeting; and

(b) Asset Plans, prepared on an annual basis, that scope and seek budgetary approval for proposed capital and operating expenditure to deliver on its Service Level Agreements (A. Langdon, pers. comms. March 8, 2011).

Victoria

In Victoria, both GMW and SRW apply the asset planning methodology, Assetlife, when considering the timing and extent of future capital expenditure (*P. Byrnes, pers. comms. 29 November, 2010; G. Coburn, pers. comms. December 3, 2010*).

Assetlife categorises all assets, establishes typical expected lives for these asset categories and derives asset condition ratings. The frequency of asset refurbishment and preventive maintenance actions is determined based on these condition ratings. To calculate renewals annuities, forecast expenditures are derived and included in a pricing model.

Authority's Analysis

Consultants' Review

To establish the appropriateness of SunWater's approach to asset management, the Authority requested the views of its consultants (the five consultants reviewing the various schemes).

SKM noted that SunWater is required to replace and or refurbish [50,000] assets and adopts a portfolio approach to determining the overall expenditure required. SKM considered that it is not possible for SunWater to predict with a 100% accuracy which assets will actually require refurbishment and/or replacement during the annuity period or when and at what cost.

The portfolio approach assumes that, by viewing the required investment as a whole, renewals expenditure on unplanned items will offset expenditure provided for planned items that are ultimately not required.

SKM noted that this portfolio approach does not lend itself well to regulatory review of submitted renewals items on the grounds of prudency or efficiency. SKM considered it impractical on both a cost and timing basis to review a sufficiently large sample size to effectively review SunWater's entire renewals portfolio.

Aurecon (2011) considered the following features of SunWater's asset management planning methodology to be positive:

(a) need identification: inspection reports and/or condition reports highlighting the need for either refurbishment or replacement;

(b) examination of the options: usually an external expert engineering report is commissioned to substantiate the need for work, review alternative options available for refurbishment or replacement, and identify the optimum outcome that meets current and future service requirements at least cost;

(c) internal review and approval process: includes assessment of the external expert report and findings, and developing in-house the planning, budgeting (invitation of quotes from contractors where possible), programming, developing a works program that defines project timeframes, and identifying the project/activity specifications (and preliminary design drawings where appropriate);

(d) a public tendering process for major cost activities: seeking private contractor interest in undertaking the activity as specified, and selecting the winning bid;

(e) appointment of the successful tender and engagement of activity works: for most activities SunWater appoint a staff member to project manage and supervise; and

(f) project closure: SunWater undertake a final inspection review and report, make final payment provided the works satisfies the works order, closing of the project within the internal management systems, and updating the SAP records.

Aurecon (2011) also noted that field investigations highlighted that SunWater employed an extensive program of regular inspections and audits for condition assessments that were effectively captured and recorded within the SAP management system.

GHD (2011) noted that:

(a) the policy and procedures documents provided a very good level of understanding in relation to how SunWater used an asset management approach to predict asset renewals, refurbishment works, condition appraisal processes, and risk assessment in a whole-of-life approach to manage the infrastructure and headworks. The documentation adequately provided SunWater staff with information on how the system was to be used and was well understood and practiced by the SunWater staff members who were interviewed;

(b) the documented methodologies were being applied in the preparation of the renewals and refurbishment programs. The delivery of the program of works now follows a defined and robust project management process and projects are procured in accordance with the published procurement guidelines and delegation authorities; and

(c) the process recognises the impact of each asset on SunWater's business continuity capability and related asset reliability to the target standards of services. Using risk to make decisions about when to replace assets is a practical way of ensuring that early failures on high risk assets do not impact on the capacity of the organisation to meet its service obligations.

In respect to (b), however, Halcrow (2011) found in the schemes that it reviewed that the ongoing condition assessment is not always undertaken by SunWater in accordance with its procedural timelines. SKM (2011) also noted that the condition assessments provided by SunWater or a number of assets was out of date. SKM further noted that small changes in SunWater's condition assessment score can have significant impacts on its renewals program and recommended that, for major assets, a condition assessment is performed within five years [rather than 10 years] of the development of a renewals submission.

Aurecon (2011) also noted that:

(a) the renewals projects evaluated tended only to include complex projects, such as those requiring replacement in which a number of alternative options existed; and

(b) unplanned renewal activities, for example, pump motor breakdown requiring immediate attention, were unlikely to instigate a review/options study nor were major renewal activities that are straightforward in the sense that renewal action was required and only one course of action was available (for example, skin rock protection at Tinana Barrage and roof replacement at Monduran Pump house).

All consultants reviewing particular schemes were able to confirm that, in general, SunWater's process for forecasting renewals expenditure, that is, identification of the need for expenditure through condition assessments, timing, scoping and tendering for the engagement of contractors, represents a structured and efficient process.

SKM reviewed SunWater's process for determining the timing of renewals, which includes separate assessments of business risk, WHS risk and asset condition. In general, SKM found SunWater's approach to be in keeping with good industry practice.

Nevertheless, SKM identified the following particular concerns and suggestions:

(a) using an age-based criterion may bias asset replacement to earlier than required;

(b) SunWater's asset condition assessments are used to adjust the date of asset replacement or refurbishment, according to a standardised asset condition decay curve. SKM recommends that SunWater instead adopts decay curves for different asset types;

(c) SunWater should adopt condition assessment methods that extend beyond visual/operational based inspections such as insulation breakdown tests and earth impedance tests for electrical cable assets;

(d) SunWater's procedures are well defined for instances where an asset should be replaced before its standard run to failure asset life. However, SKM considered that the processes and procedures are less well-defined for assets that are in-service beyond their nominal operational life or projected to be capable of operating beyond their standard run to failure service life. SKM recommended that SunWater further develop its processes for evaluating life extension;

(e) the completion of the condition reports and subsequent transfer of that data into SunWater's WMS is of variable quality and on occasions ambiguous. SKM considered that there would be merit in SunWater developing and implementing a data and data entry validation process and formalising the recording of condition and risk scores;

(f) for renewals occurring beyond five years from the planning date, SunWater adopts a valuation based on a Bill of Materials (BOM). The BOM was developed from built drawings and includes a value for each component of the expected renewals (such as concrete, cabling, etc) based on 1997 valuations. SunWater has escalated the 1997 value using multipliers provided in advice from Cardno in 2008. These multipliers vary for different components.

SKM considered that SunWater's overall approach to long-term renewals based on a BOM, given the large portfolio of assets, is appropriate. However, SKM noted the following concerns:

(i) the Cardno escalation rates, when compared to publically available data appear to be generally overstated;

(ii) SunWater's use of a 'like for like' replacement results in an overestimation of replacement costs for those asset types where technological advancement has reduced costs. This includes control equipment, telecommunications equipment and irrigation channel lining.

SKM considered that there is merit in SunWater identifying where technical advances make a 'like for like' replacement assumption inappropriate at the commencement of the development of NSPs and substituting the modern equivalent component and its cost for the existing asset in the planned replacement;

(g) the indirect cost uplift factor used by SunWater to add indirect costs to the total direct cost typically ranges from 30% to 50%. While SKM did not review this uplift factor in detail, SKM noted an Arthur Andersen report that suggested these uplift factors were appropriate; and

(h) detailed planning is generally undertaken only when proposed project falls within the next 12-month work plan (all consultants).

Halcrow (2011) noted that industry benchmarks, standards and practices in other jurisdictions suggest that a higher degree of forward planning for capital (including renewals) expenditure is generally undertaken. Halcrow observed that, in NSW and Victoria, water utilities are typically required to include detailed options analysis of renewals expenditures at least three to four years in advance depending on the value of the projects.

In particular, Halcrow reported that two utilities it is aware of undertake detailed State of the Asset reviews on an annual basis. Halcrow noted that, while details are confidential, in general the annual reviews involve an assessment of assets in the context of longer term planning.

Halcrow also noted that SunWater's current approach to forecasting renewals assumes like for like (rather than modern equivalent) replacement and does not allow for any high-level checking of outputs from the planning process (for projects beyond 12 months). Halcrow agreed that it is not appropriate to undertake detailed planning of a project that is not scheduled for implementation for another 20+ years. However, given the impact they can have on the renewals annuity, Halcrow considered that it would be reasonable for SunWater to undertake a high-level assessment of significant projects throughout the planning period.

ARUP (2011) considered that, in some instances, there may be potential for over-estimation of future renewals costs using the automated approach SunWater currently uses to identify and estimate costs for works as part of the renewals program, specifically multiple works at the same site where economies of scale could be achieved. At the same time, ARUP noted that the costs of doing [more detailed] work would not be small and the accuracy somewhat limited given the rate at which technological advances are being made.

Halcrow recommended that:

(a) the appropriate threshold for detailed options analysis (up to five years) be projects [items] expected to cost more than $100,000 each and that a record in SAP be made to this effect; and

(b) SunWater undertake high-level assessments of significant projects [items] occurring throughout the planning period.

Halcrow noted that SunWater had indicated its intention to increase the forecast renewals planning period from 12 months to cover the price path (that is, four to five years).

Conclusions

While the Authority's consultants have commented favourably on the general approach adopted, many areas have been identified which warrant consideration. These include, but are not limited to:

(a) a review of SunWater's use of asset age as in input into condition assessment;

(b) improvements to the processes for planning for asset life extensions beyond an asset's run to failure asset life;

(c) the use of modern equivalent assets rather than assuming like for like replacement;

(d) the adoption decay curves for different asset types rather than using a standard decay curve;

(e) adopting condition assessment methods that extend beyond visual/operational based inspections, such as insulation breakdown tests and earth impedance tests for electrical cable assets;

(f) formalising the transfer of information from its condition assessments into its WMS, including data and data entry validation; and

(g) reviewing the escalation rates used to estimate renewals costs from the BOM.

Further, as noted by CANEGROWERS, the relationship between renewals expenditure and operating costs (including preventive and corrective maintenance) needs to be taken into account as any level of renewals expenditure could correspond with a reduction in required operating expenditure. Conversely, ongoing maintenance could delay scheduled renewals expenditure.

The Authority notes SunWater's advice that the impacts and trade-offs between proposed renewals and operating expenditures are (at least to some extent) taken into account by SunWater when forecasting renewals (or operating) expenditures.

The extent to which the assessment of trade-offs occurs increases as an item approaches renewal or replacement. In this regard, the Authority notes SunWater's submission that some forecast renewals expenditures (particularly within the 12-month period) result from studies that consider operational efficiencies.

The Authority considers that, when forecasting renewals expenditures, SunWater should undertake high-level options analysis on material renewals expenditures expected to occur throughout the recommended planning period due to the potential magnitude of the impact of such expenditures on prices.

In the context of forecasting renewals expenditure over the Authority's recommended planning period, the Authority considers the expenditure to be material when its forecast cost exceeds 10% (the upper limit of most definitions of materiality) of the total forecast renewals expenditure for that period, for each service contract, in present value terms. This ensures that projects which can be expected to have a material impact on a scheme, irrespective of the size of the scheme or the year in which the item occurs, are assessed.

The Authority considered adopting its more typical 5% materiality test for this purpose. However, SunWater and some customer representatives consider that the costs of a more comprehensive assessment are likely to outweigh the benefits.

The Authority further considers that, when forecasting renewals expenditures, SunWater should undertake more detailed options analysis for all material items in accordance with the consultation and reporting arrangements recommended further below. Such analysis should include (but not be limited to) consideration of the impacts (including trade-offs) of renewals project options on operating expenditures and as noted further below, customer considerations.

In the context of forecasting renewals expenditure over the next five-year regulatory period, the Authority considers the expenditure to be material when its forecast cost exceeds 10% of the total forecast renewals expenditure for that period, for each service contract, in present value terms.

Recommendation:

The Authority recommends that, in forecasting renewals expenditure, SunWater undertake:

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

(b) detailed options analysis (which also take into account trade-offs and impacts on operational expenditures) for all material renewals expenditures expected to occur within the subsequent five-year regulatory period, with a material renewal expenditure being defined as one which accounts for 10% or more in present value terms of total forecast renewals expenditure over that period; and

(c) a review of its renewals planning process to adopt the Authority's consultants' suggested improvements.

Planning Period

To calculate a renewals annuity, it is necessary to determine the length of the planning period, that is, the period from which forecast renewals expenditures are to be drawn into the calculation of a renewals annuity.

In setting the 2006-11 price paths, SunWater and its customers agreed to adopt a 30-year planning period.

Stakeholder Submissions

SunWater

SunWater (2011c) proposes to calculate the renewals annuity using a 20-year term based on 24 years of forecast renewals expenditure (the additional four years being required under the proposed annual rolling methodology).

SunWater (2010h) submitted the following rationale for adopting a 20-year term:

(a) to minimise uncertainties associated with estimating expenditures over longer periods;

(b) although significant expenditure may be required after 20 years (but before 30 years), there is a high degree of uncertainty as to the precise need for and timing of this expenditure; and

(c) a 20-year time period is consistent with the planning horizon adopted by the Authority for price setting for GAWB.

Other Stakeholders

CANEGROWERS (2011a) submitted that:

(a) SunWater appears to have condensed renewals expenditure over a shorter period from 30 years to 20 years. CANEGROWERS consider that the combined impact of condensing renewals expenditure and having renewals expenditure in the earlier years will increase the renewals annuity;

(b) SunWater appears to be adopting a risk-averse approach and included items within the 25 [24] year period that may never occur. CANEGROWERS consider a more commercial and cost-sensitive business would defer some items out further than 25 [24] years;

(c) all speculative spending towards the end of the 25 [24] year renewals period should be removed and only items that are likely to occur should be included; and

(d) SunWater is not maintaining assets in perpetuity. Therefore, a 10-year fixed annuity reviewed every five years would make more sense with greater detail on proposed renewals expenditure provided.

CANEGROWERS (2011a) also questioned why a 20-year rolling annuity has been adopted by SunWater given there is so much uncertainty regarding future expenditure and SunWater has provided no real detail on this expenditure.

MDIAC (2011) submitted that the annuity period should be 20 years, as forecasting costs beyond this will result in implausible costing.

MSF (2010) submitted that, although extensive financial modelling and analysis has been undertaken by SunWater to determine the least cost strategy for managing the asset over the asset's life, there is a need to also incorporate evaluation of the economic and/or financial merits of such expenditure from a customer perspective.

Other Jurisdictions

The SCARM Guidelines consider that periods such as five to 10 years tend to lead to volatile pricing/renewals annuities. In addition, they conclude that accuracy is compromised if forecasting renewals expenditures is extended beyond 30 years.

However, the SCARM Guidelines noted a number of cases where significant refurbishment past 30 years can occur. In such cases, the planning period should be longer than 30 years (up to 100 years).

<u>Victoria</u>

In relation to GMW (Frontier Economics, 2005), before 2006, GMW calculated a renewals annuity for bulk assets over a 100-year period, while for distribution assets the period varied from between 20 to 100 years.

Subsequently, GMW commissioned Frontier Economics (in 2004) to undertake a review of the appropriateness of the existing annuity approach. Frontier Economics (2005) made recommendations for change and, on that basis, from 2006-07 GMW ceased applying a renewals approach and instead introduced a RAB based approach.

In 2001-02, SRW (2007b) reduced the renewals planning period associated with distribution assets from 100 years to 40 years to provide a balance between price stability and inter-generational equity. Given that the expenditure profile associated with headworks tends to be more variable, a 90-year period was adopted by SRW to buffer customers from the pricing impacts of large individual projects.

<u>New South Wales</u>

IPART (2004) required State Water to calculate renewals annuities over a 30 year period with the main reasons cited being that it:

(a) allowed the cost of lumpy capital expenditure to be spread over a number of years to minimise the impacts in a particular period; and

(b) helped to ensure sufficient funds were available to meet the refurbishment requirements of the assets over their lifetime.

Since, IPART has also ceased to apply a renewals annuity approach and, as a consequence, from 2006, State Water also adopted a RAB approach.

Authority's Analysis

The Authority has been directed to adopt a renewals approach, which intrinsically incorporates proposed future capital expenditure. However, the Government has not provided guidance on the appropriate length of planning period.

A forward-looking approach conforms to general pricing principles. For example, the Authority (2000) previously noted that prices should:

(a) be cost-reflective in that they should reflect the costs of providing the service;

(b) be forward looking in that they represent the least cost which would be incurred in providing the requisite level of service over the relevant period; and

(c) promote sustainable investment.

According to the SCARM Guidelines, a typical renewals annuity should include all works required to sustain existing infrastructure services, maintaining their current service potential in accordance with the requirements of customers.

Several factors are relevant to determining the appropriate length of the planning period.

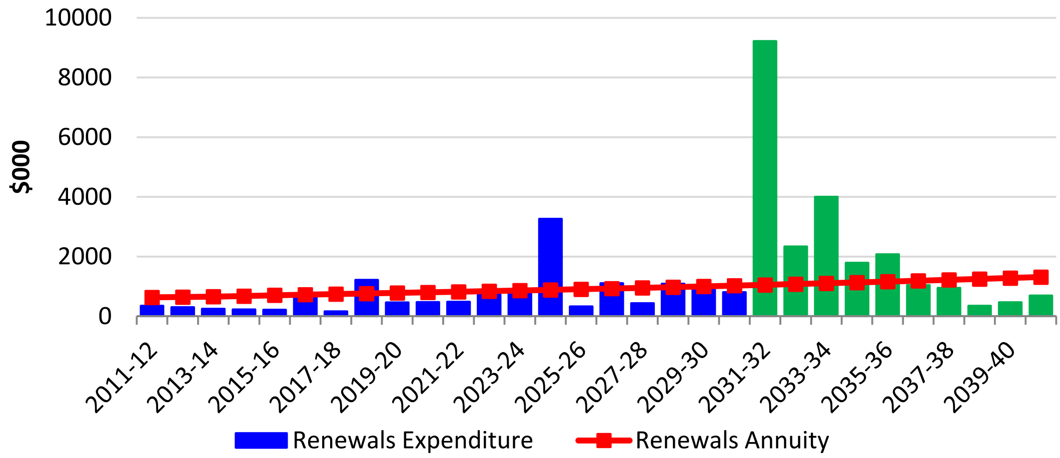
<u>Price (Renewals Annuity) Volatility</u>

Figure 5.2 and Figure 5.3 below outline how a 30-year renewals annuity tends to smooth the effects of lumpy capital expenditure over a particular planning period.

In addition, Figure 5.2 and Figure 5.3 demonstrate the extent of potential capital expenditure from Year 20 (for these two schemes at least – noting that SunWater submitted that in general this is the pattern across all schemes).

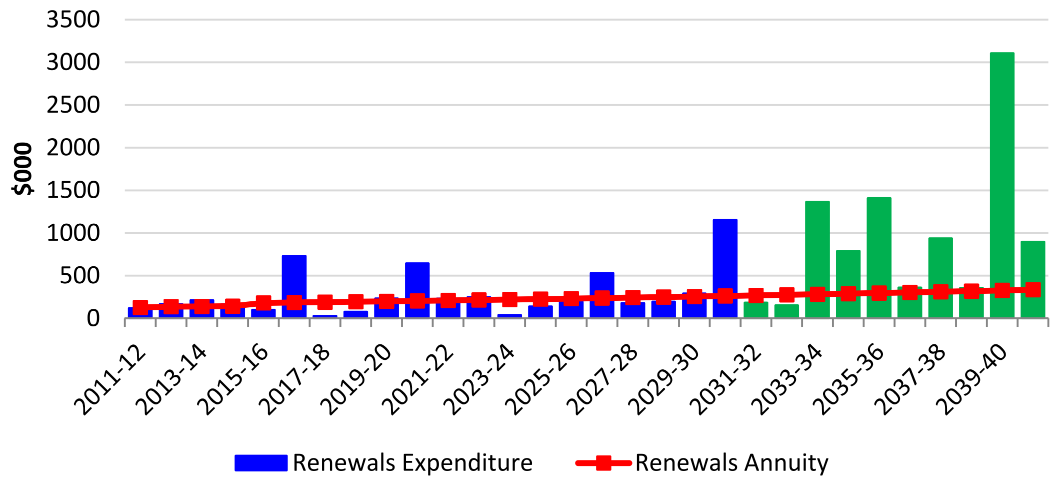
SunWater (2010h) consider that lumpy capital expenditure is typical of such irrigation assets.

Figure 5.2: Emerald Distribution System Renewals Expenditure (Nominal $)



Source: QCA (2011).

Figure 5.3: Dawson Valley WSS Renewals Expenditure (Nominal $)



Source: QCA (2011).

Price smoothing is a fundamental benefit of adopting a renewals annuity approach to asset funding. The SCARM Guidelines indicate that the choice of the planning period should be such that it secures a reasonably stable level of renewals annuity revenue over time.

Price volatility can and does increase where renewals expenditures are lumpy and a relatively short planning period (relative to asset life) is adopted. For example, while many smaller water assets have lives of five to 20 years (pump-motors, switch boards), the majority of large or lumpy capital expenditure relates to assets with long lives (typically 30 to 100 years for concrete channel linings, pipes, and storages). The Authority notes, therefore, that there would be diminished price volatility associated with a 20-year planning period and even more so with a 30-year planning period or greater.

In response to CANEGROWER's preference for a 10-year fixed annuity reviewed every five years, the Authority is concerned that price volatility may become unacceptable to customers. Such concerns have been expressed in other jurisdictions.

In summary, the Authority's analysis indicates that an unacceptable significant level of price volatility is likely to occur in subsequent price reviews where a planning period of less than 20 years is adopted and where the years beyond Year 20 include significant lumpy capital expenditure items, as is the case in (at least) the two schemes above.

The Authority notes that significant major capital works are scheduled for Years 21 to 34 in some schemes. The Authority notes that the price volatility associated with a 20-year planning period is dampened by adopting an annual rolling annuity, as proposed by SunWater (discussed in further detail below), as it would includes data up to Year 24 as an input to 2012-17 prices.

Notwithstanding this, there may be a case for extending the planning period for smoothing purposes to include projects forecast for Years 25 to 34 as part of the development of 2012-17 prices. That is, a 30-year rather than 20-year planning period would be preferred on the basis of price smoothing considerations alone.

Materiality

Materiality must also be taken into account when determining the appropriate length of the planning period.

GHD noted that a 20-year planning period understates the real cost of supplying irrigation water by ignoring the high costs of replacing long life assets, and that it would normally recommend the use of the longest lived asset to define an appropriate planning period.

Under SunWater's proposed methodology, a rolling renewals annuity, calculated with a 20-year planning period, will recover 92% of the cost incurred during that period depending on a WSS's capital expenditure. By way of comparison, a rolling renewals annuity, calculated with a 30-year planning period, will recover 96% of the cost incurred during that period depending on the WSS.

While the difference between the 20- and 30-year period is not material under the above scenario, the 30-year period would capture more the costs involved and, on this criterion, marginally favours the adoption of a 30-year planning period.

However, if the expenditure profile is front ended (that is, majority of capital expenditure in early years), the planning period will make little difference to the proportion recovered after 20 and 30 years. If, on the other hand, the expenditure profile is back ended, as is the case for some SunWater WSSs, even less of the revenue required will be recovered after 20 years.

It is noted that SunWater's proposed renewals expenditure profile varies significantly from scheme to scheme and over time. However, recommending different planning periods for groups of WSSs, to accommodate variable expenditure patterns, would overly increase administrative costs.

Therefore, if a single period is to be chosen, it is noted that in the different expenditure profiles above, either the planning period makes no material difference to the percentage of the required revenue recovered over the planning period or a 20-year period will result in a material proportion of the required revenue not being recovered.

Though marginal, on balance a 30-year period is preferred on this criterion.

Intergenerational Equity

Intergenerational equity is generally considered to be achieved when the contribution of each generation reflects the benefits it receives from that infrastructure. In this regard, the Authority notes that:

(a) Frontier Economics (2005), in their review of pricing policies prepared for GMW, considered that fairness and desirable inter-temporal price effects are achieved when customers pay only the efficient cost of services that they receive; and

(b) IPART (2009) proposed that intergenerational equity is achieved where the costs of capital projects are recovered from users in proportion to the benefits they receive over time.

Aurecon (2011) noted that substantial renewals expenditure projects are scheduled for 2019-20 to 2035-36, many of which are intergenerational investments with operational life spans of 50 to 80 or more years.

SunWater proposed that all renewals expenditure be recovered from customers over the 20-year period in which it is incurred. SunWater does not propose any apportionment of these costs to other periods, to reflect the ongoing service capacity of long life assets. For example, if an asset such as a concrete channel-lining (with a life of 40 years) is replaced within the 20-year planning period, then the recovery of this cost would substantially take place over that 20-year period (not over the life of the asset or a 40-year period). This could be considered to impose a potentially inequitable burden on customers paying the annuity from Year 1 to 20.

The Authority notes that SunWater's proposed annual recalculation of the renewals annuity or annual rolling annuity methodology – discussed further below – mitigates this impost to some (relatively minor) extent.

Nevertheless, the apparent inequity remains and is accentuated the later the expenditure is incurred in that period. For example, long life assets replaced in (say) Year 19, while paid for by customers over Years 1 to 20, would not provide benefit until constructed towards the end of the period.

Therefore, SunWater's proposed methodology means that customers in future periods receive the benefit of these long-life assets without contributing (substantially) to their capital costs in subsequent periods (after Year 20). However, the longer the planning period, the lesser is the impact on inter-generational equity.

Effectively all cohorts of customers under the proposed renewals annuity approach are benefiting from previously installed assets at some stage, the costs of which were recovered from customers in the previous generation.

Moreover, effectively all cohorts of customers under the proposed renewals annuity approach instead pay for future assets. Neither the SCARM Guidelines nor other evident regulatory decisions explicitly address this matter.

Aurecon advocated that a 30-year rolling annuity be retained as it would:

(a) provide farmers with more information and assurance when undertaking intergenerational planning of family operations; and

(b) provide additional expense information when examining individual scheme/asset viability.

The Authority has considered a number of ways to achieve intergenerational equity:

(a) adopting a planning period to capture the whole-of-life benefits of an asset. On the basis of a consideration of materiality (above), this is not considered necessary as the impact of future costs will be substantially discounted when an annuity is being calculated and are typically not material beyond about 30 years. In addition, in network utility systems such as SunWater's irrigation WSSs, which incorporate some 50,000 individual assets, it is not practical to systematically ascribe the benefits derived from each and every asset to the relevant benefitting customers or relevant period to achieve that end. In other words, it is impractical to deliver the ideal intergenerational equity prescribed by Frontier Economics (2005), where customers pay only the efficient cost of services that they receive;

(b) adopting a pro-rata approach that apportions (at least material) proposed renewals expenditures across the future period/s in which the benefits are to be received. This would be consistent with the IPART proposal whereby the costs of capital projects are recovered from users in proportion to the benefits they receive over time. However, a pro-rating approach is not consistent with the generally accepted approach to renewals annuities. In addition, changing to such an approach could create a bias in favour of the current cohort of customers who currently benefit from significant assets for which they may not have paid. In addition, even if a pro-rata approach was selectively applied to material (large) assets only, significant complexities could arise in subsequent periods (and price reviews) as a result of attempting to ascribe the benefits to various cost recovery periods;

(c) adopt a 20-year planning period as proposed by SunWater. All other things being equal, reducing the planning period from the current 30 years to 20 years may result in the benefit that existing customers obtain (from prior customers) exceeding the benefit they provide to future customers, depending on the age of current assets. In other words, it could reduce inter-generational equity, at least in the short term; and

(d) adopting a 30-year planning period (as for the previous price review), which would capture most material costs. Extending the planning period ensures cost recovery over a longer period which, combined with the effect of discounting, would reduce intergenerational equity concerns.

Accordingly, a 30-year planning period is considered more appropriate to address intergenerational equity and is therefore considered defensible on this criterion in the current circumstances.

<u>Uncertainty</u>

There are three types of uncertainty considered when determining an appropriate planning period:

(a) forecasting error – the further one forecasts into the future, the higher is the degree of uncertainty about the precise future cost of renewals expenditures. This could be related to changes in technology which alter the nature of the infrastructure ultimately required or relative unit costs or market conditions.

Further, Halcrow (2011) noted that forecast renewals expenditure for projects estimated from the BOM is likely to change once more detailed planning was undertaken (noting that currently SunWater undertakes detailed assessments one year prior to implementation). Further, unit rates and their relative values can be expected to change over this period (for example, SunWater updated its 2000 unit rates in 2008 with considerable changes evident).

Significant examples of changes in costs due to forecasting error include:

(i) Halcrow (2011) raised concerns about the forecast replacement of concrete channel lining at Emerald in 2031-32, raising the potential for an alternative plastic (HDPE) rather than concrete channel-lining to provide a more efficient solution. More specifically, Halcrow adjusted SunWater's proposed direct cost estimate for the project from $4.3 million (concrete) to $0.56 million (plastic). SunWater is in the process of responding to this recommendation;

(ii) SKM's (2011) analysis of a sample of 36 past and forecast renewals items identified that four were not able to be determined as being prudent and six were not delivered efficiently (of these 10 items two failed both tests). In summary, therefore, eight or about 25% of the 34 reviewed items demonstrated a degree of forecasting error over the period 2007-37;

(b) timing considerations – asset condition assessments are based on probabilities which require monitoring and consideration closer to the time of replacement. Halcrow (2011) noted that expenditure is likely to vary in cases where SunWater decides to defer or bring forward the expenditure (on the basis of condition or risk) or where it makes a change to the type or mix of asset. Consequently, SunWater's forecasts of renewals expenditures are an indicative rather than a definitive estimate of project expenditure.

Moreover, the timing of expenditures can have a material impact on ARR balances – and a commercial trade-off between engineering and financial considerations is required (as noted by CANEGROWERS); and

(c) service standards and capacity - the degree of uncertainty about the need for future service capacity. This particularly takes place where there are concerns about, for example, distribution systems being rationalised or becoming stranded assets in the future (that is, not requiring renewal/replacement).

The regulatory framework requires SunWater to deliver customers' WAEs. The Authority is unaware of any prospective significant change to overall service capacity – so the risk identified in (c) is not considered material for bulk WSSs. The Authority notes, however, that SunWater has some flexibility to vary the level of service so that, for example, in distribution schemes future rates of water delivery at times of peak requirement could conceivably be varied with customers' agreement. This consideration may be material in some schemes.

In any forecasts, there is a degree of uncertainty. While such uncertainty favours a shorter period (20 years) over a longer planning period (30 years), if the expenditures are appropriately scoped and costed, this uncertainty can be managed.

Conclusion

On consideration of all of the above criteria, the Authority would normally recommend that a 30-year planning period be adopted. The balance of the factors reviewed favours such a period over a shorter 20-year planning period.

However, SunWater does not yet apply even high-level options analysis to forecast renewals expenditure in the early out-years, let alone in the period beyond 20 years. This exacerbates the uncertainty of taking account of expenditures beyond 20 years. This issue is further exacerbated if there is substantial expenditure planned for that period, such that the post Year 20 expenditures (which are highly uncertain) make a material difference to the proposed annuities. This is the case in a number of schemes.

The Authority is therefore concerned that adopting a 30-year planning period may result in substantial increases in renewals annuity payments that are based on highly uncertain project costs and scope. The appropriate response to such uncertainty is not to reduce the planning period but to improve the reliability of the projects' costs and scope – and the Authority has made recommendations in this regard. However, a 30-year planning period cannot be justified at this time. While the uncertainty is such that a planning period shorter than 20 years could be rationalised, the Authority is concerned that the volatility of renewals expenditure is such that any shorter period could lead to too much volatility from one pricing period to the next.

The Authority notes that it may be necessary to reconsider this matter should problems of intergenerational equity arise as a result of very significant capital expenditure proposals (such as those relating to metering or dam spillway expenditures).

Recommendation:

The Authority recommends that a 20-year planning period be adopted, as proposed by SunWater.

The Authority also recommends that the length of the planning period be revisited in subsequent price reviews (or as a result of a price trigger) should problems of intergenerational equity arise as a result of significant capital expenditure proposals.

Prudency and Efficiency of Forecast Renewals Expenditures

To calculate a renewals annuity, it is necessary to determine if forecast renewals expenditure is prudent and efficient.

Stakeholder Submissions

SunWater

The nature of the approach adopted by SunWater to establish its renewals expenditure forecasts has been detailed above.

Other Stakeholders

CANEGROWERS (2011a) submitted that:

(a) SunWater (appears to) have taken a risk-averse approach and costed renewals expenditure at the upper end of expected costs rather than an average spend; and

(b) whilst SunWater has undertaken considerable work to determine which items need to be renewed, it is unclear if it has determined the most efficient way of renewing assets and at what cost. CANEGROWERS considered that renewals expenditure for Years 6 to 25 are just an assumed life of the asset with the cost determined by a full replacement or refurbishment cost with neither of these estimates being realistic.

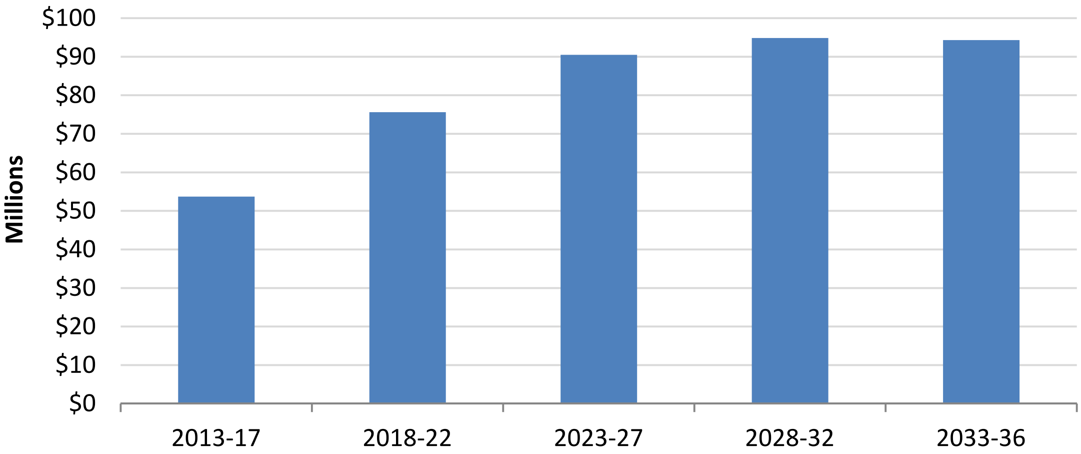
Authority's Analysis

As earlier noted, SunWater manages about 50,000 assets relevant to irrigators. It is therefore not practicable within the time available for the review, nor desirable given the potential costs involved, to assess the prudency and efficiency of every planned expenditure item. A sample of forecast renewals items was therefore reviewed for prudency and efficiency.

SunWater's NSPs outline renewals expenditures scheduled to occur on a WSS basis from 2012-13 to 2035-36 (consistent with a 20-year planning period and the proposed rolling annuity methodology, that is, 24 years of data).

Forecast renewals expenditure for this period, which includes overheads and indirect costs, is approximately \$409 million (2010-11 dollars). Figure 5.4 presents aggregate data for the 30 relevant WSSs for all customers (not just the irrigation sector) in aggregate (in real terms).

Figure 5.4: SunWater's Forecast Renewals Expenditure (Real \$)



Source: SunWater Financial Model (2013-36).

To determine the prudency and efficiency of forecast renewals expenditure, the Authority requested SunWater to provide similar information as for past renewals (see above). The same consultant arrangements were made to review SunWater's forecast renewals expenditure.

<u>Consultants' Findings on Prudency and Efficiency</u>

In reviewing proposed individual renewals expenditures, the Authority notes that:

(a) Halcrow (2011) reported that SunWater provided very little detailed information on the scope, drivers, options assessed or cost estimates for projects and, in the absence of this information, Halcrow sought to draw on its corporate experience and expertise to make an assessment of the prudency and efficiency of SunWater's expenditure;

(b) GHD (2011) reported that the information provided by SunWater for the 2012-16 program of projects was not generally adequate to determine what works were being proposed, why this expenditure was required or whether the estimated costs were reliable and project timing prudent. In particular, GHD found that while all project cost information was disaggregated by labour, contract, material and plant, no information was provided on the rates and quantities used to determine the expenditure breakdown. Provision of additional information in response to requests for sufficient detail was not timely or sufficient in detail and, hence, hindered the evaluation process;

(c) ARUP (2011) reported that the level of information from the SAP system was too brief to make an assessment of prudency and efficiency and, for some schemes, noted that a more detailed investigation is required in which they be given access to the member of staff responsible for that project to understand both the reason for the works and the basis for the costing; and

(d) Aurecon (2011) noted that, since detailed planning is generally undertaken only when a proposed project falls within the next 12-month work plan, there is very little information available regarding the specific scope of work required, materials, options assessed or detailed costing for most of the proposed renewals activities for 2012-16, let alone those out to 2035-36.

To address information deficiencies, all four consultants posed direct questions, conducted site visits (to check the condition appraisal and risk assessments in SunWater SAP software and to review a sample of the work completed in the last five years) and interviews and attended information sessions with SunWater. For each of the selected projects, the evaluation included the driver for the project, the estimated or actual cost and timing within the program to assess whether the expenditure was efficient and prudent (GHD, 2011).

The consultants then exercised a degree of professional judgement in determining the efficiency and prudency of proposed future expenditure.

As noted previously, given the concerns expressed by the consultants, a subsequent more detailed assessment was undertaken by SKM and the Authority of selected projects, based on additional information and submissions provided by SunWater. The findings of all assessments are detailed in scheme specific reports.

The Authority notes that the cost information included in SunWater financial system, which was the basis of the NSPs and SunWater's submission to the Authority, is different from that in SunWater's SAP system. SunWater has advised that direct costs recorded in its SAP system and the financial system are consistent, but that the indirect and overhead costs included in the SAP system are estimates, where as the overheads costs included in the financial system are calculated based on a more complete evaluation of the required amount of cost recovery.

As a consequence, the cost information reviewed by SKM does not always align with the cost information submitted to the Authority by SunWater.

The following general observations with respect to SunWater's forecast renewals expenditure are noted:

(a) SunWater's approach to long term renewals planning is to adopt standard asset lives and servicing (refurbishment) intervals, yet Halcrow (2011) noted that in some cases planned intervals are less than the nominated standards;

(b) SunWater does not always include cyclic activities (for example, periodic minor refurbishment of equipment) in its forward forecasts, which will impact on the long term adequacy of the renewals annuity (Halcrow, 2011);

(c) where renewals projects use contractors, SunWater's labour costs appear high;

(d) there seems to be a widespread commitment to replace control equipment at all schemes and that no strategy has been developed as with the replacement of switchboards (ARUP, 2011); and

(e) there are a number of data inconsistencies in SunWater's WMS (SKM, 2011), including incorrect asset types causing an incorrect planned replacement date.

A consolidated list of all future (and past) items reviewed by all consultants forms Appendix D. A summary of findings and conclusions appears in Section 5.4 (see also Table 5.9).

Conclusion

The Authority proposes to accept the findings of the consultants on prudency and efficiency, with the exception of those of GHD. As indicated, GHD's analysis was too high level to be accepted. Where the findings of SKM differ from those of the other consultants in respect of the same project, the Authority proposes to accept the SKM findings as SKM had access to more the detailed information which was subsequently provided.

Other matters

In response to QFF's submission that expenditure on regulatory compliance should be treated as renewals expenditure and not as new investment (that is, not as new capital expenditure to which a rate of return would apply), the Authority notes that:

(a) SunWater does not treat such expenses as new investment; and

(b) SunWater treats compliance with WHS requirements, such as for the Intersafe Program and the Public Safety Strategy, as renewals expenditure.

The Authority sought clarification of CANEGROWERS' submission that SunWater should define renewals expenditure to include operations and maintenance costs. In response, CANEGROWERS further submitted that, over time, the cost of maintaining assets generally increases to the point where it is cheaper to replace the item rather than incur the ongoing maintenance costs. This is likely to be the case for SunWater in regards to pumps and other assets that do not have fixed lives; hence any reduction in operating expenditure as a result of capital expenditure should be reflected in efficient capital expenditure.

The Authority has already noted that SunWater's asset management planning methodology does (to some extent) address this issue and has recommended that detailed assessments of material proposed renewals expenditure (for each subsequent five-year regulatory period) should address the trade-off between renewals and operating expenditures.

In response to CANEGROWERS' concern that more commercially focused management would ensure infrastructure is not only renewed when required, but also only when the benefits outweigh the costs, the Authority notes that, with respect to bulk assets, SunWater is required to maintain the current WAEs and therefore storage capacity.

However, the Authority notes there may be opportunities for SunWater to reconfigure distribution systems or depart from like for like asset replacement in a manner that maintains SunWater's ability to deliver its WAEs, whilst reducing costs in these systems. The Authority considers that any such reduction in service standards or costs should be carried out in consultation with customers, noting that SunWater should ultimately decide.

In some distribution systems SunWater could, for example, reduce the flow rate at which water is delivered or the peak delivery capacity of the network, by changing pump, channel and/or pipe specifications, as long as it maintained its capacity to deliver annual WAE volumes.

SunWater (2006a, Working Paper 36) countenanced reducing service standards (to reduce scheme costs and therefore prices) in three categories:

(a) non-discretionary activities such as WHS and other regulatory compliance – cannot be varied;

(b) discretionary activities a change in which would be unlikely to undermine long term infrastructure asset integrity – could be varied but may defer maintenance that later needs to be completed. An example was identified in the Burdekin-Haughton WSS which demonstrated a potential total costs saving of 6.2% of total scheme costs; and

(c) discretionary activities a change in which would impact infrastructure assets – assets could be varied significantly (for example, scheme closure after an agreed period) noting the long-term economic, environmental and social impacts would need consideration and potentially, decision by Government.

The Authority notes that there has been very limited progress on any of the above options during the 2006-11 price paths.

The manner in which such rationalisation opportunities could be decided by SunWater, in consultation with irrigators, is discussed further below.

5.4 Expenditure not reviewed in detail by Consultants

Because of time and information limitations, the Authority was unable to comprehensively review past or forecast renewals expenditure for prudency and efficiency.

Only some 18% of expenditure was reviewed in some detail.

This raises the issue of what to do about forecast and past expenditure that was not able to be reviewed in appropriate detail. To address this, the Authority has drawn on the results of consultant reviews adjusted to exclude outliers (large one-off projects and items not reviewed in detail), as detailed below.

Initial General Findings

The Authority found that, at an aggregate level, SunWater's actual expenditure on previously forecast projects was about 9.5% lower than forecast for 2006-11. However, whether the actual expenditures were efficient or not could not be assessed from the aggregate analysis.

As noted earlier, Indec undertook an analysis of over- and under-expenditure of past projects for which forecast and actual expenditure could be matched but was unable to draw any firm conclusion due to the impact of changes in scope (from the original forecast item) and incorrect matching of renewals expenditure items due to changes in the names or descriptions of the items being compared.

Overview of Consultant's Findings

As already noted, the Authority engaged consultants to review SunWater's past and forecast renewals expenditures for prudency and efficiency, In this regard, consultants Arup, Halcrow, GHD and Aurecon reviewed specific clusters of schemes. The items sampled from each scheme were generally selected on the basis of materiality, but account was also taken of items identified in stakeholder consultations.

To help overcome the information deficiency and the small sample size experienced by the four engineering consultants, SKM was engaged to review further details subsequently provided by SunWater on a state-wide selection of renewals items. Some of the items reviewed by SKM had been reviewed by the cluster consultants. In a number of instances, the additional information available to SKM enabled them to reach a conclusion about prudency and efficiency when the cluster consultant had been unable to do so because of information limitations.

SKM's analysis of forecast renewals identified two substantial items (Selma Channel relining and Leslie Dam cables and cableways) which were considered by SKM not to be prudent (or should be deferred to outside of the planning period), and which skewed the average savings. These items were removed for the purposes of this analysis.

SKM's analysis of past renewals expenditure also included significant items that were identified by stakeholders and which were also considered to skew the estimated savings to be applied to non-sampled renewals expenditures. These were Intersafe (a significant renewals expenditure program accepted as prudent and efficient) and the Marian Weir outlet works (considered by SKM to not be prudent). While the Authority accepts that Intersafe expenditure is prudent and efficient, SunWater's assessment was atypical of the process adopted for other renewals expenditures. The Authority therefore does not propose to take account of the Intersafe findings when determining the cost savings for general non-sampled renewals. Therefore, Intersafe expenditure was also removed for the purposes of this analysis.

The findings of the consultants are summarised in Table 5.9. Sampled items, for which no conclusion was provided on the grounds of insufficient information, are excluded. In those instances where the conclusions of SKM and the cluster consultants differed, the Authority has adopted SKM's conclusions on the basis that they had access to more detailed information.

Table 5.9: Summary of Consultant's Findings

Consultant	*Number of Items sampled*	*Value Sampled (PV, $'000)*	*Sample Ratio (%, by value of scheme reviewed)*	*Average saving identified*		
				Bulk	*Distribution*	*Total*
Forecast Items						
Arup	14	4,017	3.3	21%	36%	23%
Halcrow	42	4,917	14.5	9%	4%	7%
Aurecon	18	2,838	5.1	3%	39%	20%
Total: Forecast Items (three consultants)	74	11,772	5.5	13%	22%	16%
SKM (all schemes)	28	10,098	4.2	18%	12%	16%
Total: Forecast Items (all four consultants)	102	21,869	9.2	15%	17%	16%
Total: Past Items	21	6,315	15.1	15%	0%	13%
Total: Forecast and Past Items (all four consultants*)*	123	28,184	10.0	15%	15%	15%
Excluded items						
GHD	159	12,003	45.9	0%	0%	0%
SKM substantial items	4	21,784	7.4	100%	12%	38%

Notes: Number of items sampled excludes sampled items for which insufficient information was available to reach a conclusion. Present Value terms based on a real post-tax WACC of 4.41%. Items sampled by the four cluster consultants exclude items that were also reviewed by SKM. Outliers excluded were past expenditures on Intersafe and Marian Weir. Forecast outliers in SKM's sample were Leslie Dam cableways and Selma Channel relining. Sources: Arup, (2011), Halcrow (2011), Aurecon (2011), SKM (2011)

Authority's Analysis

The Authority notes in particular:

(a) whilst there are some differences between consultants and between bulk and distribution, there is overall a consistent possible saving identified by consultants of 15%;

(b) the smaller savings in respect of past expenditure is tempered by the small number of project sampled;

(c) the more detailed analysis by SKM resulted in results not dissimilar from those of the three cluster consultants;

(d) the exclusion of GHD is justified given the absence of a more detailed project analysis by GHD; and

(e) the exclusion of SKM's substantial items is justified on the basis that they are very scheme specific and the circumstances are not consistent with what would be expected for the items not reviewed.

At the same time, the consultants focussed on material renewals expenditures and those identified as being of concern to irrigators. These account for an average across the schemes of some 18% of the total past and forecast renewals expenditure.

In general, the extent of variation for smaller projects could be expected to be lower, on the basis that costings for smaller projects are more reliable/accurate (due to reduced scope for error as they relate to single items (Aurecon, 2011)). And, as noted above by SKM, larger assets are generally associated with longer asset lives and greater scope for changes in modern equivalent replacements, both of which can generate more significant cost variations.

If it were assumed that under- and over-estimates for smaller projects would balance out, the overall potential savings would fall to approximately 3% (15% saving on 20% of expenditure and 0% saving on 75%). On the other hand, the overall potential saving would be 15% if it were assumed that the identified savings applied to all expenditure.

The Authority does accept that it is likely that the savings on smaller projects would be less than those for larger projects. Therefore, recognising that expenditure items range in costs, and in the absence of more disaggregate information, it is considered prudent to adopt a mid-point in the 3% to 15% range of potential cost savings. That is, the Authority proposes to adopt a mid-range estimate of savings of 10%. This compares with the 9.5% saving in actual expenditure over forecast expenditure in 2006-11.

Conclusions

The Authority therefore proposes that a saving of 10% be applied to all past and forecast renewals expenditure proposed by SunWater and not reviewed in detail by consultants. When considered in conjunction with the Authority's decisions in respect of the consultants' reviews of the prudency and efficiency of (past and forecast) individual renewals projects, this in practice means that, in calculating past and forecast renewals expenditure, the Authority will:

(a) exclude from renewals expenditure all items identified by consultants as not prudent or, in the case of some forecast items, defer these to outside the current planning period. These items total approximately $9.1 million;

(b) incorporate all specific efficiency savings identified by consultants. In the analysis in Table 5.9, these efficiency savings are $3.5 million;

(c) include sampled items identified by Arup, Aurecon, Halcrow and SKM as being prudent and efficient in renewals expenditure in full. These total $33.0 million; and

(d) apply a 10% saving to all non-sampled items and sampled items for which there was insufficient information (including all items sampled by GHD). These savings total approximately $24 million.

That is, within the period 2006-07 to 2035-36, the Authority is recommending a reduction in proposed renewals expenditure of $36.6 million of SunWater's past or proposed renewals expenditure of $290 million (in present value, real terms) or about 12.6%.

For forecast renewals expenditure over the period 2012-13 to 2025-36, SunWater's proposed total renewals expenditure (in present value, real terms), including non-direct costs, is $238 million. After the Authority's adjustments the total forecast renewals expenditure is $209 million, which represents a saving of $29 million or a 12% reduction in forecast costs. All figures are in real terms.

5.5 Consultation with Customers and Reporting

Stakeholder Submissions

SunWater

SunWater (2005b) advised that it coordinates an Irrigator Advisory Committee (IAC) for each WSS to represent the interests of irrigation customers. The functions of IACs are outlined in the Charter for Irrigation Advisory Committees (Charter) and include:

(a) providing advice and recommendations to SunWater about scheme operational issues;

(b) representing the interests of irrigators; and

(c) providing a forum in which SunWater and customers discuss matters of mutual interest regarding the management of the WSS.

The composition of an IAC depends on the size and diversity of the individual WSS. Although required to hold at least two meetings each year, some larger IACs convene more frequently while others convene only once a year. SunWater advised that some IACs choose to operate beyond the scope of the Charter.

SunWater (2011b) submitted that, through the IACs, irrigators:

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

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

(c) are provided information about renewals expenditures, particularly where supply interruptions may result.

SunWater noted that opportunities for greater consultation with irrigators do exist. For example, information could be prepared annually for IACs which set out ARR balances and compared forecast with actual renewals expenditure.

Other Stakeholders

CANEGROWERS (2011a) submitted that, given the extent of renewals expenditure being proposed by SunWater, irrigators are considering whether these proposals are justified or whether there are more efficient ways to deliver water and make schemes sustainable in the long term.

CANEGROWERS Isis (2011b) stated that SunWater's consultation with irrigators has been very unsatisfactory. For example, the current BRIAC cannot discuss, and is not engaged in, matters outside local operations and maintenance issues. There was considerably more discussion and engagement with the previous body known as the Bundaberg WSS Customer Council. It would be prudent for the Authority to recommend that SunWater engage with customers on a more regular basis on broader issues.

Cotton Australia/QFF (2011a) submitted that the lack of accountability with irrigators regarding renewals is of concern.

QFF (2010a; 2010b) submitted that asset management plans should be developed in consultation with irrigators and that proposed renewals expenditures over the five-year regulatory period should be subject to irrigator approval. QFF also submitted that irrigators should review the implementation of renewals expenditures annually with any cost overruns subject to irrigator approval.

BFVG (2010b) submitted they support the further development of asset management planning in consultation with irrigators as a means of promoting accountability.

BRIG (2010d) submitted they support the renewals annuity approach on the proviso that irrigators have the opportunity to provide greater input into asset management planning.

BRIAC (2010) submitted they believe SunWater’s communication and gaining feedback from irrigators on local asset maintenance schedules can be improved and that the Authority has a role in ensuring this occurs.

Isis (2010) submitted that SunWater should establish a process for asset maintenance schedules that is transparent and subject to irrigator review.

MSF (2010) submitted that irrigators need to scrutinise asset management plans (including forecasts of renewals expenditure) to ensure transparency and the economic efficiency of investment decisions.

Macintyre Brook Irrigators Association (MBIA) (2011) submitted that SunWater’s consultation with irrigators has been poor and questions whether SunWater is meeting its obligations under the existing Charter.

MDIAC (2010) submitted they support irrigators being consulted regarding the development and annual review of asset management plans.

MDIAC (2011) submitted that service level agreements need to be amended to oblige SunWater to undertake annual consultation and approval processes with irrigators regarding renewals expenditures that have occurred in the last 12 months and are forecast to occur in the next 12 months.

The Pioneer Valley Water Board (PVWater, 2011a) submitted that irrigators would have a better appreciation of scheme operations if SunWater undertook some degree of consultation.

PDCC and PCSMA (2010) submitted there should be increased transparency and consultation with irrigators on asset management plans.

St George Irrigators (2011) submitted that efficient prices could be achieved through SunWater pursuing a stronger customer focus evidenced by high service standards, good working relations and effective and meaningful communication with irrigators.

During the Authority’s Rounds 1 and 2 of regional consultation, irrigators submitted that the nature of expenditure and options for renewals and relevant details need to be closely reviewed in consultation with irrigators to make good use of local information as this will ensure options and cost components are efficient. Irrigators also submitted that expenditure not agreed to (such as cost overruns) should not be passed on to irrigators.

The views expressed by industry representative groups during Round 1 and Round 2 consultation were also expressed through written submissions to the Authority on a WSS basis. These submissions are outlined in the WSS specific Volume 2 reports.

Other Jurisdictions

New South Wales

In NSW, State Water (2008) report that Customer Service Committees (CSCs) have been established for a range of activities, including:

(a) provision of input to the development of valley business plans;

(b) provision of input to water delivery strategies that promote efficient and compliant water use and assist in the development of Annual Operating Plans;

(c) to review and advise on asset management priorities in relation to assets critical to water delivery, including asset renewals, levels of service and maintenance; and

(d) to provide input to water pricing strategies for recommendation to IPART, including the provision for a charge for valley specific projects.

The requirement for State Water to establish CSC is outlined in, and is a condition of, State Water’s operating licence. Importantly (and not inconsistent with the approaches adopted by GMW and SRW in Victoria), the advice and input provided by CSC is not binding on State Water.

Victoria

In Victoria, the *Water Industry Regulatory Order 2003* (WIRO), a statutory instrument setting out the economic regulatory framework for utilities in Victoria, was amended in 2005 to allow the economic regulator the ability to specify standards and conditions of services and supply to apply to certain water businesses (ESC, 2008). One ESC imposed requirement is that these water businesses establish and maintain formal Customer Charters that inform customers about a range of topics associated with service provision.

In Victoria, (Frontier Economics, 2005) GMW's water service committees (WSCs) have been established to represent customer groups on a regional basis. The WSCs have an important role in defining customer service standards and asset maintenance and infrastructure replacement priorities. WSCs are appointed in accordance with section 108 of the Victorian *Water Act 1989*.

In response to this requirement, GMW established a WSC Charter that outlines the functions of WSCs (GMW, 2009). These functions are to advise and assist GMW:

(a) in the preparation and monitoring by GMW of a Customer Service Charter;

(b) in decisions regarding service level and price trade-offs and local operational matters;

(c) in the monitoring and implementation by GMW of costs and services and its identification of potential system, service and delivery improvements and efficiencies;

(d) in the development of its asset management plans, maintenance and capital programs;

(e) in the development and implementation of water resource management plans;

(f) in the preparation of annual area plans, annual budget estimates, asset management plans and responses to Government on policy; and

(g) in the development of GMW's policies, procedures, tariff structures and billing arrangements.

GMW report that, although input from WSCs is highly valued and reflected in the decision making process, ultimately, the authority for decision making lies with GMW and its Board.

Also in Victoria, SRW (2007a) have established a Customer Charter that outlines the functions of Customer Consultative Committees which include having important liaison, consultative, collaborative and feedback roles in the operation of (SRW's) business.

Specifically, SRW's Customer Charter aims to facilitate a collaborative relationship with Customer Consultative Committees on topics such as identifying areas of service level deficiency, establishing priorities for undertaking works to address these deficiencies and considering the impact on prices of these works.

Similar to GMW's approach, although the input of Customer Consultative Committees is acknowledged, decision making regarding long-term asset management planning ultimately resides with the SRW Board.

Australian Capital Territory

In the ACT, the reporting of performance information is a utility's obligation under the conditions of its license. Each year, the ICRC prepares a report summarising the compliance of all utilities with their statutory obligations and performance functions under the *Utilities Act 2000*.

The ICRC report details customer numbers, consumption volumes and overall trends in each sector, and covers issues a range of issues including:

(a) customer service performance, with a focus on customer complaints and network service quality;

(b) network reliability, serviceability and maintenance, including planned and unplanned interruptions to services, as well as utilities' responses to those interruptions; and

(c) the performance of utilities in relation to environmental issues that are a direct responsibility of the ICRC (e.g. water losses, greenhouse gas emissions and consumption efficiency).

The report also updates compliance issues that were discussed in earlier reports and provides a summary of compliance against the minimum service standards set out in schedules to the Consumer Protection Code.

In addition to being the principal means by which statutory compliance is monitored, the ICRC notes that, by identifying underperformance or non-compliance, the report serves to provide utilities and consumers with a signal about the need for performance improvements.

ACCC

In 2011, the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities approved the *Water Charge (Infrastructure Charge Rules),* compiled by the

ACCC, to apply to certain water service providers in the MDB (ACCC 2010). In accordance with these rules, SunWater is identified as a Tier 2 operator and, as such, for its MDB schemes, is required to undertake specific activities including undertaking mandatory customer consultation in the setting of charges or be subject to price determination by the ACCC (2008c).

Specifically, these activities include establishing scheme specific NSPs[19] which:

(a) provide details of the expected network and service outcomes over the five-year regulatory period;

(b) provide details of the proposed expenditure program, including capital and operating expenditure for maintenance and investment over the regulatory period;

(c) outline estimates of the regulated charges during each year of the NSP; and

(d) should be provided to customers when completed, together with summaries of the consultation undertaken and submissions received from customers.

Authority's Analysis

The Authority notes that the lack of customer involvement in planning future and reviewing past renewals expenditure has been raised by a significant number of irrigators and their representatives.

In particular, irrigators have expressed concern that:

(a) there is insufficient explanation and understanding of the circumstances that result in the need for additional or unplanned expenditure;

(b) all relevant options and their cost-effectiveness are not fully explored with appropriate customer involvement; and

(c) customers carry the consequential risks and bear the resultant cost over-runs associated with the above shortcomings without further review.

Aurecon (2011) noted that irrigators were lacking background information pertaining to both historical and forecast renewals expenditure and did not understand the basis for a number of renewal activities undertaken.

ARUP (2011) considered that the irrigation community needs to be engaged in understanding the implications of maintaining assets to an appropriate level of service and:

(a) considered that many negative issues raised by irrigation groups can be attributed to poor communication and that there is a need to ensure that a strict protocol is followed with respect to informing irrigators of any major decisions; and

(b) recommended that, where future expenditure on an item is uncertain, SunWater undertake more detailed discussion involving irrigators around the options, with the aim of reaching agreement on whether a reduced standard of service would be accepted to offset the increase in costs.

[19] In accordance with ACCC's Water Infrastructure Charge Rules, NSPs are subsequent to the development of a network consultation paper (NCP) which is provided for customer consideration and forms the basis for the provision of feedback regarding the strategic direction and major investment decisions undertaken for the WSS.

The Authority recognises that SunWater has substantial technical and financial data and a wealth of experience on which to plan its activities. SunWater also has a statutory responsibility to deliver WAEs and thus, as a minimum, maintain the capacity of its bulk assets.

A very evident exception, however, seems to exist at least for distribution system asset capacity not related to the delivery of WAE, for example, the rate of delivery of water where significant excess capacity exists.

As noted above, SunWater (2006a, Working Paper 36) countenanced potential efficiency gains as well as reducing service standards and, in particular, the bounds in which consultation with customers on this matter would occur. However, limited (if any) progress has been made during 2006-11.

While SunWater has the final statutory responsibility for WSSs, the Authority values the inputs of customers into asset management planning as an indicator of its prudence and efficiency. Broad-based customer support is clearly not evident in this case – in contrast to the requirements of Charter (implicit) and the ACCC (explicit).

The Authority also notes that, in other jurisdictions, the involvement of irrigators in asset management planning is structured, purposeful and, in some instances (such as in Victoria), required by legislation. Furthermore, regulated utilities in the ACT are legally required to report on their compliance against statutory obligations and performance functions.

The Authority notes that the Charter is silent on how SunWater should advise customers on the price implications of unplanned renewals expenditure and proposed renewals expenditure (including options to achieve a predetermined or even changed standard of service). The Charter also allows SunWater to unilaterally change service targets, with limited consultation.

The Authority recommends that SunWater strengthen its direct consultation with irrigators in regards to actual (past) and proposed renewals expenditure.

Consistent with the initiatives in other States, the Authority recommends that SunWater be required to consult with its customers about any changes to its service standards and in regards to its actual (past) and proposed renewals expenditures

Specifically, SunWater should be required to publish on its website, as a basis for consultation and reporting:

(a) enhanced scheme NSPs prior to each price review, which present the high-level options analysis for all material renewals expenditures expected to occur over the Authority's recommended planning period and detailed options analysis for all material renewals expenditures expected to occur within the subsequent five-year regulatory period; and

(b) annual updates to its NSPs detailing SunWater's proposed renewals expenditure items and accounting for significant variances between previously forecast and actual material renewals expenditure items.

Customers' written responses to the above and SunWater's response to those comments, and its related decisions, should also be published on SunWater's website.

While the Authority is not required under the *Queensland Competition Authority Act 1997* (the QCA Act) to directly monitor SunWater's compliance with the conditions of its license/s (as is the case for the ICRC on ActewAGL), the Authority considers that, as a minimum, the above requirements should be incorporated into SunWater's Statement of Corporate Intent and relevant legislation amended to enshrine such requirements.

Recommendation:

The Authority recommends that SunWater's Statement of Corporate Intent (and relevant legislation) be amended to require SunWater to consult with customers in relation to, and publish on its website, annually updated NSPs commencing prior to 30 June 2014. The NSPs should be enhanced to present (i) high level options analysis for all material renewals expenditures expected to occur over the Authority's recommended planning period, (ii) detailed options analysis for all material renewals expenditures expected to occur within the subsequent five-year regulatory period and (iii) details of SunWater's proposed renewals expenditure items and accounting for significant variances between previously forecast and actual material renewals expenditure items.

Customers' submissions in response to the NSPs and annual updates should also be published on SunWater's website alongside SunWater's responses and related decisions.

5.6 Allocation of Headworks Renewals Costs According to WAE Priority

Background

SunWater customers hold WAE specifying the reliability of priority group of the entitlement, for example, medium or high priority WAE. The term priority group is defined under the *Water Act 2000* (Qld) to mean water allocations that have the same WASO. A WASO represents the probability of being able to obtain water in accordance with the nominal volume granted with a WAE.

Holders of high priority WAE can usually rely on being able to access their nominal volume more often than the holder of a lower priority WAE (e.g. medium priority). The types and numbers of priority groups differ between schemes, reflecting the arrangements that have developed over time to suit local requirements or conditions.

It is often the case that the water sharing rules include a requirement to set aside or reserve a volume of water in order to provide for the future supply of water for high priority WAE. This reserve is not generally available to medium priority WAE. In this way, the reliability of high priority is usually significantly better than medium priority.

A high priority WAE does not provide a 100% guarantee that the holder will always get access to water. Rather, high priority means that the holder can expect to be given higher priority when available water supplies are being shared between customers of all priorities. When water supplies are low, high priority WAE holders tend to be allocated a larger share of their WAE than lower priority WAE holders. Medium priority customers often do not get any water until high priority customers have received 100% of their nominal volume (SunWater, 2006).

It is therefore necessary to establish a methodology to allocate costs to these differing priority groups of water entitlements.

Previous Review

For the 2006-11 price paths, renewals (and all other) costs were apportioned between medium and high priority customers according to water pricing conversion factors (WPCFs).

For example, if a WPCF was 2, a total of 1,000 ML of high priority could be converted to 2,000 ML of medium priority equivalent for cost allocation/pricing purposes. In this way, a ML of high priority WAE was allocated twice the costs of each ML of medium priority WAE.

Some ROPs specify conversion factors (set by DERM) which use hydrological assessments to identify the rate at which medium priority water entitlements may be converted to high priority water entitlements and vice versa.

ROP conversion factors and associated limits are designed to maintain the WRP basin-wide environmental flow objectives and water allocation security objectives. While ROP conversion factors provide the rate at which one type of entitlement can be converted to another type of entitlement, there are limitations on the number of conversions possible (i.e. it is not possible to convert all medium priority entitlement to high priority entitlements) (PwC, 2010).

However, at the time of the last review, DERM had only developed ROP conversion factors for four WSS and, therefore WPCFs were developed for WSSs based on the best available information (including DERM's hydrological data, where available) and also reflected the outcome of price negotiations between irrigation customers and SunWater.

Typically, WPCFs were 1.5 to 2.5 although some fell outside this range. For example, in the Nogoa-Mackenzie WSS, the WPCF was 3, which had the effect of transferring relatively more costs from medium to high priority WAE, than in other schemes.

In those schemes without ROP conversion factors, DERM's planning framework does allow a customer to make application for conversion. In the absence of a conversion factor, DERM would consider (among other things) the potential adverse impacts on third parties arising from such a conversion.

ROP conversion factors do not take into account a range of factors such as critical water supply arrangements or the likelihood of actually receiving an entitlement.

Therefore, a cost allocation methodology based on this approach, while possible in the few schemes where conversion factors have been established, may not be feasible or appropriate.

SunWater and customers agreed that the appropriateness of WPCFs be reviewed for the next price path (that is, the 2012-17 regulatory period).

Stakeholder Submissions

SunWater

SunWater (2010d) submitted that the approach previously adopted was based on a simplistic relationship between entitlement groups and did not adequately account for the water sharing rules or operational requirements that restrict lower priority entitlement holders from accessing bulk water storages during periods of low supply.

In most schemes, there are also CWSAs that, once triggered, effectively replace the 'normal' water sharing rules and other operational requirements during extended drought periods. The CWSAs give further priority to reserving or allocating supplies to high priority WAE. Overall, these arrangements mean that medium priority WAE holders may be cut-off from accessing stored water supplies during a prolonged drought, while high priority customers continue to access water stored by the headworks.

On this basis, SunWater submitted that high priority customers derive more benefit from bulk water infrastructure than holders of lower priority WAE. Hence, holders of high priority WAE should be apportioned a greater share of storage assets.

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

According to SunWater, the HUF measures the benefit attributable to each priority group. This term needs to be distinguished from the ability or willingness of each group to pay. Further, for a given priority group, a HUF is not intended to represent that group’s proportional share of the scheme’s overall hydrologic yield, nor does it reflect any proportional demand for, or usage of, operational services.

The HUF takes into account that water sharing rules typically give high priority customers exclusive access to water stored in the lower levels of a scheme’s storage, up to the point that medium priority entitlements just start to get a share of the water.

SunWater has outlined the derivation and application of HUFs methodology as follows.

Step 1 – Identify the water entitlement groupings

For each scheme, establish the highest (high priority) and second highest (typically medium priority) water entitlement groups. These are denoted HP_A and MP_A respectively. If more than two priority groups exist, water sharing rules are used to determine whether the subsequent group(s) should be classified as HP_A, MP_A or neither.

Step 2 – Determine the volumes of the identified water entitlement groupings

Once high priority and medium priority groupings have been established, determine the total water entitlement volume associated with each group; that is, the total nominal WAE of the corresponding priority group. Where the ROP permits the conversion of high priority entitlements to medium priority (or vice versa), the following must also be determined:

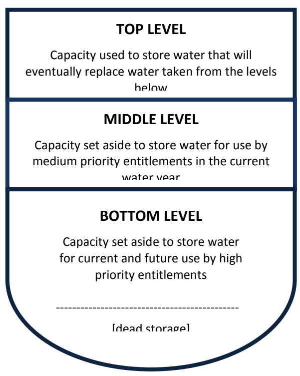
(a) the maximum volume of high priority water entitlements that can exist under the ROP rules (denoted $HP_A max$); and

(b) the volume of medium priority water entitlements corresponding to the maximum volume of high priority water entitlements (as determined in (a), denoted $MP_A min$).

In schemes where there is a single water entitlement priority group, the HUF is set to 100% for that group and no further analysis is required. Only Cunnamulla and Maranoa River have a single water entitlement priority group.

Step 3 – Determine the extent to which water sharing rules, critical water sharing rules and other operational requirements give the different priority groups exclusive or shared access to storage capacity

Using the water sharing rules and other operational requirements set out in the ROP, establish:



(a) the capacity volume of the bottom horizontal storage layer reserved for exclusively supplying high priority water entitlements (HP_1) – the ‘bottom’ level;

(b) the capacity volume of the middle horizontal storage layer available for exclusive use by medium priority water entitlements (MP_1) – the ‘middle’ level; and

(c) the capacity volume of the top horizontal storage layer to be shared between medium and high priority entitlements – the ‘top’ level. SunWater propose that the ‘top’ level be apportioned between medium priority (MP_2) and high priority (HP_2) entitlements in the same proportion as the respective volumes in the bottom and middle layers (i.e. HP_1:MP_1)

Factors that may influence these volumes include water sharing rules and critical water supply arrangements (including storage cut-off and trigger rules), as well as requirements relating to in-stream storage infrastructure operations.

In those schemes where continuous water sharing arrangements have been implemented (namely the St George and Macintyre Brook), an alternative approach is adopted and is addressed in those scheme specific reports.

Step 4 – Assess the hydrologic performance of each component of headworks storage

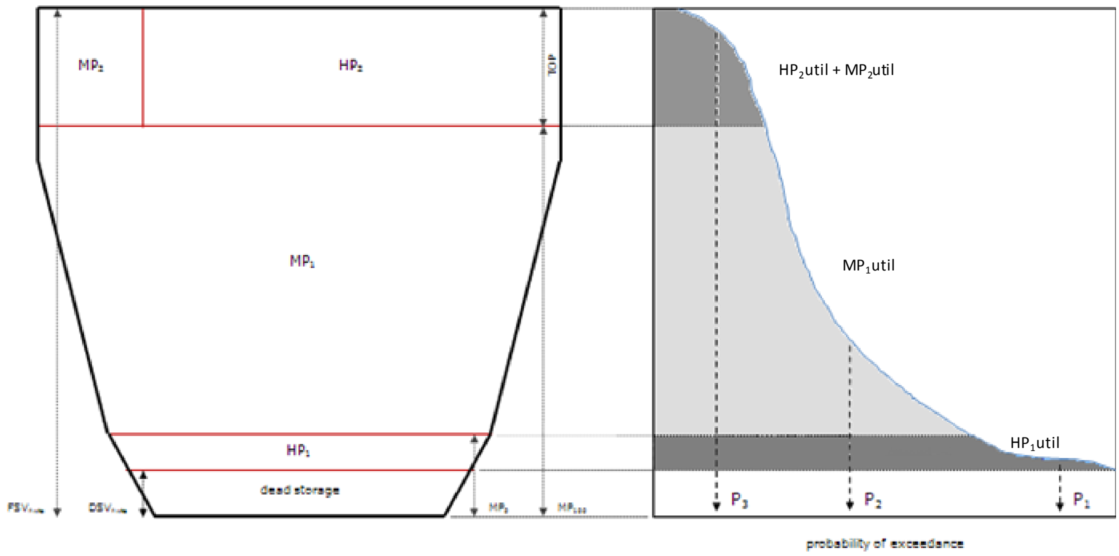
Using hydrologic models based on Integrated Quantity Quality Model (IQQM) simulations, and, where available, recent recorded daily storage data, extract 15 year sequences of combined daily storage volumes to assess the probability of being in the bottom, middle and top horizontal layers of the dam (Figure 5.5).

In statistical terms, these probabilities represent the ‘expected volume’ that is available, on average, under the conditions of relative supply shortage. SunWater chose the driest known 15-year period to establish a worst case inflow scenario. For each layer, these probabilities are used to determine the utilised volume for the corresponding priority group.

The 15 year period was considered an appropriate duration for the purposes of this analysis and is consistent with short and medium term planning periods used in contemporary climate scenario modelling in Australia[20]. It is also representative of the typical horizon over which enterprises plan for and base their business investment decisions.

The probability of the lower layers of the headworks storing water is greater than the probability of upper layers of headworks storage storing water. Subsequently, high priority water entitlements effectively have access to – and therefore are able to utilise – headworks storage capacity more often and with less restriction than medium priority water entitlements.

Figure 5.5: Assessment of Hydrologic Performance of Storage Headworks Components



[20] See Chiew FHS, Cai W and Smith IN 2009. Advice on defining climate scenarios for use in the MDB Plan Modelling, CSIRO Report for the MDB Authority.

Step 5 – Determine the headworks utilisation factors

Calculate the percentage of storage headworks volumetric capacity that medium priority users have access to for each of the 15 year sequences analysed in **Step 4**:

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

Set HUF_{mp} equal to the minimum of these values, and HUF_{hp} equal to 1-HUF_{mp}.

In schemes where different priority groups of WAE were assembled together under either the high priority or medium priority group, the HUFs are disaggregated in proportion to the nominal volumes of the priority groups.

SunWater engaged consultant Dr Sharmil Markar of consultancy firm WRM Water and Environment to undertake an independent peer review of the HUF methodology, as well as the data, assumptions and calculations presented in SunWater’s Technical Report (SunWater, 2010d).

Dr Markar concluded that the overall approach was sound and appeared to be rigorous and robust. Further, the data sources used for running the models were appropriate and the key assumptions appeared to be reasonable.

Other Stakeholders

Principles of Cost Allocation

CHCGIA (2010a) supported the principle of user-pays for the apportionment of costs.

BRIAIC (2010), MSF (2010), ISP (2010) and P. Enkelmann (2010) agreed, in principle, that headworks costs should be shared between priority groups on the basis of the reliability of supply.

BRIAIC (2010) submitted that, since high priority users require more storage to gain their reliability, cost sharing should be based on water storage rather than water usage.

MIS (2010), QFF (2010a) and ISP (2010) submitted that the allocation of capital costs should be made on the basis of the benefits received by different priority groups. MIS further submitted that the users’ share of capital costs should be established using the cost sharing ratios of the initial capital investment in the scheme, noting that this would require a line by line assessment of capital projects.

QFF (2010a) noted that beneficiaries include irrigators, towns and mines, as well as the state government through indirect benefits such as royalties from mining benefits.

Approaches to Cost Allocation

CANEGROWERS (2011a) submitted that conversion factors are needed to ensure that, if medium priority allocations are converted to high priority, there is no additional cost to remaining medium priority customers.

DVIG (2010) submitted that they no longer support the use of WPCF to allocate scheme costs between sectors [priority groups]. Rather, they noted that the Draft Review of the Dawson Valley Water Resources Plan will include a [new ROP] conversion factor and, given the amount of research conducted by DERM in determining this conversion factor, it would be appropriate for it to be used for headworks pricing.

CHCGIA (2010b) also supported the use of conversion factors determined by DERM for headworks pricing.

BRIG (2011d) submitted that capital cost charges should be based on expected average announced allocation.

BRIG (2011d) also submitted that, while the conversion factors maintain the reliability of medium priority water, the impact on users from applying conversions at very low storage levels is severe (from a small announced allocation to zero).

Headworks Utilisation Factors

SunWater's HUF methodology is supported, in general, by the Eton Irrigators Advisory Committee (EIAC) (2011a), Lower Burdekin Water (LBW) (2011), MIS (2010), MDIAC (2011), and PDCC & PCSMA (2010).

However, EIAC (2011a), LBW (2011) and MIS (2010), as well as CANEGROWERS (2011a), considered that a more detailed explanation and review of the methodology is needed. In particular, MIS submitted that the reasons for choosing the 15 year period and correlation with ROP water sharing rules should be provided. CANEGROWERS noted that a revised methodology would seem appropriate for bulk systems.

MDIAC (2010), MIS (2010), QFF (2010a), PCSMA (2010) considered that the methodology should be assessed on the basis of the performance of each scheme over the 15 year period which reflects the poorest hydrological performance. QFF (2010a) further submitted that comparisons should be made with assessments of the long term hydrologic performance of the scheme if all entitlements were to be converted to high reliability.

ISP (2010) submitted that it is difficult at this stage to make a definitive comment on the HUFs approach, noting that any standard approach would be somewhat arbitrary and would not represent a definitively correct apportionment of costs. Further, the principle behind the HUFs will vary with systems and this should be elaborated for each HUF and discussed at a scheme level. ISP proposed that an assessment of the HUFs methodology should be based on historical records of announced allocations and linked to the benefits received.

BRIAIC (2010) noted that the HUF approach is an attempt to provide a logical and formulaic approach to this issue.

PVWB (2011a) advised that they had been unable to reconcile the calculations presented by SunWater for the Pioneer River WSS.

CANEGROWERS (2011a) submitted that the impact on renewals balances of the proposed change in the previously applied conversion factors (such as the proposed move away from WPCFs to HUFs) needs to be reviewed.

Cotton Australia (2010) submitted that, with the Queensland Government's decision to set a zero value for irrigation infrastructure assets, SunWater has managed under the HUFs to shift the asset values to urban and industrial users from whom they can extract a rate of return and shift all the operating costs to irrigators. Further, the HUFs cannot be assessed on their own without including the impact of operational costs being apportioned on a per ML basis.

BRIG (2011d) submitted that the HUFs approach underestimates the proportion of assets devoted to supplying high priority bulk water [no reason provided]. Furthermore, having conversion factors for pricing that are different from those in the WRP would be very confusing and cannot be justified. BRIG proposed that the WRP conversion factors be used for determining water prices, including the allocation of capital costs.

G. Kavanagh (2011) submitted that SunWater's HUFs proposal does not address infrastructure utilisation during the period when critical water sharing rules apply. Whilst the same water sharing rules apply to all high priority entitlements under normal operating conditions, once the critical water sharing rules are activated the holders of high priority entitlements are treated differently depending on the intended use of the water. Kavanagh questioned how much of the headworks is utilised to deliver a benefit when these rules have been activated and recommended that the costs be apportioned to high priority users to reflect this.

Other Jurisdictions

New South Wales

In NSW, IPART established a set of pricing principles as part of its 1996 bulk water price determination. In regard to cost allocation, the principles stated that the cost of water services should be paid by those who use the services. Furthermore, those who cause more services to be required should pay more.

State Water's bulk water charges are broadly based on three types of licences for pricing purposes: high security, general security and supplementary licences. The high security licences (entitlements) normally receive 100% of their entitlement in all but the severest droughts, while general security and supplementary licences are only able to extract a portion of their entitlement, subject to available supplies.

In the 2010 price determination for State Water, IPART (2010a) noted that an inequity had arisen between high and general security entitlement charges under this approach. Entitlement charges were rebalanced to better equate the respective costs and benefits. Charges for high security were calculated by equating high security to the general security entitlement charge multiplied by a conversion factor and a high security premium. The high security premium was based on the average actual allocation to high security over the last 20 years divided by the average actual allocation to general security over the last 20 years (each defined as a percentage of the full entitlement). The conversion factor was determined by the resource regulator as being representative of the units of general security water required to secure one 'unit' of high security water [the same concept as DERM's ROP conversion factors].

The new approach for setting charges was driven by State Water's belief that conversion factors no longer accurately reflected the costs and benefits of general and high security entitlements. State Water argued there was a need to increase high security charges to correct this, as a number of general security licence holders tried to convert their entitlements to high security (albeit an embargo on conversion prevented the majority of these applications). Hence, this new high security premium aims to better reflect the benefits that high security customers enjoy from a secure water supply under varying degrees of water availability.

Victoria

In Victoria, water entitlements are categorised as high reliability water shares or low reliability water shares with urban high reliability entitlement charges greater than irrigation high reliability entitlement charges.

To date, the ESC has not been directly involved in assessing the mechanisms applied by GMW in allocating headwork costs across different water user. According to GMW, different costs are calculated on the basis of a hydrological yield relationship, which is used to identify the relative share of storage. However, no details are available.

Western Australia

In the state's South West, bulk water storages are owned by the Water Corporation, while the distribution network, the water within the storages and delivery are the responsibility of Harvey Water, a private irrigators' cooperative. Under this arrangement, Harvey Water pays to the Water Corporation the cost of water storages, and passes this bulk cost through to its customers.

Harvey Water's storage charges are shared between two main classifications of customers: industrial customers, who receive a guaranteed level of reliability, and irrigators, who do not have the same reliability guarantee. Irrigators are subject to fixed charges which apply to each ML of entitlement and a variable charge (water delivery component). Industrial users pay a variable charge (per ML) with no fixed charge component. The variable charge for industrial users incorporates all capital-related costs, and a premium associated with the level of reliability they receive.

Authority's Analysis

SunWater's HUF is intended to calculate the relative share of the storage assets that are required to supply high priority and (medium priority) WAE. This recognises that relatively more infrastructure is required to deliver high priority WAE than medium priority WAE and, consequently, relatively greater headworks costs are associated with high priority WAE than medium priority WAE.

Essentially, the storage capacity required for each category of water entitlement is the cost-driver for the purpose of cost allocation. It indicates that storage-related infrastructure costs associated with the holding high priority WAE per ML is greater than the storage-related infrastructure costs per ML linked to storing medium priority WAE.

The Authority notes that SunWater's HUF submission also describes the methodology as reflecting the benefit or level of service attributable to each water entitlement priority group (refer to SunWater, 2010d).

As a general principle, like most stakeholders, the Authority accepts that the storage capacity required to deliver the priority of water required is an appropriate driver of costs. Such capacity cost drivers have been adopted by the Authority in other instances such as for GAWB (QCA, 2005) although in no instances has the quality differential related to delivery been attempted to be measured.

As the basis for measuring capacity utilisation and subsequent cost allocation in headworks, the Authority agrees with SunWater's view that HUFs are in principle superior to WPCFs as they take into account water sharing rules, critical water supply arrangements, storage cut-off rules/triggers and other rules which give preferential access to high priority entitlements during periods of prolonged or recurring critical water supply shortages.

The Authority also considers HUFs to be more suitable in a headworks context than ROP conversion factors which represent the rate and extent to which entitlements can be converted from medium to high priority and vice versa, usually within very restrictive limits for a limited number of schemes[21].

Review Methodology and Findings

The Authority commissioned Gilbert & Sutherland Pty Ltd (G&S) to conduct an independent review of SunWater's HUF methodology.

[21] The Authority also notes that ROP conversion factors are not available for all schemes with high priority entitlements. Where these conversions are allowed, they are also usually subject to very restrictive limits.

G&S (2011) assessed the HUF methodology against the following criteria:

(a) appropriateness of quantitative input data and assumptions;

(b) calculation accuracy;

(c) rigor of methodology;

(d) robustness of methodology;

(e) appropriateness of methodology; and

(f) cost-recovery performance.

G&S noted that the methodology effectively apportions “slices” of storage to specific user groups depending on their ability to access that water. Put simply, a probability of utilisation is calculated as the average proportion of storage available in each of the “slices” over the 15-year period.

G&S concluded that, in general:

(a) while the values may vary (for example, exact WAE volumes), input data and model sources were appropriate and applicable to the methodology and any noted variations were not considered to be significant in terms of the calculated HUFs;

(b) the calculations for all 26 WSSs were accurate to the method and input data utilised[22] ;

(c) the methodology exhibits rigour in the inclusion of significant physical and WSS operational factors within the overall approach.

However, in seeking to take account of the level of service provide to each priority group, the selection of the 15-year period returning the “lowest HUF_{mp} value returned” effectively sets the projected level of service at a lower level which, by definition, has a low likelihood of occurrence;

(d) the methodology is generally robust in providing consistent outcomes across the majority of WSSs to which it has been applied.

However, the apportionment of the ‘top layer’ of storage between medium (MP_2) and high priority (HP_2) using the ratio HP_1:MP_1 (i.e. the ratio of capacity in the bottom and middle storage layers) does not provide a robust outcome. An improvement in conditions for medium priority users is reflected by an increase in the utilised volume in the middle storage layer ($MP_{1(utilised)}$). Yet, due to the nature of the HUF_{mp} formula

$$\text{HUF}_{\text{mp}} = \frac{MP_{1(utilised)} + MP_{2(utilised)}}{MP_{1(utilised)} + HP_{1(utilised)} + MP_{2(utilised)} + HP_{2(utilised)}}\ (\%)$$

an increase in $MP_{1(utilised)}$ effectively results in a decrease in the overall capacity utilised by medium priority users; hence a lower HUF_{mp} value. In turn, this implies that medium priority users receive less benefit from the headworks;

[22] G&S advised that calculations were not reviewed in detail for the following schemes and reasons: for Bundaberg and Three Moon Creek WSSs, the IQQM simulations could not be run as the data files were not provided. In Callide Valley WSS, the IQQM simulations could not be run as the model would not function. In Upper Burnett, the IQQM simulations were performed but the historical storage volume data could not be extended, so the 15-year critical period could not be confirmed.

(e) the methodology for the calculation of HUF_{mp} may result in overly conservative estimates of benefit derived from the assets by medium priority users. The following assumptions, to a greater or lesser extent, have a conservative effect on the HUF calculations:

(i) in schemes were the conversion of medium to high priority is allowed under the ROP, assuming the maximum conversion of HP occurs results in a lower HUF_{mp} than if the same calculation was based on existing allocations;

(ii) assuming zero inflows (which affects HP_1 and MP_1 values) leads to lower HUF_{mp} values than if minimum inflows were included; and

(iii) selection of the lowest calculated HUF_{mp} value skews the implied measure of probability of access and does not provide an objective measure of projected benefit; and

(f) the level of entitlement for the medium and high priority groupings should be based on existing levels, rather than the assumption of full medium to high priority conversion as allowed under the ROP, because it reflects current WAE (current benefit) which is the correct principle upon which to set the next five years of prices, rather than being based on the maximum possible conversion to high priority WAE, which may never occur, or take place at an unknown future time.

If conversions from medium to high priority take place during the 2012-17 regulatory period, SunWater need only adjust the HUF prior to the next price review to accommodate this change in future prices. It is likely, given the low volumes of available conversion, that there would be no material impact on SunWater's revenue during 2012-17. If material, the Authority would propose to consider an application for an end of period adjustment.

Therefore, G&S recommended that:

(a) HUFs be calculated from an assessment across a full period of available data rather than the 15-year period returning the lowest HUF_{mp};

(b) the assessment data set be extended/in-filled with recorded data (where available) to provide assessment against all available data;

(c) the method for apportioning the top layer of storage between medium and high priority be modified to reflect the ratio of nominal volumes rather than ratio of MP_1:HP_1; and

(d) HUFs be calculated on the basis of the existing levels of high and medium priority entitlements rather than the maximum volume of high priority entitlements that can exist under the ROP rules), with updates to HUFs to be undertaken with conversions as they occur.

In response to (a), SunWater (2011w) contend that this recommendation ignores the purpose of the HUFs, which is to determine the storage capacity required for high priority water entitlements having regard to the worst-case inflow. SunWater submitted that basing HUFs on the assessment of long-term data without taking proper account of the critical period would not only result in the under-sizing of the high priority share of the storage but also undermine the future security of high priority entitlements.

In response to (b), SunWater (2011w) considered that this approach would not properly reflect the proportion of storage capacity actually dedicated to high priority water entitlements given this capacity is driven by worse-case inflow scenarios, not long-term averages.

In response to (c), SunWater (2011y) submitted that it did not object to this suggestion as it may slightly simplify the methodology and would likely result in only limited changes to the final HUF values for each scheme. SunWater submitted revised HUF calculations for all schemes incorporating this change.

In response to (d), SunWater (2011w) noted that this suggestion fails to recognise or understand the important market influences that are driving water entitlement conversions at the present time, and will not result in HUFs that will endure in the long-term as medium priority entitlements are converted to high priority (within the constraints of the ROP).

Aurecon (2011) also supported SunWater's proposal to adopt the HUF allocation methodology for renewal annuities as it more closely resembles the storage capacity taken by WAE of different priorities and results in a lower allocation of costs to irrigators.

Conclusion and Implications

The Authority accepts SunWater's responses for the reasons outlined (noting the minor data issues raised by G&S).

SunWater (2011x) amended its proposed HUFs to reflect the endorsed change in (c) above, which resulted in changes for eight WSSs: Barker Barambah, Boyne River & Tarong, Lower Fitzroy, Mareeba-Dimbulah, Nogoa-Mackenzie, Proserpine River, Three Moon Creek and Upper Burnett (Table 5.10).

Table 5.10: SunWater's Amended HUF for WSS

Scheme	*Priority Group*	*Initial HUF (%)*	*Revised HUF (%)*
Barker Barambah	Medium Priority	75	76
	High Priority	25	24
Bowen Broken Rivers	Medium Priority	0	0
	High A1 Priority	35	35
	High A2 Priority	65	65
Boyne River	Medium Priority	9	10
	High Priority	91	90
Bundaberg*	Medium Priority	82	82
	High Priority	18	18
Burdekin-Haughton	Medium Priority	79	79
	High Priority	21	21
Callide Valley	Medium Priority (Groundwater)	9.8	9.8
	Risk Priority (Surface Water)	0.2	0.2
	High Priority (Surface Water)	90	90
Chinchilla Weir	Medium Priority	12	12
	High Priority	88	88
Cunnamulla	Medium Priority	100	100
Dawson Valley #	Medium Priority	46	46
	Medium A Priority	24	24
	High Priority	30	30
Eton #	High B Priority	80	79
	High A Priority	20	21

Scheme	Priority Group	Initial HUF (%)	Revised HUF (%)
Lower Fitzroy	Medium Priority	7	10
	High Priority	93	90
Macintyre Brook	Medium Priority	87	87
	High Priority	13	13
Maranoa River	Medium Priority	100	100
Mareeba-Dimbulah #	Medium Priority	46	47
	High Priority	54	53
Lower Mary	Medium Priority	42	42
	High Priority	58	58
Nogoa-Mackenzie #	Medium Priority	40	45
	High Priority	60	55
Pioneer River	High B Priority	44	44
	High A Priority	56	56
Proserpine River	Medium Priority	27	29
	High Priority	73	71
St George	Medium Priority	94	94
	High Priority	6	6
Three Moon Creek	Medium Priority(Surface Water)	8	8
	Medium Priority(Groundwater)	52	53
	High Priority (Groundwater)	40	39
Upper Burnett*	Medium Priority	18	17
	High Priority	82	83
Upper Condamine	Medium Priority	11	11
	High A Priority	86	86
	High B Priority	3	3

*Note: *SunWater WAE only, #Excludes Risk WAE. Source: SunWater (2011d) and SunWater (2011x).*

The scheme reports present an explanation, for each service contract, of the above changes (or the lack thereof).

Table 5.11 below presents a comparison of the relative share of capital costs for different priority groups under the previously adopted water pricing conversion factors and the recommended HUFs.

Table 5.11: Relative Share of Capital Cost Allocation using WPCFs and HUFs

Scheme	*Priority Group*	*WPCF (%)*	*Revised HUF (%)*
Barker Barambah	Medium Priority	85	76
	High Priority	15	24
Bowen Broken Rivers	Medium Priority	8	0
	High A1 Priority	32	35
	High A2 Priority	60	65
Boyne River	Medium Priority	13	10
	High Priority	87	90
Bundaberg*	Medium Priority	84	82
	High Priority	16	18
Burdekin-Haughton	Medium Priority	85	79
	High Priority	15	21
Callide Valley	Medium Priority (Groundwater)	59	9.8
	Risk Priority (Surface Water)	1	0.2
	High Priority (Surface Water)	39	90
Chinchilla Weir	Medium Priority	55	12
	High Priority	45	88
Cunnamulla	Medium Priority	100	100
Dawson Valley	Medium Priority	45	46
	Medium A Priority	18	24
	High Priority	37	30
Eton#	High B Priority	91	79
	High A Priority	9	21
Lower Fitzroy*	Medium Priority	7	10
	High Priority	93	90
Macintyre Brook	Medium Priority	96	87
	High Priority	4	13
Maranoa	Medium Priority	100	100
Mareeba-Dimbulah	Medium Priority	90	47

Scheme	Priority Group	WPCF (%)	Revised HUF (%)
	High Priority	10	53
Lower Mary	Medium Priority	89	42
	High Priority	11	58
Nogoa-Mackenzie	Medium Priority	63	45
	High Priority	37	55
Pioneer River	High B Priority	51	44
	High A Priority	49	56
Proserpine River	Medium Priority	50	29
	High Priority	50	71
St George	Medium Priority	93	94
	High Priority	7	6
Three Moon Creek	Medium Priority(Surface Water)	12	8
	Medium Priority(Groundwater)	77	53
	High Priority (Groundwater)	11	39
Upper Burnett*	Medium Priority	89	17
	High Priority	11	83
Upper Condamine#	Medium Priority	69	11
	High A Priority	30	86
	High B Priority	1	3

*Note: *SunWater WAE only, #Excludes Risk WAE. Source: SunWater (2006) and SunWater (2011x).*

Critical Water Sharing Arrangements

In response to G. Kavanagh (2011), the Authority notes that the CWSAs were established to provide a transparent strategy for determining how water will be shared amongst users when water supplies are critically low. They aim to ensure that water is available for essential supplies such as urban water, hospitals, power supplies, fire fighting and sewage systems.

The CWSAs were developed in consultation with the scheme operators and community, including water supply customers. Section 41 of the *Water Supply (Safety and Reliability) Act 2008* requires water service providers to have such arrangements in place. Additional powers reside with the Minister to apply restrictions in the event of emergency water shortages (section 22, 23 of the *Water Act 2000*).

The CWSAs are activated only in genuine emergency water shortage circumstances and relate to the intended use of the water rather than the allocation itself. Under the CWSA, the intended use, rather than the priority specified on the allocation, is the ultimate factor in prioritising the supply of water to customers.

Therefore, the Authority considers that it is appropriate that not all high priority WAE and customers will be treated equally during such times. That is, during CWSA some high priority users (such as urban customers) will receive a benefit of the headworks when other high priority customers will not (such as irrigation customers holding high priority WAE).

As earlier noted, according to SunWater, the CWSA are taken into account in establishing the HUF (Step 3). However, the allocation of costs using HUFs does not reflect differential treatment of different high priority customer types during such times. That is, the HUF does not differentiate between high priority customers, for example, urban, industrial and irrigation.

Accordingly, the HUF would not allocate fewer costs to high priority irrigation customers (when compared to urban or industrial customers) to reflect different treatment under CWSA. This highlights a potential inequity (albeit in limited circumstances) created by SunWater's HUF methodology for high priority irrigators.

To address this would require further refinement of the HUF approach with more costs allocated to urban or industrial customers, relative to high priority irrigation WAE. However, when the probability of this occurring is taken into account (as per HUF in Step 4) the adjustment would in all likelihood be very minor. SunWater has advised that it is not aware of any situation during times of water scarcity when high priority irrigators have actually received less benefit than other high priority customers, although SunWater concedes this is a possibility.

Accordingly, the Authority does not propose to further investigate this issue for the 2012-17 regulatory period.

In the event that high priority irrigators actually receive a lesser benefit than other high priority customers, the Authority would reconsider its position on this matter in a subsequent price review.

Transition costs resulting from the Authority's recommended cost allocation methodologies will be considered in the chapter on Draft Prices.

Recommendation:

The Authority recommends that SunWater's HUF methodology be adopted with the exception that the method for apportioning the top layer of storage between medium and high priority be modified to reflect the ratio of high and medium priority nominal volumes.

The Authority further recommends the adoption of SunWater's revised HUFs (Table 5.11) for the allocation between priority groups of prudent and efficient fixed renewals costs in bulk schemes.

5.7 Allocation of Distribution System Renewals Costs According to Priority

The Authority noted above that, during the previous price setting process, there was agreement, between SunWater and customers that high priority WAEs be converted to medium priority equivalent volumes of WAEs for the allocation of all bulk and distribution system costs.

It was also noted that Tier 1 agreed that WPCFs used for this purpose should be reviewed. The result of this review was SunWater's proposed HUF methodology for application to the bulk schemes.

Stakeholder Submissions

SunWater

SunWater (2011i) submitted that the allocation of renewals costs between medium and high priority WAEs for distribution schemes should be determined by the Authority, but that the HUF methodology should not be used because the HUF is not relevant to the allocation of fixed renewals costs in distribution systems which do not provide storage.

In determining a basis for allocating fixed distribution system costs to customers in general (rather than specifically between customer priority groups), SunWater submitted that current WAEs should be adopted.

SunWater proposed this on the basis that current WAEs represented the best available means of determining customers' current share of distribution system capacity.

SunWater advised that, to remove a potential perverse incentive for customers to convert from medium to high priority WAE in distribution systems, the quantum of fixed costs allocated to a each customer upon commencement of 2012-17 prices should remain with the customer if they convert from medium to high priority WAE.

SunWater noted that this may need to be revisited in subsequent price reviews to address changes (or implied changes) in customers' share of capacity due to the introduction of water trading.

Other Stakeholders

CANEGROWERS (2011a) submitted that trading conversion factors [DERM's ROP conversion factors, where available, or the 2006-11 WPCFs] could be used for channel systems.

CHCGIA (2010a) supported the principle of user-pays for the apportionment of capital costs and that, since channel systems are used for water delivery, as opposed to capture and storage, apportioning channel systems costs using the HUFs would be at odds with the intent of the methodology.

MIS (2010), QFF (2010a) and ISP (2010) submitted that it [cost allocation] should be made on the basis of the benefits received by different priority groups.

Authority's Analysis

Consistent with the Authority's recommended approach to allocating headworks renewal expenditure (above), the Authority considers that distribution system costs also should be allocated according to the relevant cost drivers.

In principle, the Authority considers that distribution system capacity is the relevant cost driver for fixed renewals expenditure. In general, the best measure of capacity share is the instantaneous or peak flow rate. However, neither DERM's regulatory framework nor SunWater's contracts currently specify or explicitly confer to distribution system WAE holders an entitlement to a peak flow rate or a share of system capacity.

The Authority also notes SunWater's submission that the existing arrangements for managing congestion (competition for peak flow capacity) do not easily translate to a share of customers' peak capacity. In the absence of any reliable measure of peak flow entitlements or customers' shares of (or rights to) distribution system capacity, the Authority, therefore, considered original WAE (prior to water trading) or current WAE.

As SunWater has submitted that the data for original WAE is also not available, the Authority notes that the only available proxy or basis for a measure of distribution system capacity share, is therefore current WAE.

Accordingly, the Authority considers three options below, each of which is based on current WAE.

Options

(a) Current WAE

This approach allocates renewals on the basis of current WAE held, irrespective of priority type. High and medium priority WAE would, under this approach, be allocated the same costs per ML. This reflects the view that medium and high priority users have the same share of distribution system capacity per ML of nominal WAE (as recognised by some customers and as submitted by SunWater).

Although high priority WAE has greater reliability, this is derived from a greater share of storage capacity rather than distribution capacity. In some distribution systems, the Authority understands that medium priority customers (particularly for crops requiring high flow rates over a relatively short watering period) may in fact require relatively more system capacity per ML of WAE compared to high priority customers who require fairly constant (relatively lower) flow rates over longer periods. For example, some high priority customers (for example, orchards) use trickle irrigation while some medium priority customers (for example, sugar) require more instantaneous service delivery.

(b) ROP Conversion Factors

ROP conversion factors represent the ratio at which DERM would approve conversion from medium to high priority WAE (or vice versa) based on hydrological considerations of headworks capacity.

To allocate costs between priority groups, these could be used to convert high priority WAE to an equivalent volume of medium priority WAE for pricing purposes.

However, ROP conversion factors do not represent customers' share of distribution capacity.

Further, DERM only develops conversion rates where there is demand for conversions, using appropriate hydrological data. These factors are only available for three of the eight distribution systems (Burdekin-Haughton, Emerald and Mareeba-Dimbulah) and would need to be supplemented by another method for the five distribution systems without ROP conversion factors.

(c) Water Pricing Conversion Factors

Where ROP conversion factors are not available, WPCFs may serve as an option. However, the basis of these WPCF's is not clear and are understood to reflect negotiated outcomes which took into account a number of factors including hydrological data where available. They were used to allocate all fixed costs as part of 2006-11 prices.

They therefore do not represent customer's share of distribution capacity. Moreover, they are confidential.

Conclusions

In relation to the above options, the Authority considers that current WAE is the only measurable estimate of customers' share of distribution system capacity. Further, SunWater has advised that the same level of capacity is installed per ML of nominal WAE irrespective of priority.

That is, high priority does not necessarily utilise more of the capacity of the distribution system and therefore should not necessarily pay more per ML for delivery. SunWater can deliver contracted supplies with lower flow rates, that is, installed capacity is not necessarily the best measure of the service delivered.

A more appropriate means for allocating such costs requires substantial further consideration and development and can be expected to require considerable resourcing and consultation if it is be effectively defined and implemented. The Authority recommends that such a possibility be considered before the next pricing review.

In response to SunWater's view that fixed distribution system charges should remain with customers if they convert to high priority, the Authority agrees with SunWater, for the reasons SunWater states. That is, to remove a potentially perverse incentive for such conversions, the Authority recommends that the quantum of fixed costs (allocated on the basis of current WAE) should remain with a customer if they convert to high priority. Similarly, the same should apply if a customer converted from high to medium priority. This arrangement should be subject to review as part of the Authority's recommended subsequent review of customer share of distribution system capacity.

In reaching this conclusion, the Authority notes that, over time, conversions have occurred from medium to high priority WAE using water price conversion factors (sometimes based on ROPs and sometimes on a negotiated basis). It is not clear for each individual whether the proposed arrangement will better reflect the true cost of the service they receive or create inequity with other irrigators. That will only be discernible by SunWater in reviewing individual circumstances.

The Authority notes, therefore, that there may be some winners and losers from this approach, due to the timing of conversions. However, if the Government supports a subsequent review of distribution system capacity share, the potential inequities can at least be considered and potentially addressed in subsequent price reviews.

Recommendation:

The Authority recommends that nominal WAEs be used for the allocation of fixed distribution system costs between priority groups. Fixed distribution system charges should remain with customers if they convert to between priority groups.

The Authority also recommends that, at the conclusion of this review, SunWater commence a review of a more appropriate means for allocating fixed renewals costs in distribution systems.

5.8 Calculating the Renewals Annuity

Indexed or constant (non-indexed) Annuity

SunWater (2011c) proposed an indexed annuity based on a rolling 20 years of forecast renewals expenditures as it was consistent with the approach applied for the previous price path, reflected the methodology adopted by SCARM in 1998 and adopted by the Queensland Government's Water Reform Unit in establishing the price path in 2000.

Authority's Analysis

An annuity converts a series of future uneven annual expenditures into either a constant annual charge or an indexed annual charge. SunWater has opted for the latter.

Constant versus Indexed Annuity

A necessary step in calculating a renewals annuity is to calculate the present value of the forecast renewals expenditure. This can be calculated using forecasts of nominal renewals expenditures or with forecast renewals set in real terms. Either will produce the same present value of future costs when applied with all parameters established in a consistent manner.

An equivalent nominal renewals annuity, that is, one calculated to recoup the same present value over time, can be either indexed or constant over time in nominal terms. In either case, both the cash flows and the discount rate used need to be expressed in nominal terms to ensure consistent valuations.

An annuity calculated in constant annual values front-ends the recoupment of future costs more than an indexed annuity (which more closely reflects the time value of costs). In this regard, the Authority notes that:

(a) a 20 year constant annual annuity would generate, on average, 12.9% more revenue during the first five years of the regulatory period than an annuity indexed by the inflation rate; and

(b) a 30 year constant annual annuity would generate, on average, 16.8% more revenue during the same period.

In principle, the Authority accepts SunWater's proposal to use indexed annuities as these are typically preferred for reasons of intergenerational equity and economic efficiency.

Forecasting Renewals Expenditures

Credible estimates of future renewals outlays are difficult to produce, particularly over long time horizons. For this reason, future costs are often estimated using today's values and then projected forward using an appropriate cost escalation rate.

SunWater's renewals outlays consist of the same cost elements as its operating costs, namely direct labour, materials and contractors' services, other direct costs (such as rates and land taxes) and miscellaneous administrative costs, and non-direct (indirect and overhead) costs.

The Authority's analysis in relation to the escalation methods and factors proposed by SunWater for its cost components is provided in Chapter 6 – Operating Costs.

In summary, the Authority concludes in that section that:

(a) labour price indexes and other evidence suggest that labour costs in Queensland over the short to medium term are likely to rise by around 4% per annum, and probably more than this in regional Queensland where the continuation of strong growth in the resources sector is likely to maintain upward pressure on labour (and other) costs;

(b) SunWater's proposal to escalate its direct materials and contractor costs by 4% per annum seems reasonable when compared with ABS construction cost index data and analysis of short-to-medium term investment trends; and

(c) SunWater's proposal to escalate other direct costs and all non-direct costs by the general inflation rate (2.5% per annum) is reasonable given the nature of these costs which are primarily generated by administrative and management functions.

Notwithstanding these conclusions, the Authority is also mindful of the long term nature of forecasting future renewals outlays as inputs to the calculation of the renewals annuity.

While the Authority considers a 4% per annum escalation rate for labour, materials and contractors' costs is appropriate over the regulatory period, it is not persuaded that the current cost pressures responsible for this level of escalation necessarily will be sustained over the long term (that is, the Authority's recommended 20 year planning period).

It is also important to recognise that the application of higher escalation rates beyond the current price path can increase present values and raise associated renewals annuities. Consequently, during the price path, customers would be paying for future cost increases that may not eventuate. This could be seen as inequitable particularly where there is a large degree of uncertainty involved.

For these reasons, the Authority concludes that, for the purpose of estimating future renewals outlays, the cost escalation factor for all component costs beyond the regulatory period should be the general inflation rate (that is, 2.5% per annum).

The Appropriate Annuity Index

The factor used to index the annuity through time can be different to the factors used to escalate cost components. The main criterion is that the present value of the indexed annuity is equivalent to the present value of the forecast costs. There are many equivalent indexed annuities that can give rise to this result.

SunWater proposes calculating its renewals annuities in real terms using a real discount rate which is then indexed over the price path by the inflation rate[23]. This is equivalent to generating a constant growth rate annuity in nominal terms where the growth rate is the general rate of inflation. This is not an unreasonable approach.

Recommendation:

The Authority recommends that SunWater continues to calculate its renewals annuities indexed annually by the general rate of inflation.

The Authority also recommends that for the purpose of calculating renewals annuities, proposed renewals expenditure be obtained using the following escalation factors:

(a) for the direct labour, materials and contractors' costs, 4% per annum over the regulatory period (2012-17), and 2.5% per annum thereafter; and

(b) for the 'other' direct cost component and all non-direct costs: 2.5% per annum for the entire recommended renewals planning period.

[23] SunWater, 2010, Renewals annuity Background Paper, January.

Frequency of Recalculation

Stakeholder Submissions

SunWater (2011c) proposed an annual rolling annuity, that is, the renewals annuity for each WSS would be recalculated each year of the price path.

MDIAC (2010) submitted that the annuity should be fixed for the five year regulatory period [no reason provided].

Other Jurisdictions

The SCARM Guidelines considered that the renewals annuity should be recalculated regularly every one, three or five years as appropriate to ensure that future costs are always being brought to account (but provided no further guidance on which period should be adopted).

In Victoria, both GMW and SRW applied non-rolling annuities in the early 1990s. However:

(a) GMW reported that the rolling annuity approach was subsequently adopted to enable a better [earlier] understanding of the price implications of longer-term renewals expenditure (G. Coburn, 2010); and

(b) SRW reported that the rolling annuity approach was subsequently adopted to avoid price spikes associated with lumpy renewals expenditure (P Burns, 2010).

Authority's Analysis

The Authority notes that SunWater proposes a rolling annuity that is recalculated each year of the 2012-17 regulatory period, rather than being recalculated every three or five years.

Adoption of a five year rolling annuity (that is, recalculate the annuity only every five years) would be administratively simpler and more transparent to customers and hence easier to review. It would also coincide with the resetting of prices every five years.

Nevertheless, on the basis of the greater smoothing (that is, lower price volatility) offered by annual recalculation, and the experiences of other jurisdictions, the Authority recommends that SunWater's proposed approach be adopted.

Recommendation:

The Authority recommends that SunWater's annual rolling annuity calculation be applied.

Recommended Renewals Annuities for 2012-17

Based on the findings in this chapter, the Authority has calculated the following recommended renewals annuities for each of the 30 WSS as summarised in Table 5.12.

Table 5.12: Authority's Recommended Renewals Annuities for 2012-17 (Real $'000)

Water Supply Scheme	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Barker Barambah	242	235	237	234	233
Bowen Broken Rivers	324	318	321	407	400
Boyne River and Tarong	17	16	20	19	19
Bundaberg (bulk)	544	544	543	545	553
Bundaberg (distribution)	1,545	1,658	1,686	1,790	1,810
Burdekin-Haughton (bulk)	769	759	748	753	737
Burdekin-Haughton (distribution)	2,381	2,568	2,602	2,665	2,718
Callide Valley	364	355	347	342	340
Chinchilla Weir	4	4	4	4	4
Cunnamulla	5	6	6	6	6
Dawson Valley (bulk)	(63)	(58)	(34)	(21)	1
Theodore (distribution)	174	200	219	217	213
Eton (bulk)	527	522	515	516	537
Eton (distribution)	545	553	581	578	584
Lower Fitzroy	49	48	48	47	47
Lower Mary (bulk)	(4)	(4)	(4)	(3)	(3)
Lower Mary (distribution)	452	445	441	438	429
Macintyre Brook	266	261	258	259	256
Maranoa River	5	5	5	8	8
Mareeba-Dimbulah (bulk)	26	26	34	34	37
Mareeba-Dimbulah (distribution)	1,845	1,928	1,898	1,884	2,055
Nogoa-Mackenzie (bulk)	424	425	416	417	409
Emerald (distribution)	623	645	689	696	706
Pioneer River	131	139	148	148	156
Proserpine River	197	194	191	186	182
St George (bulk)	653	646	636	630	621
St George (distribution)	253	252	249	260	253
Three Moon Creek	105	104	103	102	102
Upper Burnett	187	192	189	190	191
Upper Condamine	538	529	523	529	521

Source: QCA (2011). Note: Service contracts with negative balances arise due to the Authority's decision not to adopt SunWater's judgement-based adjustments to two schemes (see section on ARR Unbundling Methodology).

Recommendation:

The Authority recommends the adoption of the proposed renewals annuities presented in Table 5.12.

6. OPERATING EXPENDITURE

Summary

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

The Authority recommends that, in 2012-13, SunWater's total non-direct operating costs be reduced by 2.7% for irrigation service contracts including identified cost savings of approximately 1.2% and a 1.5% productivity gain in that year.

For subsequent years, the Authority recommends that SunWater's forecast total non-direct operating costs be reduced by an annual efficiency gain of 1.5% per annum, compounding. The Authority's total non-direct operating cost efficiency gains result in annual cost saving which increase from 2.7% in 2012-13 to 8.93% in 2016-17.

The Authority also recommends that, in 2012-13, SunWater's total direct operating costs (excluding electricity) of each irrigation scheme be reduced by 3.18%, except where higher cost scheme savings have been explicitly identified, including anticipated cost savings of 2.43% and a 0.75% productivity gain in that year.

For subsequent years, the Authority recommends that SunWater's forecast total direct operating costs (excluding electricity) be reduced by an annual efficiency gain of 0.75% per annum, compounding. The Authority's total direct operating cost efficiency gains result in annual cost savings which increase from 3.18% in 2012-13 to 6.24% in 2016-17. Electricity cost savings targeted by SunWater at 1.0% per annum to 30 June 2015 are also applied together with specific cost savings identified by the Authority's engineering consultants.

The Authority recommends that total non-direct costs generally be allocated to service contracts using direct labour costs. For bulk schemes, fixed operating costs should be allocated to priority groups using HUFs, except for half of fixed operations costs, which should be allocated using current WAE. In addition, all fixed distribution system operating costs should be allocated to priority groups using current WAE.

The Authority recommends that for 2011-12 and the regulatory period 2012-17:

(a) labour, materials and contractors costs should be escalated at 4% per annum;

(b) electricity costs should be escalated at 7.41% per annum; and

(c) other non-direct and direct costs should be escalated by 2.5% per annum.

The Authority also recommends that SunWater be allowed to recover the cost of working capital. For the future, however, SunWater should aim to base working capital requirements on efficient forecasts of revenue and cash flows from SunWater's irrigation schemes, rather than relying on historical, whole of business data.

The Authority recommends that SunWater undertake a review of its planning policies, processes and procedures to better achieve its strategic objectives and improve the usefulness of its information systems with a view to: attaining greater operating efficiency; achieving greater transparency; facilitating future price reviews; and promoting more meaningful stakeholder engagement. SunWater should submit proposals, together with details of improvements to its management accounting for the recording, documentation and analysis of labour costs for approval by the Authority by 30 June 2014 (with a draft provided to the Authority by 30 June 2013).

6.1 Background

Ministerial Direction

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

In doing so, the Authority must have regard to the level of service [standard of service] provided by SunWater to its customers. The Authority must also have regard for the legitimate commercial interests of SunWater and the requirement for SunWater to operate as a commercial entity.

Issues

Issues for consideration in the 2012-17 review include:

(a) the extent to which the cost savings anticipated in the previous price review have been incorporated into SunWater's total cost estimates for the purpose of 2012-17 prices;

(b) the prudency and efficiency of SunWater's proposed operating expenditures for 2011-12;

(c) the most appropriate methodologies for allocating operating costs to service contracts and to different priority groups within each service contract; and

(d) the escalation factors to be applied to costs for the purpose of forecasting operating expenditure.

6.2 Total Operating Costs

Operating costs are classified by SunWater as direct, indirect or overhead. The Authority has adopted the terms direct and non-direct (incorporating indirect and overhead costs).

Direct costs are defined as those attributable to a service contract, for example, labour, materials and contractors used directly in a service contract area. SunWater classified its direct costs according to:

(a) activity – operations, preventive maintenance, corrective maintenance, electricity and other; and

(b) expenditure type – labour, materials, contractors, electricity and other.

The Authority notes that electricity is both an activity and an expenditure type.

Non-direct costs are defined by SunWater as:

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

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

SunWater includes non-direct costs in both renewals and operating expenditures. However, for the purposes of analysis, the Authority has reviewed all non-direct costs in this chapter.

Previous Review

The 2006-11 price paths were recommended by SunWater after consultation with irrigators. The Queensland Government subsequently approved those prices.

As part of this process, Indec Consulting Pty Ltd (Indec) was engaged in 2005-06 by SunWater to assess the comparative efficiency and the reasonableness of SunWater's costs, and to identify potential cost savings.

Indec recommended potential total cost savings of \$3.8 million to \$4.7 million (Real 2005-06) or 7.5% to 9.9% of total annual costs. SunWater was to achieve these costs savings during the 2006-11 price paths (SunWater, 2006a). Indec's potential savings excluded consideration of electricity, insurance, local government rates and land tax.

Stakeholder submissions

SunWater

SunWater submitted that, relative to actual costs incurred in 2010-11, forecast total operating costs for 2012-17 would increase. This was primarily due to forecast increases in electricity and preventive maintenance costs.

SunWater's actual 2010-11 and forecast total operating costs (including electricity and non-direct renewals expenditure) to 2016-17 are presented in Table 6.1.

Table 6.1: SunWater's Actual (2010-11) and Forecast (2012-17) Total Operating Costs (Real $'000)

Cost	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Operations							
Direct	13,412	12,273	12,348	12,360	12,373	12,347	12,347
Non-direct	13,886	11,728	12,607	12,987	12,815	12,379	11,999
Total	**27,298**	**24,001**	**24,956**	**25,349**	**25,186**	**24,727**	**24,346**
Variance to 2010-11		(12.08%)	(8.58%)	(7.15%)	(7.73%)	(9.42%)	(10.81%)
Preventive Maintenance							
Direct	4,505	6,204	6,294	6,342	6,391	6,440	6,440
Non-direct	3,806	4,898	5,251	5,395	5,347	5,182	5,008
Total	**8,311**	**11,102**	**11,545**	**11,737**	**11,738**	**11,622**	**11,448**
Variance to 2010-11		33.58%	38.92%	41.22%	41.23%	39.84%	37.74%
Corrective Maintenance							
Direct	7,558	3,942	3,996	4,038	4,080	4,123	4,134
Non-direct	4,417	2,831	3,042	3,130	3,134	3,063	2,962
Total	**11,976**	**6,774**	**7,038**	**7,168**	**7,214**	**7,186**	**7,096**
% change		(43.44%)	(41.23%)	(40.15%)	(39.76%)	(40.00%)	(40.75%)
Electricity	3,424	7,938	9,411	10,143	10,932	11,900	12,826
Variance to 2010-11		131.82%	174.84%	196.22%	219.26%	247.54%	274.58%
Total Operating Costs							
Direct	28,899	30,357	32,048	32,883	33,775	34,810	35,746
Non-Direct	22,109	19,457	20,901	21,512	21,296	20,624	19,970
Total	**51,009**	**49,814**	**52,949**	**54,395**	**55,071**	**55,434**	**55,716**
Variance to 2010-11		(2.34%)	3.80%	6.64%	7.96%	8.67%	9.23%
Total Operating Costs (excl. electricity)							
Direct	25,475	22,419	22,638	22,740	22,844	22,910	22,920
Non-Direct	22,109	19,457	20,901	21,512	21,296	20,624	19,970
Total (excl. non-direct renewals)	47,585	41,876	43,539	44,252	44,139	43,534	42,890
Non-direct renewals	3,043	4,313	2,611	2,732	2,759	3,085	5,119
Total (incl. non-direct renewals)	**50,628**	46,189	46,149	46,984	46,898	46,618	48,009
Variance to 2010-11		(8.77%)	(8.85%)	(7.20%)	(7.37%)	(7.92%)	(5.17%)
Total Operating Costs (including electricity and non-direct renewals)							
Direct	28,899	30,357	32,048	32,883	33,775	34,810	35,746

Non-Direct	25,152	23,770	23,512	24,244	24,055	23,708	25,089
Total	**54,052**	54,127	55,560	57,127	57,830	58,518	60,835
Variance to 2010-11		0.14%	2.79%	5.69%	6.99%	8.26%	12.55%

Note: 2010-11 data is actual SunWater expenditure; 2012-17 is SunWater Forecast data. Source: SunWater (2011an) and SunWater (2011ao).

Other Stakeholders

CANEGROWERS' (2011a) submission:

(a) questioned why no comparison was provided in the NSPs between the efficient costs determined by Indec in 2006 and SunWater's actual costs over the 2006-11 price paths;

(b) highlighted that, after converting the 2006 figures to 2011-12 dollars (18% Brisbane inflation from 2005-06 to 2010-11 and 3% inflation for 2011 to give result in total inflation of 21.5% over six years), SunWater's actual costs varied by -4% to 103% of those determined by Indec during the 2006-11 price paths review; and

(c) requested that increases above [Indec's] efficient cost estimates be thoroughly reviewed, and that cost increases be clearly justified.

CANEGROWERS (2011c) also submitted that the centralisation (and subsequent movement to Brisbane) of many functions meant SunWater is incurring higher labour costs.

J. Biggs (2011) noted that actual expenditure on the Cunnamulla Weir from the last price path was well below budgeted expenditure and that the new price path budget must take account of the past surplus.

Authority's Analysis

The Authority's analysis below relates exclusively to the 30 irrigation service contracts relevant to this investigation of SunWater. That is, it excludes the five South East Queensland (SEQ) schemes (and all associated costs, including 40 full time staff) that were transferred from SunWater to Seqwater. This ensures that comparisons of past and forecast operating expenditure are on a consistent basis.

Forecast and Actual 2006-11 Operating Costs

Indec's forecast efficient operating costs for 2006-11 for SunWater were as follows (Table 6.2).

Table 6.2: Indec's Forecast of SunWater's Efficient Total Operating Costs 2006-11 (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*5 Year Average*
Operations	15,418	14,652	13,910	13,819	13,643	14,288
Preventive Maintenance	5,279	5,209	5,124	5,177	5,098	5,178
Corrective Maintenance	3,358	3,318	3,339	3,549	3,442	3,401
Electricity	8,178	8,178	8,178	8,178	8,178	8,178
Non-Direct	19,876	18,372	17,313	16,955	16,901	17,883
Total Forecast Operating Costs (including electricity)	**52,109**	**49,728**	**47,865**	**47,678**	**47,262**	**48,928**
Total Forecast Operating Costs (excluding electricity)	**43,931**	**41,550**	**39,687**	**39,500**	**39,083**	**40,750**

Note: Non-direct costs also includes non-direct renewal cost estimates. Source: Indec (2011ao).

SunWater's actual total operating costs for 2006-11 are detailed in Table 6.3.

Table 6.3: SunWater's Actual Total Operating Costs 2006-11 (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*5 Year Average*
Operations	10,790	10,505	11,885	13,448	13,412	12,008
Preventive Maintenance	5,190	4,399	4,797	5,272	4,505	4,833
Corrective Maintenance	4,179	5,884	5,514	4,418	7,558	5,511
Electricity	5,937	4,971	4,634	6,864	3,424	5,166
Non-Direct	27,831	25,097	25,872	24,579	25,152	25,706
Total Actual Operating Costs	**53,926**	**50,856**	**52,702**	**54,582**	**54,052**	**53,223**
Total Actual Operating Costs (excluding electricity)	**47,989**	**45,885**	**48,068**	**47,718**	**50,628**	**48,057**

Note: Non-direct costs include actual non-direct renewal costs. Source: SunWater (2011an) and SunWater (2011ao).

The five year averages show that, over the 2006-11 price paths, actual:

(a) direct operations costs were $2.3 million less than forecast by Indec;

(b) direct maintenance costs were $1.7 million higher;

(c) electricity costs were $3.0 million lower; and

(d) non-direct costs were $7.8 million higher.

Overall, SunWater's actual total operating costs (excluding electricity) during 2006-11 were $7.3 million or 17.9% higher than forecast in the previous price path, based on the five year annual averages.

It should be noted, however, that any cost overrun by SunWater is to SunWater's account as prices over 2006-11 reflected the forecast costs and there was no provision to recover/repay any over/under expenditure.

Forecast 2012-17 Costs and Forecast Efficient 2010-11 Costs

The Authority notes that, in forecasting 2012-17 operating costs, SunWater had regard to

2006-11 actual data for the purpose of budgeting expenditure for a typical (future) year. SunWater described the typical year as one which did not experience extreme conditions (such as flood or drought) but instead reflected average water use and workload.

In addition, SunWater made forward-looking adjustments to align with its expectations of scheme needs during 2012-17.

In response to stakeholder concerns, the Authority requested Indec to establish whether SunWater's proposed costs for 2012-17 reflected previously agreed efficiency gains expected to be achieved in 2006-11.

Indec's 2011 analysis placed particular emphasis on the forecast efficient level of costs for 2010-11, as this was the year in which it was anticipated (during the previous review) that SunWater would achieve efficient costs.

Indec's analysis shows that SunWater's total forecast operating costs for the 2012-17 regulatory period are above the efficient level of operating costs forecast for 2010-11 as part of the previous review. Specifically, total forecast operating costs (excluding electricity) for 2012-17 are (in real terms) between $7.1 million or 18.08% (2012-13) and $8.9 million or 22.84% (2016-17) above 2010-11 efficient forecast costs (Table 6.4).

Table 6.4: Indec's Forecast Total Operating Costs 2010-11 and SunWater's Forecasts 2012-17 (Real $'000)

	2010-11	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Total Forecast Operating Costs (excluding electricity)	**39,083**	**46,149**	**46,984**	**46,898**	**46,618**	**48,009**
Variance to 2010-11		7,066	7,901	7,815	7,535	8,926
Variance to 2010-11 (%)		18.08%	20.22%	20.00%	19.28%	22.84%

Note: Non-direct costs include actual non-direct renewal costs, as SunWater forecast the recovery of all non-direct costs in their operating costs for 2006-11. Source: Indec (2011g); SunWater (2011an); and SunWater (2011ao).

Indec's analysis at the service contract level shows that, for 15 service contracts, SunWater has forecast 2012-17 operating costs (excluding electricity) below the efficient level of 2010-11 operating costs. Indec's analysis also shows that for the other 15 service contracts, SunWater has forecast operating costs for 2012-17 that are above the 2010-11 efficient level.

Indec (2011) noted, however, that SunWater's proposed 2012-17 cost allocation methodologies associated with distribution system loss WAE appear to impact on the allocation of costs between bulk and distribution service contracts. Indec considered that this may introduce anomalies in its analysis (above) at the service contract level. On this basis, the above observations are considered unreliable for those schemes which have both bulk and distribution service contracts.

The results of Indec's analysis at a service contract level for bulk schemes not associated with a distribution system is detailed in Table 6.5 and Table 6.6.

Table 6.5: Bulk Service Contracts – SunWater's Forecast Operating Costs, excluding electricity, (2012-17) above Indec's Forecast of Efficient Costs 2010-11 (Real $'000)

Service Contract	*Minimum 2012-17 Variation to 2010-11*		*Maximum 2012-17 Variation to 2010-11*	
	$	*%*	*$*	*%*
Bowen Broken WSS	655	293.2	686	307.1
Boyne River and Tarong WSS	11	3.2	28	8.1
Lower Fitzroy WSS	246	820.9	261	870.9
Macintyre Brook WSS	205	30.2	253	37.3
Pioneer River WSS	10	1.2	50	5.7

Source: Indec (2011g).

Table 6.6: Bulk Service Contracts – SunWater's Forecast Operating Costs, excluding electricity, (2012-17) below Indec's Forecast of Efficient Costs (2010-11) (Real $'000)

Service Contract	*Minimum 2012-17 Variation to 2010-11*		*Maximum 2012-17 Variation to 2010-11*	
	$	*%*	*$*	*%*
Barker Barambah WSS	(176)	(19.7)	(246)	(27.5)
Callide WSS	(69)	(6.9)	(110)	(11.1)
Chinchilla Weir WSS	(63)	(47.7)	(65)	(49.2)
Cunnamulla Weir WSS	(42)	(44.6)	(43)	(45.6)
Maranoa WSS	(68)	(68.1)	(69)	(69.1)
Proserpine WSS	(242)	(26.5)	(269)	(29.4)
Three Moon WSS	(198)	(37.1)	(214)	(40.1)
Upper Burnett WSS	(93)	(11.5)	(127)	(15.7)
Upper Condamine WSS	(18)	(1.9)	(63)	(6.5)

Source: Indec (2011g).

Indec's method of overcoming any anomalies that could arise for the 16 service contracts from linked bulk and distribution systems was to combine them into eight schemes. See Table 6.7.

Table 6.7: Bundled WSSs – SunWater's Forecast Operating Costs, excluding electricity (2012-17), and Indec's Efficient Costs (2010-11) (Real $'000)

Service Contract	*Lowest Variation*		*Highest Variation*	
	$	*%*	*$*	*%*
Bundaberg WSS and Bundaberg Distribution System	339	6.2	522	9.5
Burdekin Haughton WSS and Burdekin Haughton Distribution System	1,228	12.3	1,546	15.5
Dawson WSS and Dawson Distribution System	217	12.4	297	17.0
Nogoa WSS and Emerald Distribution System	576	19.6	685	23.3
Eton WSS and Eton Distribution System	844	38.7	924	42.3
Lower Mary Supply and Lower Mary Distribution System	288	47.4	322	53.0
Mareeba-Dimbulah WSS and Mareeba-Dimbulah Distribution System	(1,020)	(19.9)	(1,135)	(22.2)
St George WSS and St George Distribution System	(358)	(13.8)	(444)	(17.1)

Source: Indec (2011g).

Indec has cautioned not to draw any inference from its analysis that SunWater should reduce its costs over the 2012-17 regulatory period to the level of efficient costs determined for 2011. It observed that further analysis would be required to justify and support such an inference.

Details of the additional analyses undertaken for both non-direct and direct costs, and their implications for SunWater's costs, are outlined further below.

SunWater's Forecast 2012-17 Costs and Actual 2010-11Costs

SunWater's forecast 2012-17 operating costs are compared with 2010-11 actual costs in Table 6.8.

Table 6.8: SunWater's Actual (2010-11) and SunWater's Forecast (2012-17) Total Operating Costs (Real $'000)

Cost	*2010-11*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*	*5 Year Average*
Operations	27,298	24,955	25,347	25,188	24,726	24,346	24,913
Variance to 2010-11		(8.58%)	(7.15%)	(7.73%)	(9.42%)	(10.81%)	(8.74%)
Preventive Maintenance	8,311	11,545	11,737	11,738	11,622	11,448	11,618
Variance to 2010-11		38.92%	41.22%	41.23%	39.84%	37.74%	39.79%
Corrective Maintenance	11,976	7,038	7,168	7,214	7,186	7,096	7,140
Variance to 2010-11		(41.23%)	(40.15%)	(39.76%)	(40.00%)	(40.75%)	(40.38%)
Electricity	3,424	9,411	10,143	10,932	11,900	12,826	11,042
		174.84%	196.22%	219.26%	247.54%	274.58%	222.49%
Total Operating Costs (excl. non-direct renewals)	51,009	52,949	54,395	55,071	55,434	55,716	54,713
Variance to 2010-11		3.80%	6.64%	7.96%	8.67%	9.23%	7.26%
Non-direct renewals costs	3,043	2,611	2,732	2,759	3,085	5,119	3,261
Total Operating Costs (incl. non-direct renewals)	54,052	55,560	57,127	57,830	58,518	60,835	57,974
Variance to 2010-11		2.79%	5.69%	6.99%	8.26%	12.55%	7.26%

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

Table 6.8 shows that, relative to actual 2010-11operating costs, SunWater's forecast 2012-17 operating costs vary as follows, based on a five year annual average for all schemes:

(a) operations (including non-direct) costs decrease by 8.7%;

(b) preventive maintenance (including non-direct) costs increase by 39.8%;

(c) corrective maintenance (including non-direct) costs decrease by 40.4%;

(d) electricity costs increase by 222.5%;

(e) total operating costs (excluding non-direct costs applied to renewals) increase overall by approximately 7.26%; and

(f) total operating costs (*including* non-direct costs applied to renewals) also increase overall by approximately 7.26%.

As with the comparison of forecast 2012-17 costs with Indec's forecast efficient 2010-11 costs, further more detailed analysis is required to establish the prudency and efficiency of SunWater's operating costs.

6.3 Prudency and Efficiency of Non-Direct Operating Costs

Over the 2012-17 regulatory period, SunWater's proposed non-direct costs are forecast to be slightly below actual costs in 2010-11 ($25.2 million), ranging from between $23.5 million and $25.1 million (in real terms). See Table 6.1.

Non-direct costs constitute, on average, about 51% of operations, 47% of preventive maintenance and 43% of corrective maintenance costs.

SunWater's 2010-11 non-direct costs, which formed the basis of SunWater's forecast 2012-17 total non-direct costs, were reviewed by Deloitte Touche Tohmatsu (Deloitte) to determine their prudency and efficiency.

In June 2011, Deloitte's Draft Report was released for stakeholder comment. Deloitte's Final Report was released for stakeholder comment in October 2011.

Stakeholder Submissions

SunWater

SunWater (2011a) highlighted that comparing the efficiency of a particular business with other entities is a complex undertaking, as business characteristics such as the age of assets, scope of services, business size, number of customers and geographic spread can vary significantly between entities and are likely to materially influence the outcomes of benchmarking.

However, SunWater acknowledged that indicative comparisons of a limited number of costs or cost measures with similar businesses (such as those that may have undergone recent regulatory reviews) are possible. SunWater submitted that the recent IPART review of State Water Corporation (State Water) is such a review.

WS Atkins International Limited and Cardno Limited (Atkins and Cardno) published their review of State Water's operation and capital cost for IPART in November 2009 (Atkins and Cardno, 2009).

SunWater submitted that State Water's provision of bulk water services in 12 valleys is similar to SunWater's bulk WSSs, however, it noted that State Water does not provide distribution services, nor own and operate assets common to SunWater's portfolio, such as pipelines, pump stations and open channels. The two companies are compared in Table 6.9.

Table 6.9: State Water and SunWater Attribute Comparison

Services	*SunWater*	*State Water*
Number of Customers	5 000	6 000
Bulk water supply	✓	✓
Number of bulk water schemes	23	12 (Valleys)
Number of major dams	19	19
Number of weirs and barrages	63	51
Distribution systems	✓	✗
Treatment	✓	✗

Source: SunWater (2011a).

SunWater submitted benchmarking data sourced from Atkins and Cardno (2009) (Table 6.10).

Table 6.10: Atkins and Cardno benchmarking of Bulk Water Providers

Agency	*Dams*	*Weirs*	*Operation, maintenance and administration as a portion of current replacement cost (%)*
SunWater – River Regulation	24	84	0.69
State Water	17	69	0.95
Goulburn-Murray Water (G-MW) – River Regulation	14	14	1.91
Sydney Catchment Authority (SCA)	21	0	2.38

Note: River regulation is equivalent to bulk water service. Source: SunWater (2011a).

From this data, SunWater concluded that:

(a) SunWater's (river regulation) operational, maintenance and administrative costs as a proportion of current replacement cost of assets, at 0.69%, are lower than those for State Water (0.95%), GMW (1.91%) and SCA (2.38%) (Table 6.10); and

(b) SunWater's corporate costs[24] allocated to bulk WSSs totalled $2.8 million and are lower than State Water's recommended efficient costs of $5.5 million.

SunWater submitted that the above comparisons indicate that SunWater's costs compare favourably with its peers, although it recognises that reliable cost and performance comparisons are difficult to obtain.

SunWater (2011a) also noted the *National Performance Report 2009-10: Rural Water Service Providers* (National Water Commission (NWC), 2011) presents a range of cost items and other data for rural water service providers including administration costs.

[24] Comprising CEO, Board, Finance, Strategy Policy, Compliance, Human Resources and ICT.

However, the handbook to service providers (NWC, 2009b) recognises that caution should be exercised when using this data. Accordingly, SunWater did not submit any specific comparative examples based on the performance reporting indicators under the National Performance Framework for Rural Water Service Providers.

Other Stakeholders

Benchmarking

Australian Sugar Mission Council (ASMC, 2010), CANEGROWERS (2011a) and PVWater (2011b) proposed that SunWater's operations should be benchmarked against similar organisations such, as PVWater, Murray Irrigation Limited or GMW.

The ASMC also suggested that SunWater's business model, operational processes and administrative costs should be assessed for efficiency against a common baseline, for example, cost per delivered ML of water.

CANEGROWERS (2011a) sought a more relevant benchmarking exercise undertaken [than Deloitte's], preferably with local water management boards, such as PVWater, and questioned both the prudency and efficiency of SunWater's organisational structure and its relevance to the provision of irrigation water.

CANEGROWERS (2011c) also proposed that actual FTE reductions should be closer to 20 if total inefficiencies are extrapolated across SunWater's entire staff (of almost 500).

MDIAC (2011) were concerned that Deloitte would have been unable to fully assess the efficiency of SunWater, given that Deloitte only had access to a portion of SunWater's data.

MSF (2011) submitted that Deloitte's use of FTEs as the comparator to remove differences in remuneration scales [overlooks] that a lower paid workforce is less efficient with more FTEs, and consequently benchmarking may have skewed results.

PVWater considered the benchmarking exercise undertaken [by Deloitte] to have used an inappropriate base due to significant differences in service standards and that, rather than utilities from the USA, a comparison of the cost to operate individual SunWater irrigation schemes would be more appropriate.

Centralised Operations

BBWSSI (2011) wrote of their concern about the prudency of overhead costs for their scheme. For example, it is estimated [by their consultant's report] that they are paying $29,500 for customer support, despite there being only six irrigators in the scheme. BBWSS wrote that they receive no phone calls, verbal updates, text messages, emails or letters about impending releases from upstream storages. In effect, they do not feel they receive any customer support from SunWater, and believe that these overhead costs should be fully explained (by SunWater) before they will accept them.

BRIAIC (2011a) commented that, although there is statistical analysis of SunWater's purchasing trends and risks, there is little to no actual review or audit data of purchasing practices as they apply to NSPs.

BRIG (2011d) highlighted that Deloitte's report (2011a) did not comment on whether SunWater's purchasing methods are efficient or "best practice", and that it did not address whether the purchasing efficiency issues identified at the least price path had been implemented. Furthermore, BRIG considered that it seemed highly unlikely that some 61% of preventive maintenance costs could be attributed to indirect and overhead costs. BRIG cannot comprehend how that much planning could be required.

CANEGROWERS (2011a) submitted that the organisation described in SunWater's centralised cost submission (2011a) bears little resemblance to what is required to efficiently deliver water to irrigation customers. CANEGROWERS considered that there appears to be duplication of many roles within SunWater's organisational structure and proposed that many SunWater functions are over-staffed.

CANEGROWERS (2011b) considered that, due to the size of indirect and overhead costs, the Authority's consultant should have consulted directly with irrigators.

CANEGROWERS Isis (2011b) proposed that SunWater should achieve efficient overhead costs to maintain water pricing at acceptable levels. An appropriate labour management structure would be to recruit or hire for busy periods, and cut back to a smaller permanent base at other times.

CANEGROWERS Isis also contended that the centralisation of SunWater's personnel in Brisbane is a factor, as wage levels are potentially higher than in regional areas. They requested that the Authority investigate the impact on wages so irrigators can have confidence that centralisation has reduced not increased costs. If costs have increased, then the Authority must recommend and take into consideration a cost off-set factor.

Cotton Australia (2011) suggested that central costs of $1.8 million per year for Strategy and Stakeholder Relations were excessively high.

P. and M. Francis (2011) questioned whether the increasing centralisation of SunWater has provided an effective approach for managing the scheme [Three Moon] into the future.

MBIA (2011) questioned whether the significant head office and regional office costs are justified for Macintyre Brook scheme.

MSF (2011) questioned whether irrigators should be paying for advertising and corporate relations (Strategy and Stakeholder Relations) when the Lower Mary systems already have a well established customer basis.

MSF (2011) and P. Enkelmann (2011) questioned whether centralisation has led to a decrease in costs in any of the schemes (including Lower Mary). If there has not been a demonstrable increase in efficiency, they questioned whether the decision to centralise SunWater's business is justified.

Efficiency Gains

P. Enkelmann (2011) and P. and M. Francis (2011) questioned whether the efficiency gains targeted by SunWater in the 2008 initiative have been fully implemented. [The efficiency gains referred to are those under SunWater's Smarter Lighter Faster Initiative (SLFI)].

KCWB (2011) commented that, although there had been some efficiency gains made since 2009 [SLFI], the benefits will have [had] dissipated by the end of 2010-11, and that operational costs are projected to increase steadily over the next price path.

Third-Party Certification

BRIAIC (2011a) asserted that there is no Act or Regulation requiring SunWater to maintain third party certification for ISO 9001 (Quality), 4801 (Safety) and 14001 (Environment) to undertake the operation of Burdekin-Haughton WSS. If confirmed that these are not legislative requirements, BRIAIC requested that irrigators should not contribute toward the substantial costs that come with maintaining such systems, as they should be borne by the non-irrigator side of the business.

CANEGROWERS (2011b) questioned whether SunWater was complying with standards beyond that required for irrigation (for example, to undertake mining work) and what the cost of meeting those standards is and asserted that any additional costs should be attributed to non-irrigation service contracts only.

Other Jurisdictions

State Water – 2010-2014 IPART Price Review

Atkins and Cardno (2009) compared the costs (from 1 July 2010 to 20 June 2014) of State Water in New South Wales to entities of a similar size that manage dams and weirs, either for bulk water management or potable supplies.

The costs of maintenance, capital works, and operating, maintenance and administrative expenditure were presented as a proportion of the current replacement cost (CRC) of key assets in each scheme (Table 6.11).

Table 6.11: Company Comparison

Agency	*Dams (#)*	*Weirs (#)*	*Maintenance (% of CRC)*	*Capex (% of CRC)*	*Operation Maintenance & Administration (% of CRC)*
Sun Water – River Regulation	24	84	0.2	0.17	0.69
State Water	17	69	0.45	0.32	0.95
Sun Water – Aggregated Service Provider	24	84	0.37	0.18	1.01
GWM Water – Aggregated Service Provider	12	9	0.29	50.0	1.72
Goulburn-Murray Water-Regulated River	14	14	0.31	0.62	1.91
Sydney Catchment Authority	21	0	0.17	2.02	2.38
Goulburn-Murray Water-Aggregated Service Provider	14	14	0.9	0.89	2.48

Note: GWM Water has 50% Capex to CRC due to the extensive channel re-lining works. Source: Atkins and Cardno (2009).

Due to the heterogeneous mix of utilities considered (in terms of asset base, geography, condition of assets and rigour of data), Atkins and Cardno treated the benchmarking exercise as an indicative exercise only. It was not used as a basis for their recommendations on efficiency and cost effectiveness.

However, with regard to improving State Water's efficiency, Atkins and Cardno recommended that:

(a) total efficiency gains could lead to total operating cost reductions (corporate costs) of between 0.8% and 3.3% each year (including State Water's proposed reductions, and both catch-up and continuing efficiencies identified by Atkins and Cardno); and

(b) proposed management restructures are appropriate to achieve more efficient management.

IPART adopted the operating expenditure recommendations proposed by Atkins and Cardno.

Authority's Analysis

The Authority engaged Indec to compare the efficient forecast with actual costs for 2006-11 and to assess whether the efficient level of cost agreed in 2005-06 as part of the previous review had been achieved during the 2006-11 price paths.

The Authority also engaged Deloitte to identify the prudent and efficient level of SunWater's non-direct costs. Deloitte focussed exclusively on non-direct costs and are the key contribution consultant to this section.

As noted above, the analysis of non-direct operating costs includes those allocated to direct operating and renewals costs. Accordingly, any cost savings identified for total non-direct operating costs will impact future renewals ARR balances.

The Authority notes that SunWater's staff numbers increased from 526 in 2005-06 to 636 in 2008-09. This was above the staffing level agreed to in 2005-06.

SunWater attributed the high level of costs to the duplication of regional and Brisbane head-office business structures (SAHA, 2011). In 2009-10, SunWater instigated a program of cost reduction known SLFI, which identified $10 million of potential cost savings.

These were mostly achieved by end 2010-11 (SAHA, 2011) and the balance is to be achieved by June 2012. SunWater advised that the majority of cost savings achieved by SLFI reduced SunWater's non-direct costs and are reflected in SunWater's forecast 2012-17 operating costs.

Indec

As noted above, Indec was engaged to assess SunWater's performance against Indec's efficiency gains identified for the 2006-11 price paths.

Indec also considered whether SunWater had reduced its costs to reflect the loss of SEQ WSSs and staff.

<u>2006-11 Non-Direct Costs</u>

During 2006-11, SunWater's actual non-direct operating cost expenditure consistently exceeded Indec's forecast efficient non-direct operating costs for 2006-11 (Table 6.12). Variances ranged between $8.6 million (2008-09) and $6.7 million (2007-08).

Table 6.12: Comparison of SunWater's Actual (2006-11) with SunWater's Forecast (2006-11) Non-Direct Costs (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*
Total Forecast Non-Direct	19,876	18,372	17,313	16,955	16,901
Total Actual Non-Direct	27,831	25,097	25,872	24,579	25,152
Variance between Actual and Forecast	7,955	6,726	8,559	7,624	8,252
% Change from Forecast	40.02%	36.61%	49.44%	44.97%	48.82%

Source: Indec (2011g); SunWater (2011an); and SunWater (2011ao).

However, Indec noted that care should be taken in considering variation between forecast and actual non-direct costs, in isolation from changes to direct costs over the same period. SunWater underwent a number of structural and cost reforms over the 2006-11 price paths, as well as redefining its direct and non-direct cost categories.

The Authority accepts that there have been significant structural changes in SunWater including previously unexpected initiatives such as Intersafe which have added to SunWater's responsibilities and have been assessed as being prudent and efficient. On this basis, the Authority recognises Indec's caveats and discounts the significance of the comparison between previously forecast efficient non-direct costs in 2005-06 and SunWater's actual expenditure.

The Authority also notes that SunWater sought to address the higher-than-expected level of costs by implementing SLFI which SunWater has advised was primarily intended to reduce non-direct costs.

Deloitte

Deloitte carried out a detailed efficiency review of SunWater's non-direct costs.

Deloitte conducted a Mission, Activities and End Products (MAE) analysis, which compared SunWater's non-direct costs against an internal Deloitte database of 74 US utilities, did a case study comparison with local third party water service provider Pioneer Valley Water Board (PVWater), and a comparison of non-direct costs as a portion of total operating costs with Australian utilities.

Other benchmarks from rural water utilities in Australia can be obtained from the National Performance Report (NPR) 2008-09 (NWC, 2010) of rural water utilities. However, Deloitte noted that the data is not granular enough to be useful in an efficiency exercise.

MAE Analysis and Benchmarking

Deloitte described the MAE analysis as a bottom up, needs based assessment of costs on a functional level, breaking down each function into sub-functions (missions), activities and end-products (or deliverables) (Deloitte, 2011a). The purpose of the analysis is to collect information about the business that explains: how employees spend their time; and what costs within a function are directed to which activities.

For the review of SunWater, Deloitte conducted a streamlined version of the MAE analysis which relied on management to estimate how time is allocated by staff. Overall, the streamlined version is considered by Deloitte to provide a picture of an organisation within a ±10-20% level of accuracy.

Deloitte considered its utility database (US data) an appropriate benchmark for SunWater as:

(a) the size of the dataset provides a good distribution for comparison purposes;

(b) data is available at the sub-functional level for administration costs;

(c) FTEs are the best denominator to use for administrative functions, as they largely service internal customers and their use removes differences in remuneration scales, cost environments, the effects of foreign exchange and timing issues; and

(d) the utilities in the database have fundamental similarities to SunWater.

Deloitte's utility database include relatively similar entities to SunWater, in that they provide essential services, are network utilities with large asset bases and land areas to manage, have both bulk and distribution business components, are generally monopoly services, have similar revenue cycles (including meter reading and regular billing cycles), require similar finance and treasury skills, have similar capital structures, have similar customer interfaces (i.e. call centres, websites), use similar IT applications and skills, and employ from a similar base of skilled professionals.

Conversely, key differences also exist between SunWater and some of the utilities in the database. Many of the database utilities have a mixture of both residential and commercial customers, whereas SunWater only provides water to relatively larger customers. Further, many of the utilities were larger and could therefore be expected to achieve economies of scale beyond that of SunWater. Deloitte noted, however, that with almost 500 FTEs, the difference in achievable economies of scale between SunWater and many of the utilities in the database are not as pronounced as they could be, and that scale efficiencies diminish as companies grow beyond SunWater's size.

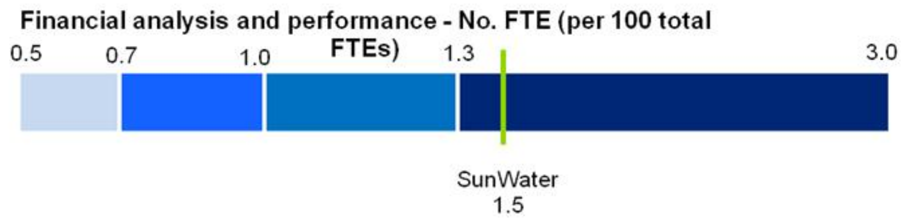
To collect data about SunWater's workforce and operations, Deloitte engaged 12 SunWater staff members in workshops across the overhead and indirect functional groups. Of SunWater's 212 staff in overhead functions, 178 roles were included in the analysis (83%). The CEO Office, GM for Infrastructure Management, Procurement and Infrastructure Development, and Corporate Counsel functions were excluded from the analysis, due to their relatively small size.

Based on the number of FTEs dedicated to each individual function per 100 employees, the database results were organised into quartiles. Deloitte considered the lowest two quartiles (lowest range of FTEs per 100 employees) as potentially over resourced - these were consequently reviewed in closer detail. The highest quartile (highest range of FTEs per 100 employees) was not analysed further, but Deloitte flagged consider that could reflect that some areas were potentially under resourced (such as customer service).

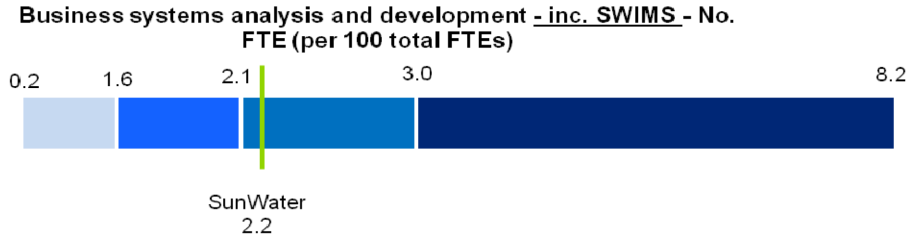
Only those functions for which SunWater was in the third or fourth quartile are shown below. The more efficient quartiles appear on the left hand side of the diagram (Figure 6.1).

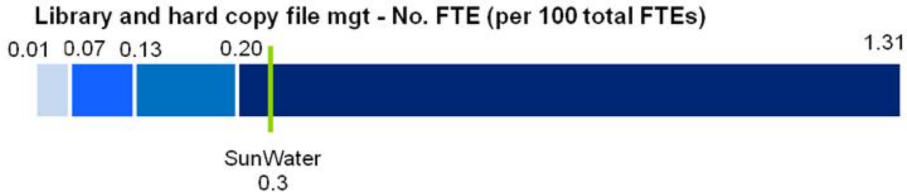
Figure 6.1: Deloitte's Potential Efficiency Gains (Quartile Diagrams)

Finance Functions in Third or Fourth Quartile

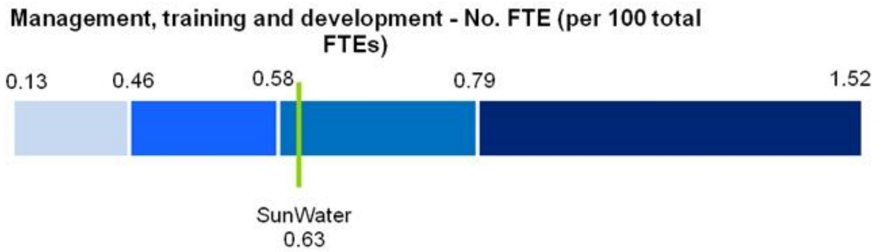


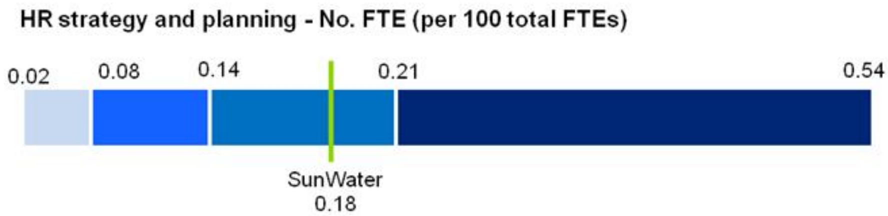
ICT Functions in Third or Fourth Quartile

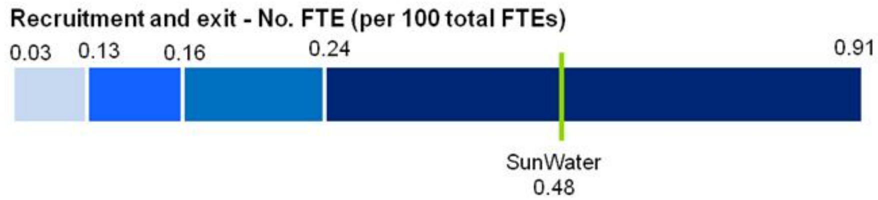


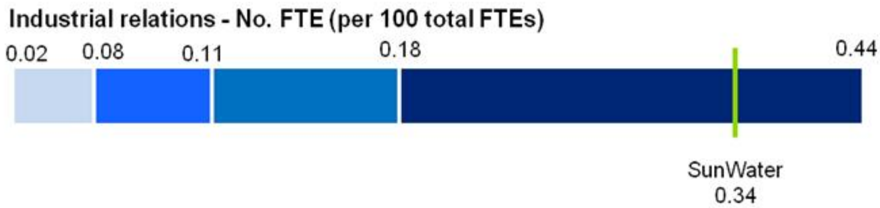


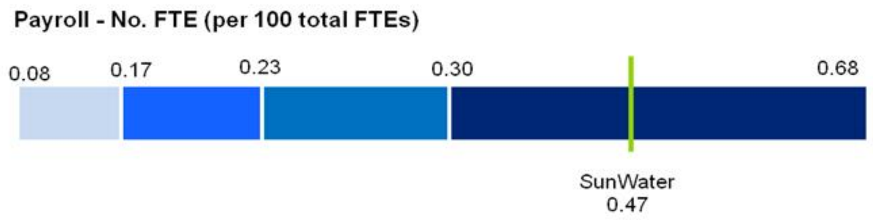
HR Functions in Third or Fourth Quartile



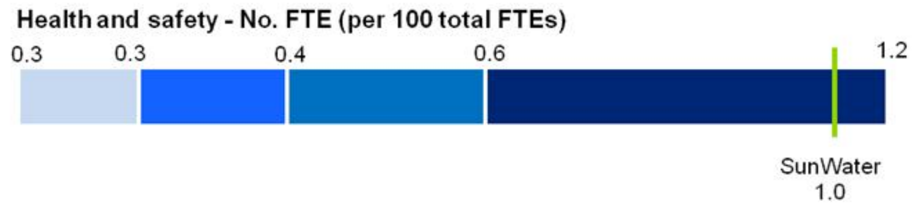








HSEQ Functions in Third or Fourth Quartile



Source: Deloitte (2011a).

As Deloitte considered that the second quartile was an appropriate target for prudent and efficient operations, it has identified the efficiency gains necessary for SunWater to achieve the second quartile.

Based on the workshops and interviews undertaken as part of the MAE analysis, Deloitte has proposed efficiency improvements of 4.15 to 5.15 FTEs, which is 2.3% to 2.9% of the FTEs considered in their analysis.

Using the median SunWater salary of $96,178 ($'2010-11), the proposed efficiency gains equate to potential savings of $399,140 to $495,314 per annum ($'2010-11), for the whole of SunWater. Deloitte also noted that the FTE reductions were in addition to the efficiency savings made as a result of SLFI, as the FTE structure used as the basis for their analysis was a post-SLFI structure.

SunWater Response to Deloitte's MAE Analysis

SunWater (2011cc) considered that total administrative efficiency (that is, total number of administrative FTEs per 100 employees) is more indicative of its operations as once all administrative function FTEs are combined, the impact of definitional variations within the benchmarking group is diminished; variability in performance across functions is reduced; and the overall accuracy of the analysis should be improved.

SunWater asserted that Deloitte's efficiency recommendations had been arrived at by inappropriate cherry picking of the benchmarking data and without incorporating SunWater's overall performance into the analysis.

In response to Deloitte's recommendations, SunWater contended that its overall administrative efficiency (top quartile) should be given more weight than the analysis of individual sub-functions, and should be taken as an indication that there are no further efficiencies to be gained from the administrative resource centres.

SunWater highlighted that:

(a) all utilities will have variable performance rates across administrative sub-functions, but will have tailored their organisational structure to meet the needs of their business;

(b) eliminating variability in performance across all functions and sub-functions will not necessarily lead to overall improved performance, and may compromise service levels and quality of work; and

(c) Deloitte's analysis does not allow for the inevitable functional definitional differences that will exist between businesses and that to counter definitional differences the analysis should validate lower level efficiencies against the total administrative results (i.e. a top-down approach).

SunWater cited Deloitte's appreciation of the cross-functional efficiency within ICT as an example of why the benchmarking study should be analysed from a top-down perspective. When assessed individually in Deloitte's MAE analysis, the ICT service desk function was benchmarked in the second lowest (that is, second least efficiency quartile).

However, combined with the infrastructure support function, reflecting the tendency of service desk staff to work across both areas and provide infrastructure support, the combined service desk-infrastructure support function benchmarked in the target quartile. SunWater also considered that Deloitte had not appropriately explained or justified their efficiency findings, and suggested that, if the recommendations were based on more than just the benchmarking analysis, then the explanations provided should be more explicit, as opposed to simply concluding that costs seemed high (SunWater, cc).

SunWater also provided specific feedback about two of the recommended efficiency opportunities identified by Deloitte (Table 6.13).

Table 6.13: SunWater Response to Deloitte's Proposed Efficiency Improvements

Proposed Efficiency Improvement	*SunWater Response*
Finance: Customer Payment Methods	SunWater has already sought to encourage customers to move to lower cost payment methodologies. If FTE savings of 0.25 are implemented, customers will gain benefit of savings, while still imposing higher payment transaction costs on SunWater (i.e. using cheque instead of electronic options). Deloitte's findings imply that SunWater should either take away the inefficient (i.e. cheque) payment option or convince customers to stop using it. SunWater considers both options unrealistic and undesirable for SunWater customers.
HSEQ: Review opportunities for consolidation of training sessions.	Deloitte should reconsider its findings, taking into account SunWater's geographically scattered employee base, and demonstrate how consolidation of training sessions could be achieved, while also minimising travel and accommodation requirements.

Source: SunWater (2011cc).

The Authority notes SunWater's reservations regarding the variable performance of utilities and inevitable functional definitional differences. The Authority nevertheless considers that Deloitte's analysis, in the absence of unambiguous direct comparators, represents a valid 'bottoms up' approach to identifying possible overall cost savings.

Deloitte Local Benchmarking of PVWater

In response to suggestions by some stakeholders, the Authority commissioned Deloitte to compare the administration costs of PVWater with appropriate SunWater distribution systems.

To do so, certain adjustments were required to ensure a like-with-like comparison. The adjustments to PVWater accounts included removing bulk water charges, which relate to the bulk component of the Pioneer Valley WSS operated by SunWater. The removal of these costs ensures that comparisons relate only to the cost of operating the distribution system.

Adjustments to data for SunWater distribution systems included:

(a) removing Infrastructure Management (Asset Management) and (Regions) costs from non-direct costs. These costs were instead included as operations and maintenance costs rather than administration costs, as per PVWater's classification system; and

(b) removing Infrastructure Development from non-direct costs (and thereby out of operational expenditure) as these were similar to the capital costs of PVWater.

Five distribution systems (Dawson, Lower Mary, St George, Emerald and Eton[25]) were chosen for the benchmarking. These were selected on the basis of similarity of their total operating costs, WAE (including losses), number of customers, and the length of pipes and channels.

Deloitte compared the six schemes using total operating costs as a denominator, and non-direct costs as the numerator. Based on SunWater's proposed cost allocation base for non-direct costs (direct cost of labour), indirect and overhead costs in SunWater schemes ranged from 27-33% of total operating costs, while the comparable ratio for PVWater was 38% (Table 6.14).

Accordingly, SunWater's non-direct costs do not appear to be excessive when compared to PVWater.

Nevertheless, Deloitte qualified its analysis by noting that there are significant differences between PVWater and SunWater which could make the comparison unreliable. For example:

(a) PVWater consists of only four FTE staff. For the benchmarking exercise, PVWater needed to estimate the proportions of staff time spent on administration versus operations and maintenance activities, and this can vary considerably depending on weather conditions and related workloads. These approximate apportionments are difficult to compare with SunWater who have just under 500 staff who are assigned either to specific projects or centralised functions; and

(b) PVWater is a relatively new scheme and therefore probably requires less maintenance. SunWater schemes are much older schemes and may have different and additional maintenance requirements.

[25] Full details of the selection process are included in Deloitte (2011a), p36.

Table 6.14: Deloitte's Benchmarking of Administration Costs

	WAE (ML)	*Total Operating Cost ('$000)*	*Indirect & Overhead Cost ($'000)*	*Admin % of Total Costs*
Lower Mary	14,864	$866	$259	30%
Dawson	19,957	$1,264	$364	29%
PVWater	**47,390**	**$799**	**$305**	**38%**
St George	60,489	$1,612	$533	33%
Eton	63,263	$2,115	$572	27%
Emerald	116,647	$1,946	$551	28%
Average for SunWater WSSs				**29%**

Source: Deloitte (2011a).

Australian Rural Water Utilities

Deloitte also compared the differences in non-direct costs as a percentage of total operating costs between SunWater and a sample of other Australian irrigation service providers. Deloitte's primary data source for these comparisons was the Rural National Performance Report 2008-09 (NWC, 2010) (NPR). Additional information was sourced from QCA (2010), IPART (2009), and SCA (2010).

Deloitte noted the wide dispersion of the results reported by NPR and found that comparisons made on this basis were unreliable due to differences in operating conditions and business characteristics, variations in expense category definitions and the unaudited nature of the data.

The Authority has examined the annual reports of a number of these entities and SunWater, and agrees with Deloitte's assessment that this form of benchmarking is unreliable due to major differences in expense category definitions.

The Authority considers that much more work needs to be done in the standardisation and recording of data before the NPR can be used as a dependable source for benchmarking purposes.

The Authority's Potential Non-Direct Cost Efficiency Gains

As part of the non-direct operating cost review undertaken by Deloitte (as discussed above), a non-direct operating cost efficiency gain of $495,000 per annum across the whole of SunWater (62 service contracts) was recommended.

Deloitte estimates that, at the aggregate level, 60% of non-direct costs are incurred by the 30 irrigation service contracts. On this basis, there is a non-direct cost efficiency gain of $297,000 per annum applicable to SunWater's irrigation service contracts, as follows (Table 6.15).

Table 6.15: Deloitte's Non-Direct Operating Cost Savings for Irrigation Service Contracts 2012-17 (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Non-Direct Costs	23,512	24,244	24,055	23,708	25,089
Deloitte Efficiency Gain	297	297	297	297	297
Efficiency Gain as Percentage	1.26%	1.23%	1.23%	1.25%	1.18%

Note: Indirect and overhead costs include non-direct renewals. Source: Indec (2011g); SunWater (2011an); and SunWater (2011ao).

The Authority accepts Deloitte's findings and recommends that the saving recommended by Deloitte be applied from the beginning of the 2012-17 regulatory period, allowing SunWater the remainder of 2011-12 to make the necessary changes to staffing. The Authority considers further savings below.

Labour Productivity Gain

SunWater has proposed that salaries and wages generally will rise by 4% per annum. However, SunWater has forecast that its total salaries and wages will rise by only 2.5% per annum, with the difference (1.5% per annum) being accounted for by (unspecified) productivity improvements.

The Authority considers that labour costs are the primary driver of potential efficiency gains that should apply to total non-direct costs. For example, non-labour costs such as accommodation and communications can be expected to vary in accordance with employed labour and therefore decline as labour productivity increases.

As a consequence, the Authority considers that SunWater should achieve savings to non-direct non-labour costs in line with the productivity gains expected for labour costs. The Authority, therefore, recommends a 1.5% per annum (compounding) efficiency gain be applied to SunWater's proposed total non-direct costs for 2012-17.

Conclusion

Indec found that, by 30 June 2011, SunWater had not achieved the efficiency gains incorporated into the 2006-11 price paths. Indeed, SunWater's non-direct operating costs for the period 2012-17 are up to 48% above the efficient cost level agreed to at the time of the 2006-11 review. This suggests potential for efficiency gains.

However, Indec has noted that the centralisation of SunWater's business and the subsequent changes in its cost allocation methodology place limitations on its analysis. Further, the Authority notes that previously forecast efficiency gains made in 2005-06 did not account for the introduction of new programs such as Intersafe. As such, Indec's analysis does not provide sufficient guidance on the nature and size of the past efficiency gains which should be carried into future forecasts, if any.

Future gains are more appropriately addressed by Deloitte's more detailed analysis of SunWater's non-direct costs in 2010-11 and the productivity gains proposed by SunWater.

In addition, as noted above, the Authority recommends that SunWater's proposed 1.5% efficiency gain for non-direct labour operating costs be extended to non-direct non-labour operating costs, on the basis that productivity gains in non-labour costs should be achieved in line with those experienced in labour costs.

Deloitte's saving is not compounded annually, but does impact SunWater's proposed non-direct cost forecast throughout 2012-17. In contrast, the Authority's recommended productivity gain of 1.5% per annum applied to total non-direct operating costs has an annual compounding effect.

The overall impact of the Authority's proposed non-direct cost efficiency/productivity gains is reflected below (Table 6.16).

Table 6.16: Authority's Recommended Total Non-Direct Operating Cost Efficiency Gains 2012-17 (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Deloitte Efficiency Gain (Table 6.15)	297	297	297	297	297
Authority's Productivity Gains (1.5% compounding)	338	726	1,091	1,443	1,943
Total Efficiency Gain	635	1,023	1,388	1,740	2,240
Total Non-Direct Operating Costs [1]	23,512	24,244	24,055	23,708	25,089
Total Efficiency Gain as percentage of Non-Direct Operating Costs	2.70%	4.22%	5.77%	7.34%	8.93%
Adjusted Total Non-Direct Operating Costs	22,877	23,221	22,667	21,968	22,849

1. *While these forecasts are presented in real terms, the Authority's nominal forecasts will include a 4% annual labour cost increase.*

Note: Indirect and overhead costs include non-direct renewals. Source: QCA analysis; SunWater (2011an); SunWater (2011ao).

As demonstrated by Table 6.16, the combined efficiency gain increases from 2.7% to 8.93% over the 2012-17 period.

Over time, further efficiency gains can be expected due to the influence of technological advances (for example, finance, information and telecommunications systems), negotiations with irrigators over the appropriate reconfiguration of distribution systems and (perhaps) changes in service standards. However, the Authority's recommended increased scrutiny of renewals expenditures proposals may offset all or some of these latter potential gains.

The Authority also notes that SunWater's staff numbers had declined to 471 as at 30 June 2011, but that this does not include contractors. Subsequently, SunWater advised that current (21 October 2011) employee numbers are 481 FTE plus 50 staff contractors making a total of 531 FTE. There are currently only a net ten vacancies, which if filled, would bring total staff and contractor numbers to 541. SunWater's forecast costs assume 539 total FTEs (including contractors) for 2012-13.

This is below the peak of 636 total FTEs in 2008-09 but above SunWater's 2005-06 level of 486 FTEs after adjusting for the loss of 40 staff to Seqwater. However, total non-direct costs since 2008-09 to 2010-11 only vary from $25.9 million to $25.2 million (Table 6.3). These variations are not evidently consistent with reported changes to staffing. The Authority has not been able to reconcile these differences with SunWater.

SunWater should reconcile its non-direct costs (by expenditure type) with staffing (including SLFI targets) from 2008-09 for consideration prior to the Final Report.

Recommendation:

The Authority recommends that, in 2012-13, SunWater's non-direct operating costs be reduced by 2.7% for irrigation service contracts on the basis of Deloitte's maximum identified saving and the Authority's proposed productivity gain in that year.

For subsequent years, the Authority recommends that SunWater's forecast 2012-17 total non-direct operating costs should be reduces by a compounding 1.5% per annum.

SunWater, by 23 December 2011, should reconcile its non-direct costs (by expenditure type) with staffing (including SLFI targets) from 2008-09.

6.4 Prudency and Efficiency of Insurance

SunWater holds a range of insurance policies including special risks coverage (asset related), professional indemnity and public liability, asset specific insurance (housing, motor vehicles, plant and machinery), accident insurance, travel insurance and environmental insurance.

Stakeholder Submissions

SunWater

SunWater (2011a) utilised the services of a broker to obtain competitive premiums and to advise them on the prudent scope of insurances and deductibles.

The total insurance costs for each irrigation service contract are shown in Table 6.17 and Table 6.18.

In aggregate, premiums for 2011-12 have increased from $2.973 million as originally submitted in the NSPs to $3.204 million in response to the major flood events of 2010-11. However, SunWater do not anticipate premiums to increase further in real terms over the forthcoming price path.

Table 6.17: SunWater's Forecast Annual Insurance Costs 2011-16 (Real $'000)

Service Contract	*Annual Cost (2011-12 to 2015-16)*
Bulk water	1,632
Distribution	1,571
Total	3,203

Source: SunWater (2011aq).

Table 6.18: SunWater's NSP and Revised Insurance Premium by Service Contract (Real $'000)

	NSP ($)	*Revised ($)*	*Change in Premium (%)*
Burdekin Water Supply	271,650	295,848	8.9
Proserpine Water Supply	80,895	88,151	9.0
Bundaberg Water Supply	90,294	98,396	9.0
Lower Mary Water Supply	7,325	9,424	28.7
Barker Barambah Water Supply	75,185	81,924	9.0
Upper Burnett Water Supply	61,408	66,842	8.8
Boyne Water Supply	50,626	55,090	8.8
Chinchilla Weir Water Supply	5,837	6,345	8.7
Maranoa Water Supply	5,160	5,607	8.7
Cunnamulla Weir Water Supply	2,191	2,397	9.4
St George Water Supply	37,707	41,102	9.0
Macintyre Brook Water Supply	66,414	71,575	7.8
Upper Condamine Water Supply	63,922	69,468	8.7
Bowen Broken Water Supply	49,981	47,942	(4.1)
Eton Water Supply	112,592	78,357	(30.4)
Pioneer Water Supply	89,619	91,355	1.9
Callide Water Supply	129,872	141,013	8.6
Dawson Water Supply	44,693	48,626	8.8
Lower Fitzroy Water Supply	11,518	12,537	8.8
Nogoa Water Supply	182,556	198,773	8.9
Three Moon Water Supply	34,708	37,787	8.9

	NSP ($)	*Revised ($)*	*Change in Premium (%)*
Mareeba Water Supply	106,812	83,779	(21.6)
Bulk Sub-total	*1,580,965*	*1,632,338*	*3.2*
Burdekin Irrigation Distribution	344,365	388,989	13
Lower Mary Irrigation Distribution	40,920	43,452	6
Bundaberg Irrigation Distribution	474,697	540,466	14
St George Irrigation Distribution	44,433	48,371	9
Eton Irrigation Distribution	119,275	134,902	13
Dawson Irrigation Distribution	21,371	23,056	8
Emerald Irrigation distribution	92,357	104,609	13
Mareeba Irrigation Distribution	254,197	287,839	13
Distribution Sub-Total	*1,391,615*	*1,571,684*	*12.9*
Total	**2,972,579**	**3,204,022**	**7.8**

Source: SunWater (2011aq).

Other Stakeholders

BRIG (2011d) submitted that SunWater's professional indemnity insurance costs should not be attributed to irrigation water users, as those costs relate solely to Sun Water's consulting business. BRIG highlighted that this issue had not been examined by Deloitte (2011a).

CANEGROWERS (2011a) highlighted that insurance costs are very high and that the insurance program should be reviewed to ensure it is appropriate and efficient. CANEGROWERS (2011b) objected to irrigator schemes paying any proportion of SunWater’s professional indemnity insurance, as this is a requirement for SunWater’s non-irrigator service contracts. Further, CANEGROWERS queried whether a review of past insurance spending and claims had been undertaken to ensure that SunWater has not over-insured itself.

CANEGROWERS also drew attention to the disparity between irrigator and non-irrigator risk profiles. Industrial and urban customers are more likely to require immediate replacement of equivalent capacity infrastructure, while irrigators are less likely to need rapid rectification and more likely to reconfigure assets. Consequently, irrigators are much less likely to require full insurance than non-irrigation customers. Moreover, CANEGROWERS suggested that spreading the cost of insurance by value and type of asset does not reflect these risk profiles, and questioned whether their SunWater’s current cost allocation methodologies for insurance reflect their actual insurance strategy.

CANEGROWERS also highlighted the high level of insurance premiums and the lack of information about what is covered under the policies or the degree of risk adopted. For example, in Bundaberg distribution system, insurance is 5% of total costs.

Cotton Australia and QFF (2011b) raised similar concerns to those raised by CANEGROWERS regarding the magnitude and scope of scheme specific insurance claims (specifically in Emerald

Distribution System and Nogoa-Mackenzie Water Supply Scheme). They requested that SunWater provide additional information regarding what is insured, the insured value and risk profile adopted by SunWater in determining those premiums.

EIAC (2011a) are concerned about both the amount of insurance allocated to the scheme, and the scope of the policies held, for both Eton Bulk and Distribution System.

Other Jurisdictions

SunWater compare the total insurance premium allocated to irrigation schemes ($2.9 million) to that of GAWB ($696,000 increasing to $805,000 for a single storage, pipeline distribution system and treatment plant).

Authority's Analysis

SunWater's forecast expenditure on insurance for irrigation service contracts in 2011-12 is expected to be $3.2 million (Table 6.17).

Deloitte (2011a) focused on the process undertaken in selecting an appropriate insurance policy. This was due to the limited publically available data to assess and compare insurance premiums. The individual nature of SunWater's asset risk profile also made analysis difficult.

Deloitte found the process SunWater employed in securing a competitive insurance package to be robust, and that SunWater had utilised a more flexible insurance policy for the 2012-17 regulatory period, to better respond to a range of different liability scenarios.

Conclusion

The Authority notes Deloitte's findings that SunWater has undergone a competitive and rigorous process in selecting its insurers. The Authority also notes the cost of SunWater's insurance relative to GAWB and that the latter were independently reviewed for the Authority and accepted as being efficient (QCA, 2010a).

The Authority notes that insurance costs have been allocated by SunWater primarily using broad risk premium differentials between broad categories (storages, channels, pipelines) and then to individual assets within schemes proportional to declared values. These costs have been allocated to schemes in a different manner to other non-direct costs which use direct labour costs as the cost allocation base. The Authority accepts this approach given the nexus between premiums and asset types. The means for allocating these insurance costs between customer groups is addressed further below.

The allocation of assets between customer groups is discussed in Section 6.7.

In response to stakeholders' other concerns:

(a) in response to submissions that SunWater's professional indemnity insurance should not be attributed to irrigation water users, SunWater (*Peter McGahan, personal comms, 6 October 2011*) has advised that public indemnity and public liability insurance are related to all SunWater assets and customers. SunWater stated that professional indemnity insurance is a necessary cost of providing water supply services as it relates to risks associated with water supply services and assets. If SunWater does not insure for these risks, then it would need to self insure (in which case the cost of self insurance would be recovered from users);

(b) SunWater's insurance is provided on a competitive basis and SunWater derives no benefit from overestimating such costs as they are effectively passed through. Deloitte (2011a) considered SunWater's overall approach and the types of policies selected to be competitively acquired and appropriate;

(c) the differential timing of required capacity rectification between customer groups should not affect the premium involved. Moreover, there is no evidence that rectification is undertaken for assets specific to industrial or urban customers. In most instances, customers are provided services from common assets;

(d) in terms of insurance coverage, SunWater (*Peter McGahan, personal comms, 6 October 2011*) advised that they have no basis to assume different customer risk profiles, nor the discretion to abandon or alter services (or predict which services could be abandoned) in the event of unexpected damage; and

(e) SunWater obtains insurance on the basis of specific assets and allocates them to schemes. SunWater submitted (*Peter McGahan, personal comms, 6 October 2011*) that spreading the cost of premiums by asset type is appropriate as it reflects how the insurers calculate premiums.

Recommendation:

The Authority recommends that SunWater's estimates of insurance costs be accepted.

6.5 Labour Utilisation

Some of the Authority's consultants sought to examine how SunWater established labour utilisation targets identified in documentation made available by SunWater, as SunWater had not provided a complete explanation of how total labour utilisation was calculated.

Stakeholder Submissions

Other Stakeholders

BRIG (2011d) was concerned about how under-utilised labour is deployed across SunWater's business, and whether the cost of under-utilised labour is spread across all the duties on which labour is deployed. In Bundaberg, BRIG identified non-irrigation duties to be reading meters and meter repairs for DERM's underground scheme, and duties related to Burnett Water.

PVWater (2011b) were concerned with stated labour utilisation rates of 77% for workers in the regions (Infrastructure Management), and suggested it was a high level of under-utilisation and required detail examination as part of the complete NSP reviews.

CANEGROWERS (2011c) considered that a high proportion of spare labour means that SunWater's labour force should include more casuals and contractors, and requested a detailed analysis of Infrastructure Management's directly allocated labour. CANEGROWERS proposed that any spare time identified is likely to be inefficient.

CANEGROWERS queried whether the cost of under-utilised staff was being inappropriately attributed directly to schemes. They suggested that an analysis of the percentage of costs being directly billed for each item was needed to see if staffing levels are appropriate.

CANEGROWERS also suggested that staff spare time should go back to schemes they service, in proportion to the time spent there as a direct cost.

Authority's Analysis

A number of stakeholders have expressed concerns that SunWater may be holding a high proportion of spare labour on its books.

The Authority sought further information and clarification of this issue from SunWater.

SunWater has advised the Authority that it does not employ labour utilisation rates for estimating the utilisation of labour (that is, downtime). Rather, SunWater develops 'labour utilisation targets' for each of its positions to reflect how the position's workload is expected to be distributed between service contracts (direct costs), indirect cost centres (indirect costs) and overhead activities.

These targets are based on how the time of individual employees has been used in the past, adjusted on the basis of management expectations concerning changed conditions or circumstances.

The utilisation target is presented as a percentage of total capacity directly charged to service contracts and indirect cost centres.

That is, for example (Table 6.19), 1.76% of HR is budgeted to be directly billed to service contracts or indirect cost centres – that is, in this instance 98.24% is budgeted to be billed to overhead activities.

The utilisation targets are therefore a management tool to achieve appropriate budgeting and allocation of staff. Over time, this assists in establishing efficient labour management.

The utilisation rates quoted do not reflect total staff utilisation or efficiency.

Table 6.19: SunWater's Average Resource Centre Labour Utilisation Targets 2011-12

Resource Centre	*Average Labour Utilisation Target*
CEO Office	–
SSR – Strategy and Stakeholder Relations	52.72%
HSEQ – Health, Safety, Environment & Quality	36.09%
Corporate	–
Finance	7.61%
Corporate Counsel	75.04%
HR	1.76%
Procurement	38.67%
Corporate GM	–
ICT	16.81%
External Audit	–
Plant Account	–
Water Trading	–
Infrastructure Development (North and South)	80.7% and 78.95%
Infrastructure Development – Business Development	9.67%
Infrastructure Development – General Manager	–
Infrastructure Development – Project Proposals	80.01%
Infrastructure Development – Project Management	–
Infrastructure Management (Central, Far North, North and South)	80.53%, 80.14%, 80.26% and 81.98%
Infrastructure Management – General Manager	–
Infrastructure Management – Asset Management	86.33%
Infrastructure Management - Water Accounts	78.67%
Infrastructure Management – Services Delivery	59.33%

Note: Average Labour Utilisation Targets are for entire resource centres (including both direct and non-direct labour), not individual service contracts. Target field is blank if data was not provided by SunWater. Source: P. McGahan, per. comms., 16 August 2011.

6.6 Prudency and Efficiency of Direct Operating Expenditure

A regulated entity needs to demonstrate that its approach to forecasting operating expenditure is consistent with good industry practice and is based on sound strategies aimed at providing necessary resources in an efficient manner to operate the entity's assets, and maintain their continuing serviceability and reliability.

In order to demonstrate the prudency and efficiency of proposed costs (including operational expenditures), the Authority initially requested that SunWater:

(a) provide all relevant information from 2000-01 to 2015-16, including the reconciliation of this expenditure with statutory accounts (April 2010);

(b) note the importance of cost information being made available to support future recommended prices, and provide documentation which demonstrates that proposed operational expenditure is prudent and efficient (June, 2010);

(c) provide details and supporting material regarding operational expenditure (July, 2010 and August, 2010) and

(d) provide further information in support of the NSPs including (October 2010):

   (i) sufficient detail in order to validate costs and their drivers and to understand the basis for their incurrence and incorporation into prices;

   (ii) sufficient disaggregation of costs to align with the components of the types and activities identified in the NSPs.

Stakeholder Submissions

SunWater

Overview of Operating Expenditure Activities and Types

SunWater has classified its direct operating expenditures into:

(a) operations – day-to-day operational activity (other than maintenance) enabling water delivery, customer management, asset management planning, financial and ROP reporting, workplace health and safety compliance, and environmental and land management;

(b) preventive maintenance – proactive maintenance undertaken to ensure the ongoing operational performance and service capacity of physical assets, including asset condition monitoring, servicing/planned maintenance and weed control. It is cyclical in nature with a typical interval of 12 months or less;

(c) corrective maintenance – reactive maintenance undertaken to restore normal operations immediately due to emergencies/break-downs or to address regulatory requirements (for example, rectify a safety hazard in advance of planned maintenance) including fixing burst pipes and broken pumps; and

(d) electricity – use of electricity to pump water and operate major items of infrastructure.

SunWater has disaggregated each of the above activities into the following cost types (except electricity):

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

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

(c) contractors – contractor costs attributed directly to jobs within operations and maintenance activities, including weed control contractors, commercial contractors and consultants; and

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

Approach

SunWater has advised that it had regard to its historic direct operating expenditure captured in its BOM, which takes data from the SAP accounting system, in developing its proposed direct operating expenditures for 2012-17.

SunWater submitted that the BOM provides a consistent way for staff to record cost information according to cost type, activity and service contract. The BOM system records and classifies all activities into: routine; non-routine (once-off or refurbishment and enhancement) or development projects (mostly for commercial customers).

SunWater (2011y) submitted that there is not a constant workflow when operating and maintaining WSSs. SunWater noted that it endeavours to control costs and meet customer standards of service, despite variation from year to year and day to day, which result in a movement of costs between activities and service contracts.

Factors contributing to variations in the dispatch of operational effort include:

(a) climatic and seasonal conditions – impacting conditions for aquatic weeds and weed control costs, such as the frequency of slashing of access roads, channels and drains;

(b) volume of water in storages and customer demand – driving the workload for scheduling and delivery of water; and

(c) opportunistic maintenance activities – for example, when the storages are low and assets normally under water can be accessed.

SunWater indicated that the significant variability in operating conditions means that it does not use zero based[26] budgeting when developing annual budgets. It noted that it has previously attempted to implement zero based budgeting, but had found that the resulting budgets were inflated and unrealistic.

SunWater (2011y) noted that costs for each activity (operations, corrective maintenance and preventive maintenance) in the NSPs were based on the costs over the past four years (excluding those considered not to be representative of costs over this period such as extreme weather events [spurious costs] plus or minus any other known changes in costs, for example, increases in Acrolein (an aquatic herbicide), plant hire and contractors costs. Adjustments have been made for preventive maintenance in line with the Parsons Brinkerhoff (PB, 2010) costings (see below).

In a subsequent submission, SunWater (2011aj) indicated that the process outlined above did not involve a rigid process of determining a precise ‘typical year’. Instead, SunWater assumed that the pattern of water use will be consistent with past trends that is:

(a) the climate in each scheme is for a typical year (no high rainfall or drought conditions);

(b) water quality, weed growth, erosion and other impacts on infrastructure are consistent with assumed climatic assumptions for each scheme;

(c) asset performance is consistent with nil unexpected major breakdowns or system failures experienced; and

[26] Zero based budgeting is an approach where every line item of the budget must be approved, rather than only changes from the previous year. No reference is made to the previous level of expenditure. Zero-based budgeting requires the budget request be re-evaluated thoroughly, starting from the zero-base.

(d) workload is consistent with yearly trend.

SunWater, therefore, noted that the characteristics of this 'typical year' are not precise, and were not documented. SunWater submitted that this was not necessary as the purpose was only to ensure that the costs presented were not based on extreme operating conditions.

SunWater does not estimate direct costs at the sub activity level as it claims that it is simply not useful or practical to do so, and that this implies a precision that does not exist. Furthermore, SunWater believes that estimating at this level will result in significant errors in sub-activity costs, given the difficulties in predicting the division of work between sub-activities (and activities), and the variability of work between years.

SunWater stated that it instead examines the range of activities required and determines the resourcing requirement to perform those activities in aggregate. SunWater believes that this approach reflects the operational reality that employees' efforts will move between different activities within years and between years, depending on the prevailing circumstances.

Direct labour is the largest operating cost, comprising around 60% of all proposed expenditure (excluding electricity). SunWater (2011aj) based its direct labour forecasts on three building blocks; the total amount of labour, the unit cost of labour, and how and where labour would be applied.

SunWater submitted that its direct labour forecasts assume the continuation of the number of employees as at 1 July 2010 throughout the regulatory period, unless there was a specific identified need for additional operations staff.

SunWater calculated the unit cost of labour in accordance with its Enterprise Bargaining Agreement (EBA). An hourly charge out rate was determined for each level of employee.

Where labour is employed across a number of different service contracts, SunWater forecasts the number of hours spent in each (using a workshop process). This forecast is made having regard to historical data, but is essentially forward looking based on expectations about where labour resources would be applied in the future. SunWater noted that this required management judgement and that the rationale for the decision for each employee was not documented.

SunWater subsequently forecast the activities that those employees would carry out in each scheme. As discussed above, these forecasts were made at the activity level only. For preventive maintenance, SunWater adopted the labour cost component recommended by PB in its review of preventive maintenance.

Again, SunWater's noted that these assumptions were made through a workshop process with managers, and with reference to how employee time had been used in the past based on completed timesheets, along with assumptions about how employees' time would be spent, on average, in a 'typical year'.

The outcomes of the above process are documented in a resource planning tool. However, SunWater did not document the rationale for how it has allocated each individual's time into these activities. In many cases, the forecasts were based on management judgement at the time.

Estimating Operating Expenditure by Activity

Operations

SunWater has adopted the 'typical year' approach outlined above for the development of its forecasts of operations costs.

For the reasons already outlined, SunWater only allocates labour cost at the activity level rather than the sub-activity level.

Accordingly, SunWater note that any assessment of labour costs at the sub-activity level will inevitably be more to do with the assumptions about how employees' time has been split between sub-activities, rather than any meaningful assessment of efficient costs .

Preventive Maintenance

SunWater's has not adopted its 'typical year' forecasting methodology for the development of preventive maintenance cost estimates. Instead, SunWater has adopted the tailored approaches outlined below to develop the condition monitoring, servicing and weed control components of preventive maintenance.

Condition monitoring and servicing cost forecasts are based upon costs prepared by PB (2010) as part of SunWater's review of preventive maintenance activities. The PB review included a review of SunWater's preventive maintenance work instructions, and the development of cost estimates for each work instruction based upon estimated plant, material, labour and subcontractor costs. SunWater has used these forecasts, broken down into labour, materials and contractors, as the basis for its forecast expenditure for servicing and condition monitoring.

SunWater's weed control activities are carried out both in house (application of Acrolein and burning of drains) and by contractors (slashing). Expenditure forecasts for contractor weed control, including slashing, are based on existing contracts or on the expectations of likely contracting rates. SunWater slashing contracts typically run for three years and are market tested upon renewal.

Acrolein is used for weed control in channel system. Prices for the chemical have varied substantially in recent years, due to the risk of the chemical being withdrawn from the Australian market. As part of its submission on this review, SunWater prepared a position paper on its future use of Acrolein (on the Authority's website). In the paper, SunWater proposes to escalate the cost of Acrolein by CPI over the regulatory period.

Corrective maintenance

Forecasts of corrective maintenance expenditure were developed through the adoption of SunWater's 'typical year' methodology discussed above.

Electricity

SunWater's electricity costs comprise a significant component of its overall operating costs, due to the cost of pumping water, predominantly in distribution systems. However, there is also some relatively minor electricity use in bulk WSSs that involve off stream storages (Bowen Broken, Dawson Valley and Eton WSSs) and that require pumping to supplement stream flows (Barker Barambah – Redgate Relift and Upper Condamine WSSs).

SunWater's (2011h) initial electricity cost estimates were based on SunWater's judgement of the period that best represented electricity consumption for each service contract. This meant that individual estimates were based on one to three years of historical electricity cost data. In schemes where electricity usage was correlated to water usage, forecasts were converted to $/ML, otherwise SunWater used an average of total electricity costs.

SunWater (2011h) initially estimated its electricity costs in three ways, depending on the pumping requirement of the schemes:

(a) in distribution systems (and Barker Barambah – Redgate Relift and Upper Condamine WSSs), SunWater noted that pumping costs are dependent on customer demand. Distribution system electricity use forecasts and unit costs have been calculated by dividing historical electricity costs by the volume of water delivered to customers;

(b) for bulk WSSs without off stream storages, SunWater estimated costs based on actual expenditure in 2010; and

(c) for bulk WSSs with off stream storages, electricity costs are driven by defined stream flow events rather than customer demand. Individual scheme ROPs set out the rules governing the pumping and release of water. As a result, annual electricity usage may vary, and SunWater has used the expected average expenditure [details of calculation not provided] to estimated electricity costs.

SunWater's (2011h) background paper on electricity costs proposed that, where the costs of electricity exceed the above forecasts, they be subject to annual cost pass through adjustments.

SunWater's (2011ak) revised forecasts reflect the following methodological changes:

(a) use of the full 2006-11 price paths electricity cost data to calculate average $/ML, thereby making no judgement about what constitutes a 'typical year'; and

(b) further differentiating the approach for schemes where electricity usage is correlated to water usage and those where it is not. For schemes where electricity costs are correlated to water usage, the $/ML rate was determined by the line-of-best-fit across the five years of historical data. For schemes where electricity costs are not correlated to water usage, the forecast cost is the average cost across the five years of historical cost data.

SunWater (2011h) noted that it procures all electricity for the irrigation service contracts from Ergon Energy under Franchise Tariffs. SunWater also notes that, with the introduction of the contestable electricity market in Queensland, it could procure electricity from the contestable market, but that once such a decision was made there is no returning to Franchise Tariffs for that contract area.

SunWater (2011i) submitted its analysis of the potential cost savings of moving, in selected high electricity use service contracts, to contestable electricity contracts. Given current prices and future uncertainties, SunWater's analysis revealed no material cost savings can be made (at this stage) from moving to contestable electricity procurement.

SunWater (2011h) noted that it reviews the opportunity's periodically in response to new information about Franchise Tariffs and prices in the contestable market.

Other Stakeholders

<u>Relationship between operational and renewals expenditure</u>

CANEGROWERS (2011a) noted that renewals are often undertaken because, in NPV terms, the reduction in operating and maintenance costs as a result of the capital expenditure outweighs the capital cost of a project.

CANEGROWERS also noted that, over time, the cost of maintaining assets (including pumps and many other assets that do not have fixed lives) increases and, at some point, it is cheaper to replace the assets than incur the cost of maintaining it, as SunWater has rightfully acknowledged.

CANEGROWERS believe that any reduced operating costs associated with capital expenditures should be reflected in ongoing efficient operating costs. They submit that this should be able to be done and validated for operational expenditure savings over the next five years from capital expenditure investments. CANEGROWERS is concerned that growers pay for capital expenditure for 25 or 30 years, but the Authority is looking at operational expenditure for five years. They note that there is a risk that the Authority's review will not capture operational expenditure savings beyond five years. Canegrowers also noted that this is especially significant if capital expenditure is planned beyond five years which would significantly reduce operating costs, such as automation.

CANEGROWERS submit that, beyond five years, any operational expenditure savings from capital expenditure should be reflected in the efficient capital expenditure numbers; that is, netted off any operational expenditure savings from capital expenditure.

The St George Irrigators (2011) support a clear delineation between routine maintenance and renewal expenditure. Routine maintenance will keep the headworks working as required until it becomes apparent that some major component must be replaced or a completely new component added. They also note that it appears that SunWater wants to go to extraordinary lengths to apportion overhead costs accurately but seems less concerned about cost categories that directly affect the operational efficiency of the headworks – such as maintenance.

Time Sheet Accuracy

BRIG (2011d) asserted that the accuracy of the time sheeting process requires examination. BRIG noted that the ability of SunWater to carry out the required preventive maintenance with only 3.1% of the total cost being attributed to materials and 1.7% to contractors is most unusual and unlikely.

The St George Irrigators (2011) are also concerned that SunWater staff and/or contractors do not keep an accurate record of whether they had performed preventive or corrective maintenance on a given day and whether there were any interaction effects with the renewal spend.

Cotton Australia and QFF (2011b) asserted that there was no evidence of operations expenditure in service contract NSPs having been developed using a bottom up approach, despite words to that effect in Halcrow (2011).

Electricity

AWB (2010) requested that the authority investigate what impacts increases and changing electricity tariffs will have on irrigators in their scheme.

BRIG (2011d) questioned whether SunWater is buying electricity in the cheapest possible way. BRIG believes that SunWater should examine the availability of long term electricity supply contracts so that irrigators have the option to lock in the energy component of their water price over the five-year price path.

BRIAIC (2011a, 2011b) noted that SunWater's [initially] proposed methodology in relation to electricity shifts the entire electricity price risk, above CPI, to the end user.

BRIAIC noted that this is a new practice and that SunWater's former price paths made estimations of electricity prices and accepted the electricity price risk. BRIAIC understood that such a price risk for SunWater was an efficiency driver in that it forced the detailed review of pumping systems, operational strategies and usage projections to minimise electricity price impacts. Further, by excluding this risk from SunWater, it removes the emphasis on the organisation to ensure its systems and processes are being maintained to the upmost operational efficiency. A review of cost impacts to end users demonstrates the annual price variability may be significant. To support its submission, BRIAIC included price estimates of electricity per ML under a series of electricity price scenarios.

BRIAIC suggested that, as SunWater applies a corporate pricing policy that integrates pricing risk, such as corrective maintenance risks (estimates of asset failures with variability) but is now not prepared to accept any pricing risk in regard to electricity, it may be time to discard this pricing model and shift to pure cost recovery. They therefore recommend that, if SunWater is no longer prepared to drive internal efficiency improvements via accepting pricing risk, it would be preferable to end users to have a direct costing system that identifies and collects all costs with no overhead/indirect methodologies being applied. This would eliminate all costing risk to SunWater and provide pricing transparency to customers.

CANEGROWERS (2011b) suggested that the Authority should investigate the options for delivering cheaper electricity charges for the Bundaberg WSS by moving to the contestable market. While SunWater may prefer to stay with Ergon Energy, it may be to irrigators' advantage in Bundaberg to swap to another electricity supplier.

Cotton Australia and QFF (2011b) agreed with Halcrow (2011) that electricity usage should be averaged over the last four years, rather than three. They also felt there was not enough consideration of where and how electricity was being used within individual schemes.

EIAC (2011a) did not support SunWater's proposed method for determining electricity. They proposed instead: to take actual electricity consumption tables from accounts; divide by actual water volumes for water meters for similar periods; and apply the resultant unit rate to forecast annual volumes.

Other Issues

A. Thomas (2011) noted that operational costs are those costs which expire within the annual operating cycle of 12 months. Within this classification, if those costs directly related to delivered volume are recovered on this basis, business risk from variation in water demand is minimised. Other operational costs may be recovered on the basis of water entitlement.

BBWSSI (2011) wrote that it was inappropriate for a government-owned company to have provided only about three fifths of the information required to make an educated judgement for the [2012-17] price path negotiations (as at 5 April 2011), and that SunWater must supply all the information required for the price review to proceed.

BRIAIC (2011a) noted that the NSP states that materials and contractor costs are based on the quantities required in the work instructions for the scheme. The unit cost of materials and contractors has been based on current unit costs, with adjustments made where those costs are expected to change in real terms. BRIAIC notes that this inferred that the Work Instructions have been reviewed for optimal efficiency and contain work unit quantities. This information would be of significant importance in ascertaining SunWater's efficiency as it is applied to the services.

BRIAIC therefore requested that SunWater provide copies of or access to Work Instructions for review. These instructions should include the quantities of work required and the referenced unit costs as stated in the NSP.

CANEGROWERS Isis (2011) submitted that SunWater's labour program needs to have the flexibility to accommodate seasonal variations in demand.

Cotton Australian and QFF (2011b) requested more detail of the rates and land taxes incurred by schemes (in particular, Emerald and Nogoa-Mackenzie), including a discussion of how these are spread across different priority groups. They also requested confirmation that these costs have been paid in Nogoa-Mackenzie WSS.

Cotton Australia and QFF also considered that it is unclear whether distribution system customers are paying for some services twice, as the same activities are listed for both the bulk and distribution systems. They requested clarification as to whether this is the case.

Hinchliffe, Hinchliffe & Farmer (2011) suggested operational costs such as weed control could be contracted out to landholders to help recoup costs as it is a normal everyday activity undertaken by individuals on a regular basis.

MBIA (2011) have questioned whether Macintyre Brook scheme will be left with prices based on inefficient costs, given the limited GHD analysis of operating costs. Without some adequate analysis of base costs, irrigators will have little confidence in prices

Other Jurisdictions

Essential Services Commission

In Victoria, the WIRO requires the ESC to ensure that the prices levied on customers of all 20 Victorian water business (including metropolitan, regional urban and rural businesses) are reflective of efficient operating expenditure and that the planning horizon extends beyond the five-year regulatory period. The WIRO also requires that the manner in which prices are determined provide incentives for the business to pursue efficiency improvements over the regulatory period.

To this end, the ESC must ensure that expenditure forecasts contained in an entity's Water Plan reflect the efficient delivery of the proposed outcomes, as well as demonstrating that the proposed prices provide the regulated entity with incentives to pursue efficiency improvements.

The ESC engaged independent consultants to review forecast operations expenditure, including whether the proposed trend in operating expenditure over the regulatory period was reasonable and consistent with existing obligations and service standards. Consultants were to have regard to expected productivity improvements, trends in input prices and the impact of growth on operating expenditure needs and any other relevant factors.

Authority's Analysis

The Authority sought expert advice from Indec and four independent engineering consultants (ARUP, Aurecon, Halcrow, and GHD) on the prudency and efficiency of SunWater's proposed direct operating expenditure.

The Authority considers direct operating expenditure to be prudent if there is a demonstrated need for the expenditure. That is, the expenditure is necessary to: operate, maintain, or administer the particular service; fulfil related regulatory obligations; meet particular objectives of SunWater's SAMP; or deliver stipulated or agreed service levels.

The Authority regards direct operating expenditure to be efficient if it represents the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Indec

Indec compared efficient direct operating costs forecast in 2005-06 and actual direct operating costs for 2006-11 (Table 6.20). Their review indicated that:

(a) actual operations costs were below forecast each year of the 2006-11 price paths;

(b) preventive maintenance actual costs were below forecast in four of the five years;

(c) corrective maintenance was above forecast in all five years; and

(d) electricity (not shown) was below forecast in all five years.

Table 6.20: Comparison of SunWater's Actual Direct Operating Costs and Indec's Forecast Direct Operating Costs 2006-11 (Real $'000)

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*
	Actual					*Forecast*				
Operations	10,790	10,505	11,885	13,448	13,412	15,418	14,652	13,910	13,819	13,643
Preventive Maintenance	5,190	4,399	4,797	5,272	4,505	5,279	5,209	5,124	5,177	5,098
Corrective Maintenance	4,179	5,884	5,514	4,418	7,558	3,358	3,318	3,339	3,549	3,442
Total Operating Costs	20,158	20,788	22,196	23,138	25,475	24,055	23,178	22,374	22,545	22,183

	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*
	Variance from Forecast					*% Variance from Forecast*				
Operations	(4,628)	(4,147)	(2,025)	(371)	(231)	(30.0%)	(28.3%)	(14.6%)	(2.7%)	(1.7%)
Preventive Maintenance	(89)	(809)	(327)	95	(593)	(1.7%)	(15.5%)	(6.4%)	1.8%	(11.6%)
Corrective Maintenance	821	2,566	2,174	869	4,117	24.4%	77.4%	65.1%	24.5%	119.6%
Total Operating Costs	(3,896)	(2,390)	(178)	593	3,293	(16.2%)	(10.3%)	(0.8%)	2.6%	14.8%

Note: Positive variance means actual was higher than forecast. Negative variance means actual was lower than forecast. Source: Indec (2011g); SunWater (2011an); and SunWater (2011ao).

Comparison of 2010-11 Efficient Costs to 2012-17 Forecasts Costs

Indec also sought to determine whether SunWater's proposed costs for 2012-13 reflect previously anticipated efficiency gains. To achieve this, Indec compared forecast costs (in real terms) for 2012-17 against the level of 2010-11 forecast efficient costs.

The analysis contained in Table 6.21 shows that the forecasts prepared by SunWater for 2012-17 set total direct operating costs above the level of forecast efficient costs for 2010-11.

Table 6.21: Forecast Efficiency Savings Analysis: Direct Operating Costs 2010-17 (Real $'000)

	2010-11	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Forecast Direct Operating Costs ($)	22,183	22,638	22,740	22,844	22,910	22,920
Variation to 2010-11 forecast Direct Costs ($)		455	557	661	727	737
Variation to 2010-11 forecast Direct Costs (%)		2.1%	2.5%	3.0%	3.3%	3.3%

Note: Direct operating costs exclude electricity. Source: Indec (2011g); SunWater (2011an); and SunWater (2011ao).

Indec did not infer from this analysis that SunWater should alter its costs over the 2012-17 period to the level of efficient costs determined for 2011.

Engineering Consultants

The independent engineering consultants were required to:

(a) compare SunWater's policies, procedures and practices against good industry practice, required service standards and compliance requirements;

(b) take into account market conditions and historical trends; and

(c) examine the potential for efficiency gains.

For this purpose, each consultant:

(a) undertook a desktop review of information provided by SunWater in support of its NSPs, including background papers and details of its policies and procedures relating to operational expenditure;

(b) requested SunWater to provide more meaningful disaggregation of the data included in its NSPs;

(c) attended meetings with SunWater staff to obtain further guidance and more detailed information in relation to SunWater's NSPs, its asset management framework, and its business systems; and

(d) conducted an evaluation process including at attempt at local benchmarking with a third-party service provider.

Planning Framework

SunWater's annual budgets and its NSPs have been based on a 'typical year', with the exception of preventive maintenance. While the Authority's consultants found that this 'typical year' approach is generally appropriate, they note that use of the term 'typical year' was not defined.

Further, Halcrow (2011) noted that without a clearly defined and documented definition of the planning parameters assumed for a 'typical year', it was difficult to validate the basis of the assumptions made by SunWater in preparing its forecasts.

Halcrow understood that SunWater's budgeting process involved a workshop with SunWater's area managers, during which the expenditure for each scheme was reviewed in detail, including adjustments made to exclude the impact of 'spurious data' and to account for known changes. SunWater also made adjustments to remove the impact of incorrect time bookings by staff.

Halcrow considered the workshop process reasonable, however they noted as significant omissions, the lack of documentation about the procedures followed, workshop outcomes or the basis for adjustments. The lack of documentation complicated the task of verifying that appropriate adjustments had been made to historical expenditures, and increased the risk that inefficiencies are carried forward from year to year.

Halcrow also noted that, while forecasts based on historical averages may be appropriate, there is a risk that inefficiencies are carried forward from year to year. Halcrow found that, without being able to verify that appropriate adjustments have been made to historical expenditures, it is not possible to make any judgements in relation to the efficiency of the expenditure.

Aurecon (2011) noted that the methodology employed by SunWater to determine forecasts by averaging preceding years cost data is mostly appropriate, particularly with modifications for cost outliers (one-off events unlikely to be repeated) and to cost items undergoing price changes. They also noted that attempts to develop a budget based on perceived requirements during a normal year would potentially be more subjective and open to criticism.

Aurecon generally supported the principle of the historical averaging methodology adopted by SunWater for operating cost forecasting, but noted that improvements to the averaging methodology, such as lengthening the time period, may be possible and easily implementable to deliver more defensible and accurate forecast estimates.

Aurecon viewed the reliability and validity of historical data to be SunWater's greatest challenge in developing a methodology to forecast 2012-17 operating costs. They noted that SunWater acknowledged that its own review of historical data revealed occurrences of incorrect booking of costs against activities. These errors included but were not limited to:

(a) non-routine activities booked as routine costs;

(b) metering costs included under the customer management activity;

(c) work booked to the wrong activity type (operations instead of preventive maintenance);

(d) work booked to the wrong cost type (contract slashing booked to plant and equipment instead of contractors); and

(e) indirect and overhead costs included in direct costs.

The Authority recommends that SunWater:

(a) develop a consistent definition of the term 'typical year';

(b) determine and articulate the appropriate years to include in the 'typical year'. Given that periods of drought may run for several years, consideration should be give to a longer time span which takes into account both wet and dry years. The averaging of historic data should take into account changes in approach and new technology; and

(c) document the workshop processes, outcomes and adjustments to expenditure forecasts.

Moreover, according to Halcrow (2011), SunWater's planning framework (which includes procedures and practices) should (Halcrow, 2011):

(a) provide detail on how an organisation aims to manage key risks and achieve strategic, legislative or regulatory objectives;

(b) identify drivers for investment, including trigger points;

(c) define the processes, principles and accountabilities for developing the capital and operating plans;

(d) provide transparent and robust principles to ensure alignment between strategic objectives and investment priorities, incorporating customer and stakeholder requirements;

(e) provide a rational method of assigning expenditure and prioritising programs and projects, thereby optimising the selection and delivery of the capital and operating expenditure programs;

(f) incorporate approval processes and allow for sufficient monitoring and reporting against budget and implementation plans; and

(g) reflect operating environment and service requirements.

Recommendation:

The Authority recommends that SunWater undertake a review of its planning policies, processes and procedures to better achieve its strategic objectives. Proposed amendments should be reviewed by the Authority prior by 30 June 2014 (with a draft provided by SunWater to the Authority by 30 June 2013).

<u>Prudency and Efficiency</u>

Complete, accurate and reliable data is critical to an assessment of the prudency and efficiency of expenditure. All of the Authority's consultants reported that they experienced problems accessing sufficient data in a timely manner to make firm recommendations about the prudency and efficiency of SunWater's forecasts of direct operational expenditures.

Halcrow (2011) noted that any assessment of prudency and efficiency is difficult as it is unclear what planning parameters (including cost drivers) had been used to develop the budget.

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

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

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

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

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

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

(f) retrieving information regarding individual assets was difficult.

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

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

ARUP (2011) noted that to assess an organisation's prudency and efficiency it would normally seek to understand in greater detail the activities being undertaken; associated costs and how these have been translated into forecasts; and what assumptions have been made. They noted that the absence of this detail in the information provided by SunWater made it difficult to assess prudency and efficiency.

ARUP noted that the information provided in relation to operations, corrective maintenance; and preventive maintenance activities did not sufficiently connect costs with the discharge of specific service obligations. ARUP also noted that there have been numerous operational and procedural changes within SunWater and that these changes made the extraction and reconciliation of information difficult. In response to these issues, ARUP recommend that SunWater re-evaluate its processes to enable future audits to link costs with service obligations.

Halcrow (2011) noted that it sought to obtain detailed information to facilitate its assessment of prudency and efficiency. In particular, Halcrow sought to understand the basis for SunWater's expenditure forecasts, together with the key assumptions used in their development. Halcrow noted that, while SunWater has provided information in response to requests made, the data was insufficiently disaggregated to enable a detailed review of cost information. This limited Halcrow's ability to adequately assess the prudency and efficiency of the proposed expenditure.

GHD (2011) noted that the information provided by SunWater in response to the initial information request was not sufficiently detailed for its analysis and that further requests for disaggregated data were necessary. Disaggregated cost data would have afforded GHD the ability to review and drill down into the NSP summary costs. GHD noted that, despite additional requests, the data supplied was not sufficiently detailed.

SunWater did supply to the consultants the financial model used to develop the NSPs. However, GHD noted that this information was in summary form and did not allow for the adequate review of the base line data. GHD considered that the cost information supplied was not adequate for this review.

After submission of GHD's Draft Report to the Authority, SunWater provided a dataset of disaggregated information to GHD. GHD reviewed the information but concluded it was generated from existing summary data to fit the data request and not a summation of detailed recorded expenditure. GHD noted that SunWater's provision of the allocation model for calculation of the data set would not have been acceptable either. It was not, in GHD's opinion, information that would have supported the development of the forecasts and, as such, was not considered further.

SunWater (2011aj) accepts some of the criticisms raised by the Authority's consultants about the level of detail available, however, it does not accept that these deficiencies were to an extent that the consultants could not take a view about the efficiency and prudency of the costs they were charged to examine.

As highlighted by its consultants above, the Authority considers that a major issue for this assessment has been the lack of historic data and information on forecast operating and capital (renewals) expenditures (including expenditure drivers) used as a basis for pricing in 2006-11, and an inability to match actual expenditures against previous forecasts. As a result, it has been difficult to assess the prudency and efficiency of actual expenditures.

The Authority considers that SunWater needs to improve the usefulness of its information systems. In particular, SunWater needs to document and access relevant information necessary to:

(a) attain greater operating efficiency;

(b) achieve greater transparency;

(c) facilitate future price reviews; and

(d) promote more meaningful stakeholder engagement.

As noted previously with respect to renewals (see Chapter 5 – Renewals), there is also a case to improve consultation with customers at scheme level to ensure that their needs and perspectives are taken into account in assessing the prudency and efficiency of operational initiatives.

Recommendation:

The Authority recommends that SunWater needs to improve the usefulness of its information systems. In particular, SunWater needs to document any access relevant information necessary to:

(a) **attain greater operating efficiency;**

(b) **achieve greater transparency;**

(c) **facilitate future price reviews; and**

(d) **promote more meaningful stakeholder engagement.**

Proposed improvements should be reviewed by the Authority prior by 30 June 2014 (with a draft provided by SunWater to the Authority by 30 June 2013).

Assessment of Activity Costs

Labour Expenditure

SunWater has assumed the continuation throughout the regulatory period of the number of positions as at 1 July 2010. The unit costs of labour were calculated in accordance with its EBA, and an hourly charge out rate was determined for various positions.

As noted previously, SunWater's assumptions about time allocations involved management judgement through a workshop process. Although the outcomes of this process are documented in a general manner in a resource planning tool, the rationale for the decision for each employee was not documented at the time.

In reviewing forecasts of labour expenditure, the Authority's consultants requested that SunWater provide details of how labour costs were built up, together with an overview of its budgeting/workforce planning processes. Although SunWater did provide a high level overview of its forecasting methods, it did not supply sufficient information for the consultants to review the estimates of labour included in the NSPs in any detail.

However, after reviewing the consultants' reports, the Authority sought further clarification from SunWater on how it calculates its labour charge-out rates.

SunWater explained that, in order to establish the charge-out cost for each position, total capacity (that is, total workable hours each year) is first calculated for each position. Total Capacity (days) = 365 – weekends – annual leave – budgeted sick leave – public holidays = 365 – (52*2) – 20 – 5 – 11 = 225 days.

The number of workable days each year (225) is then multiplied by the weighted average of SunWater's two standard 'work weeks' (36.25 hours head-office and 38 hours field work), which equate to an average capacity per position of 1,652 working hours per year.

From a budgeting perspective, each position has a base rate (equivalent to the annual salary divided by the position capacity – either 1,632 or 1,710 hours per year). However, labour is directly attributed, or charged-out, according to its activity rate.

The activity rate includes the base rate, and all other employee costs (superannuation, annual leave loading, long service levy, payroll tax and workers compensation insurance), and is approximately 22% higher than the base rate.

SunWater's methodology means that the direct cost of labour includes the cost to SunWater of both non-available work days (such as weekends and public holidays) and statutory on costs. Non-available work days are deducted when SunWater calculates the number of workable days each year, and statutory on-costs are included in the costs directly attributed to service contracts for each unit of labour.

Although the accounting practices for allocating labour costs are appropriate, the rationale for the decision for each employee was not documented, and the Authority agrees with its consultants that SunWater needs to improve its management accounting for the recording, documentation and analysis of labour cost information.

This should include closer alignment of both budgeted and actual cost information to activities performed, and the management of variances between budgeted and actual labour costs to ensure continuous improvement in the use of labour resources.

The Authority's cost saving applied to labour is discussed further below.

Recommendation:

The Authority recommends that SunWater improve its management accounting for the recording, documentation and analysis of labour cost information. SunWater should submit proposals for approval by the Authority by 30 June 2014 (with a draft provided by SunWater to the Authority by 30 June 2013).

Operations Expenditure

SunWater's operations activity comprises nine sub-activities as follows: customer management, workplace health and safety, environmental management, water management, scheme management, dam safety, schedule and delivery, metering, and facilities management (SunWater 2011aj).

The Authority's consultants commented that it was not possible for them to reach definitive conclusions about the prudency and efficiency of SunWater's proposed operations costs because detailed sub-activity based budgeting information was not provided. Instead, consultants had to rely on relatively unreliable historical sub-activity expenditure information, descriptions in scheme operations manuals, and the requirements detailed in the ROPs, ROLs and IROLs to guide their assessment of operations expenditure forecasts.

Subsequent to the release of the consultants' reports, SunWater (2011aj) advised that its operations costs are forecast at the activity level, not sub-activity level. However, it also provides a disaggregation of forecast operations costs by cost type (labour, materials, contractors, other direct costs, and allocated indirect and overhead costs).

SunWater's business model involves the sharing of its operations resources across a range of different sub-activities. For example, SunWater does not provide a dedicated workforce for each of its sub-activities such as metering, scheme management or schedule and deliver. This is because the workload within each sub-activity, and even between operations and maintenance activities, can change materially from year to year depending on operational circumstances.

SunWater 'sizes' its labour and other direct operating resources (materials, plant and equipment, contractors, etc.) to perform a range of tasks under a variety of circumstances. It does not forecast costs at the sub-activity level as it believes that it is not useful or practical to do so, and implies a precision that does not exist.

Accordingly, SunWater argues that, by trying to assess the prudency and efficiency of operations costs at the sub-activity level, the consultants have failed to recognise the way in which the operations activity is resourced. Any assessment of costs at the sub-activity level will be more to do with the assumptions about how employees' time has been split among sub-activities than any meaningful assessment of efficient costs.

SunWater further argues that a better approach would be to assess whether the various costs associated with an appropriate scope of sub-activities that comprise operations are reasonable and efficient.

Although the Authority concedes that forecasting workloads at the sub-activity level may be difficult, and may not be warranted, it nevertheless considers that SunWater needs to further improve its management accounting processes for the recording and documentation of cost information for budgeting and analysis of variances as outlined in the previous section on labour costs.

Another specific issue raised by customers was whether it was necessary for SunWater to continue to read meters quarterly, or whether customers or electricity providers could carry out this task resulting in significant cost savings. In responding, Aurecon (2011) found that there is a clear regulatory requirement for SunWater, as the ROL holder, to report quarterly on meter readings to DERM.

In addition to this regulatory requirement, Aurecon agreed with SunWater's position that having SunWater staff read the meters has a number of benefits, including timeliness, less reading errors, and associated monitoring for network faults and infrastructure damage.

In the absence of any specific reductions to operations costs identified by the Authority's consultants, no specific adjustments are proposed to operations costs. However, having regard to the consultants' scheme specific findings overall, the Authority proposes to apply a general cost reduction as identified below.

Preventive Maintenance Expenditure

SunWater's preventive maintenance activity comprises three sub-activities as follows: asset condition monitoring, asset servicing and weed control (SunWater 2011aj).

In relation to SunWater's expenditure forecasts for condition monitoring and servicing, the Authority's consultants generally found that:

(a) the methodology for forecasting condition monitoring and servicing expenditure largely reflected an independent report by PB (2010), and used appropriate drivers, taking into account the nature and frequency of the activities to be undertaken;

(b) the forecasts were greater than those obtained by PB and, failing an adequate explanation from SunWater, the consultants could not assess the prudency and efficiency of the additional expenditure;

(c) although preventive maintenance expenditure forecasts were disaggregated by cost type (labour, materials, contractors, other direct, and indirect and overhead costs), SunWater did not provide a disaggregation by sub-activity (condition monitoring, servicing and weed control), limiting the consultants' capacity to assess the prudency and efficiency of forecast costs;

(d) the following recommendations of the PB study were directly relevant to the Authority's review:

    (i) SunWater's maintenance plans and work instructions, and associated labour inputs and unit costs, and sub-contracted maintenance activities should be reviewed; and

    (ii) the optimum mix of preventive and corrective maintenance activities needs to be investigated for each scheme as input to SunWater's reliability centred maintenance (RCM) approach; and

(e) the forecast expenditure in the NSPs reflects SunWater's current approach to maintenance and is yet to be optimised to fully reflect the PB findings. Consequently, further efficiency savings in the delivery of servicing and condition monitoring activities is likely in the future.

In relation to SunWater's expenditure forecasts for weed control, the Authority's consultants generally found that:

(a) expenditure forecasts for outsourced weed control are based on existing contracts, or if subject to renewal, on expectations of what the likely contract rates will be. These contracts typically run for three years and are market tested when due for renewal; and

(b) forecasting weed control costs is difficult due to substantial variability across schemes and over time, and volatility in the price of chemicals.

In response to the consultants' findings, SunWater (2011aj and 2011ar) advised as follows:

(a) preventive maintenance costs are forecast at the activity level, not sub-activity level. SunWater's view of the consequences of this for the consultants findings are discussed above in relation to labour and operations costs;

(b) in a number of cases, consultants used past data as a basis for assessing the reasonableness of forecasts. SunWater argued that past data is not a reliable indicator of expected workloads. For example, some past preventive maintenance at storages was booked erroneously to operations. Problems with using past data was also highlighted by PB;

(c) labour, contractor and material cost estimates for condition monitoring and servicing were drawn directly from a first principles analysis by PB. SunWater argues that PB's recommendations are based on a thorough independent review which is forward looking and represents the best source of reliable information for the forecasts;

(d) additional condition monitoring costs identified by consultants is due to work not included in the scope of work instructions reviewed by PB. SunWater noted that this can include additional servicing, calibration and adjustment of pumps, motors, regulator gates, meters and valves, particularly on storage infrastructure after floods or on pumping equipment during the peak season;

(e) although SunWater is progressively introducing condition-based maintenance rather than the previous time-based approach (i.e. the RCM approach), efficiency savings will take some time to materialise due to the number of assets involved; and

(f) the weed control costs included in the NSPs were based on an assumption of $6,114 per drum for Acrolein. This has since reduced slightly since NSP data was developed to $5,721 per drum.

Although the Authority concedes that forecasting workloads at the sub-activity level may be difficult, and may not be warranted, it nevertheless considers that SunWater needs to further improve the transparency of the forecasting of its costs by type (labour, materials, contractors, etc). This reflects a number of the recommendations made in PB (2010).

With regard to the information problems identified, and given the scheme specific reductions for sampled items identified by the Authority's consultants (Table 6.22), the Authority proposes to apply a general cost reduction as identified below.

Corrective Maintenance Expenditure

In reviewing SunWater's corrective maintenance forecasts, the Authority's consultants found that:

(a) SunWater develops its forecasts on a 'typical year' by reviewing the last four years of data and excluding 'outlier years'. However, full details of the processes followed and the assumptions underlying its methodology were not documented;

(b) SunWater's use of historical expenditure to forecast corrective maintenance expenditure is commonly adopted by water utilities, and is an appropriate methodology given the inherent difficulties in accurately forecasting corrective maintenance;

(c) SunWater has proposed a reduction in corrective maintenance expenditure compared to current levels and an increase in preventive maintenance expenditure over the 2012-17 regulatory period. This is consistent with a reduction in corrective maintenance spending as asset reliability increases;

(d) although it is commonly accepted that there is an optimum mix of preventive and corrective maintenance activities, the scope of the review of preventive maintenance undertaken by PB (2010) excluded corrective maintenance practices and associated costs.

As a result, PB were unable to ascertain whether the balance of preventive and corrective maintenance was at an optimum level; and

(e) from the information available to the review, it was not possible to determine whether the proposed corrective maintenance expenditure is efficient.

In response to the consultants' findings, SunWater (2011aj and 2011ar) advised that:

(a) full details of the methodology used to forecast corrective maintenance costs was not documented;

(b) corrective maintenance forecasts were based on expected scheme operating conditions over the regulatory period, not on a simple average of actual costs over the previous price period;

(c) the effects of above-CPI cost escalations were not considered in the consultants' analyses; and

(d) although SunWater has started to introduce condition-based maintenance rather than the previous time-based approach (i.e. RCM approach), efficiency savings will take some time to materialise due to the number of assets involved.

The Authority considers that SunWater needs to further improve the transparency of the forecasting of its corrective maintenance costs by type (labour, materials, contractors, etc.). Additional information and analysis needs to be provided in subsequent cost and pricing reviews, so that forecasts can be readily validated by external parties.

The Authority supports the recommendation of its consultants that SunWater continues to progressively develop an RCM approach to maintenance as this will help to ensure that an optimal mix of preventive and corrective maintenance is achieved which in turn should lead to further efficiency gains.

In the absence of any specific reductions to corrective maintenance costs identified by the Authority's consultants, no specific adjustments are proposed to corrective maintenance costs. However, having regard to the consultants' scheme specific findings overall, the Authority proposes to apply a general cost reduction as identified below.

Electricity Expenditure

In relation to electricity expenditure, the Authority's consultants commented as follows:

(a) SunWater has set an energy consumption reduction target of 5% by 2014-15 as part of its energy management plan (Aurecon, 2011). However, it would be very difficult to measure the achievement of the identified savings of one percent per annum given the relative inaccuracy of electricity and flow meters (Halcrow, 2011);

(b) electricity cost savings have not been incorporated into forecast expenditures (Halcrow, 2011); and

(c) SunWater has not historically sought to optimise pumping regimes, and this suggests that there may be scope to reduce electricity costs in the future (Halcrow, 2011).

In its advice to the consultants, and its submissions, SunWater (2011h, 2011ad, and 2011ak) has noted that:

(a) SunWater periodically assesses the merits of moving from franchise tariffs to the contestable electricity market to ensure that the costs of electricity are minimised. However, the variable nature of power usage associated with the supply of irrigation water means that it is not feasible to purchase electricity from the contestable market at present. Halcrow (2011) accepted that this is likely to be the case;

(b) in terms of reducing the amount of electricity used, SunWater's ability to control pumping during peak and off-peak periods is limited. This is primarily due to limited storage volumes, and the requirement to provide water to irrigators irrespective of whether it is during peak or off-peak periods;

(c) SunWater has, nevertheless, recently gone to the market to identify a consultant to optimise its pumping regime (Halcrow, 2011); and

(d) SunWater is seeking to increase its pumping energy efficiency through the development and implementation of a portfolio energy management plan (*Energy Management Program Plan*, October 2010). The Plan identifies more than one hundred specific energy saving opportunities, covering individual schemes as well as organisation wide initiatives.

In principle, the Authority accepts that SunWater's has carried out a sufficiently detailed review of the costs and benefits associated with a move to contestable electricity contracts (SunWater 2011 ad), and that currently there is insufficient incentive for it to change from its current reliance on franchise tariffs.

Nevertheless, the Authority notes that the proposed carbon tax, and the Authority's pending review of Queensland's electricity tariffs, may result in significant changes to the costs and benefits associated with the continued reliance on franchise tariffs. Therefore, the Authority proposes that SunWater review the cost differential between franchise and contestable electricity contracts on an annual basis commencing in 2012-13.

In relation to electricity consumption forecasts:

(a) the Authority acknowledges that SunWater's use of the complete 2006-11 dataset for determining average electricity consumption, rather than the 'typical year', should improve the robustness and accuracy of its estimates; and

(b) although the Authority agrees that electricity reductions of 1% per annum may be difficult to monitor reliably, SunWater's electricity consumption should show a decline of at least 5% by 2014-15, as a result of the implementation of the *Energy Management Program Plan*.

The Authority proposes to incorporate SunWater's proposed annual 1% electricity reduction to 30 June 2015 together with specific adjustments recommended by the Authority's engineering consultants (mainly relating to pumping).

SunWater's proposals for the escalation of electricity costs during the regulatory period, including the effects of the imposition of a proposed price on carbon, are discussed further below in Section 6.8 on cost escalation.

Recommendation:

The Authority recommends that SunWater continue to review the cost differential between franchise and contestable electricity contracts on an annual basis commencing in 2012-13.

The Authority proposes to incorporate SunWater's targeted 1% electricity reduction to 30 June 2015 together with specific adjustments recommended by the Authority's engineering consultants (mainly relating to pumping).

Other issues

Effects of the Intersafe project on forecast operating expenditure.

The Authority notes the following potential countervailing effects on future operating expenditure as a result of the risk mitigation afforded by the Intersafe project:

(a) future operating expenditure may decrease through lower insurance premiums, lower costs of managing occupational health and safety and perhaps an increased utilisation rate for labour resulting in lower labour costs in the medium term; and

(b) future operating expenditure may increase due to an increase in the preventive and corrective maintenance of new Intersafe assets.

SunWater has advised that its operating expenditure forecasts do not include quantification of the above potential effects. The Intersafe project is dealt with in more detail in Chapter 5 – Renewals Annuities and in the scheme specific reports.

Local Benchmarking against PVWater

Following consultation with irrigator representatives, the Authority sought to compare the operating expenditures of select SunWater distribution systems against those of a third-party distribution service provider, PVWater. PVWater manages a single irrigation scheme with five sub-systems in the Mackay region. The Authority engaged Deloitte to investigate the viability of using PVWater's operational costs to benchmark those of SunWater.

Deloitte's (2011) investigation concluded that while operations data is available in different forms from both SunWater and PVWater, the data does not allow meaningful comparisons. They noted that are two main reasons for this:

(a) SunWater and PVWater have different scheme characteristics: SunWater's channel distribution systems cannot be compared with the PVWater distribution systems that rely on natural watercourses (bulk-like systems) or pipelines; and

(b) the unreliability of disaggregated data: SunWater's distribution systems do not have sub-system data comparable to available PVWater data, and PVWater does not have operations data comparable to SunWater's activity-level data.

Deloitte did find a limited high-level comparison could be made between total operational costs and labour operational costs for the two entities over the period 2006-07 to 2009-10 on the basis of cost per ML of allocation, per km of channel/pipeline/drains and per customer. However, Deloitte also noted that, given the differences between the scheme characteristics of SunWater and PVWater it would be difficult to identify any efficiencies based on these benchmarks.

Findings In Relation to Prudency and Efficiency of Forecast Direct Operating Expenditures

Scheme Specific Efficiency Measures

Of the four engineering consultants employed by the Authority to assess the prudency and efficiency of SunWater's proposed direct operating and renewals costs for 2012-17, only Halcrow (2011) and Aurecon (2011) quantified specific opportunities for direct operating cost savings.

For the fourteen service contracts considered by Halcrow and Aurecon, the efficiency reductions were, on average, equivalent to 2.43% of total direct operating costs. The quantified savings excluded energy related efficiency gains, which are potentially achievable in a limited number of schemes (up to 10 service contracts) with significant electricity pumping costs as noted below (Table 6.22).

Table 6.22: Halcrow and Aurecon's Recommended Direct Cost Savings (Real $'000)

	Direct Operating Expenditure (excl. electricity)	*Savings Identified*	*Savings Identified (%)*
Aurecon			
Barker Barambah	680	2.55	0.38%
Boyne Tarong	363	11.3	3.11%
Lower Mary	273	15.75	5.77%
Lower Mary Distribution	624	25	4.01%
Upper Burnett	669	5.1	0.76%
Bundaberg	1,063	30.2	2.84%
Bundaberg Distribution	4,858	120	2.47%
Central Cluster Average	**8,530**	**209.9**	**2.46%**
Halcrow			
Nogoa Mackenzie	2,146	5	0.23%
Emerald Distribution	1,701	65	3.82%
Lower Fitzroy	264	5	1.89%
Dawson	860	3	0.35%
Theodore Distribution	1,121	60	5.35%
Callide	866	29	3.35%
Three Moon Creek	314	6.6	2.10%
Northern Cluster Average	**7,272**	**173.6**	**2.39%**
Total	**15,802**	**383.50**	**2.43%**

Note: Further savings identified by SunWater in Lower Fitzroy WSS mean that the average cost savings becomes 2.46% which the Authority may adopt prior to the final report. Source: SunWater (2011); Aurecon (2011); and Halcrow (2011).

GHD and ARUP identified opportunities for savings but were unable to quantify those savings.

ARUP, Aurecon and Halcrow identified unquantified opportunities for efficiency improvements in direct operating costs including:

(a) preventive maintenance cost estimates in excess of cost schedules developed by PB (2010) with greater savings in corrective maintenance (Arup, 2011, Aurecon, 2011 and Halcrow, 2011);

(b) moves to a RCM approach (ARUP, 2011, Aurecon, 2011 and Halcrow, 2011); and

(c) energy efficiency measures equivalent to 5% of SunWater's total electricity usage by 2014-15 (Aurecon, 2011). This efficiency gain will only apply in a limited number of schemes where there are opportunities to alter electricity tariffs and/or the timing of water pumping. It is therefore not appropriate to apply identified electricity savings across all schemes – these specific savings will be applied in the relevant schemes.

The consultants reported that, for their review of direct operating costs, there was insufficient information provided by SunWater to quantify all potential savings. Consequently, in the absence of sufficient information, the Authority proposes that the quantified 2.43% of direct operating cost saving be applied in 2012-13 across all service contracts, except where higher cost savings have been explicitly identified.

The Authority considers that the application of the 2.43% average to schemes, for which lower than 2.43% savings were specifically identified, is appropriate on the basis of the consultants' concerns about insufficient information. That is, for many schemes there were substantive unsampled direct operating costs to which further savings should be applied.

As noted for non-direct costs, further efficiency gains can be expected due to the influence of technological advances. However, these need to be offset by other cost increases which can be expected such as those associated with additional reporting and consultation requirements being proposed by the Authority.

In addition, the Authority notes that SunWater has proposed a labour productivity gain of 1.5% per annum.

As labour comprises about 50% of total direct operating costs (excluding electricity) based on the NPV of 2012-17 costs, SunWater's 1.5% labour related productivity gain equates to a 0.75% per annum cost saving in respect of total direct operating costs (excluding electricity) (SunWater, 2011an and 2011ao), compounding annually.

Whereas the Authority has recommended applying the 1.5% productivity gain to non-direct non-labour operating costs (above), it is not considered appropriate to do so with direct non-labour operating costs. In this regard, whereas non-direct non-labour costs (such as telecommunications and office space) are expected to move in line with non-direct labour costs; by contrast, direct non-labour costs (such as materials and contractors) are unlikely to do so as they are more driven by the requirements of the scheme.

The overall impact of proposed efficiency gains is reflected below in Table 6.23.

Table 6.23: Direct Operating Expenditure 2012-17 – Combined Efficiency Gains (Real $'000)

	2012-13	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Engineering Consultants' efficiency gain (2.43% plus)[1]	550	550	550	550	550
SunWater's Labour related productivity gains (0.75% compounding)	170	346	524	701	880
Total Efficiency Gain	720	896	1,074	1,251	1,430
Total Direct Operating Costs[2]	22,638	22,740	22,844	22,910	22,920
Total Efficiency Gain as percentage of Direct Operating Costs	3.18%	3.94%	4.70%	5.46%	6.24%
Adjusted Total Direct Operating Costs	21,918	21,844	21,770	21,659	21,490

1. *The Authority will apply specific identified savings exceeding 2.43% in service contracts where such savings were identified by consultants. As a result the average cost saving presented in this row will be 2.77%.*
2. *While these forecasts are presented in real terms, the Authority's nominal forecasts will includes a 4% annual labour cost increase.*

Source: QCA analysis, SunWater (2011an); and SunWater (2011ao).

The Authority has noted previously that it requires a reconciliation by SunWater of staffing (including SLFI targets) and non-direct costs particularly over the period from 2008-09 to 2010-11. This is based on the understanding that SLFI cost savings are purported to relate exclusively to non-directs. However, if part of these cost savings also arises in direct operating costs, then SunWater should incorporate such details in its submission on this matter.

Recommendation:

The Authority recommends that, in 2012-13, SunWater's direct operating costs (excluding electricity) be reduced in accordance with Table 6.23 above, except where higher costs savings have been explicitly identified.

6.7 Cost Allocation

SunWater's operations are characterised by a large proportion of non-direct (indirect and overhead) costs.

In general terms, economic efficiency requires that prices reflect resource use. Where costs can be linked to a particular service or user, prices can be calculated to closely reflect resource use.

However, if costs do not have a direct causal relationship with a service or user (such as for SunWater's overhead and indirect costs) they must be allocated using a fair and reasonable cost allocation methodology.

The Authority sought independent expert advice from Deloitte in relation to the reasonableness of SunWater's methodology for the allocation of indirect and overhead costs to its service contracts. Deloitte's report (2011a) can be found on the Authority's website.

SunWater's submissions describe a two stage process for cost assignment:

(a) in the first stage, SunWater directly attributes its directs costs, and allocates its non-direct costs, to service contracts; and

(b) in the second stage, SunWater allocates all of the fixed costs assigned to service contracts (direct and non-direct), to medium and high priority customers within the service contracts.

Previous Review

The non-direct costs were pooled into seven separate overhead cost pools and an indirect cost pool for ROP Costs:

(a) the Brisbane head office pool included Brisbane based indirect and overhead costs;

(b) the six separate indirect and overhead regional business centre cost pools (reflecting the six regional centres in existence at the time of the forecasts); and

(c) a single indirect cost pool for ROP costs.

Indec (2011g) reported that, for the purposes of the 2006-11 price paths, SunWater [generally] adopted total direct cost as the basis for allocating non-direct costs.

More specifically, Brisbane and business centre overheads were allocated to direct expenditure activities, excluding electricity and refurbishment and enhancement activities, based on each activity's proportion of total direct costs.

The overheads from each of the six business centre overhead pools were allocated only to those activities directly under the direction of that business centre.

ROP costs were allocated directly to the relevant water supply schemes.

Total scheme operating costs were then allocated between different priority groups using WPCFs (see Chapter 5 – Renewals) for both bulk and distribution systems.

The Authority notes that the definitions of costs used during the 2006-11 price paths negotiations (for example, 'local overhead costs' and 'Brisbane administration costs') are not comparable to similar terms used in the 2012-17 regulatory period price review. This is due to the organisational and cost restructures that have occurred between the two reviews.

Cost Allocation Stage 1

Stakeholder Submissions

<u>SunWater</u>

SunWater (2011) has submitted that its business profile has changed significantly since the previous price paths were developed in 2006. Importantly, SunWater has (and continues to) embark upon significant investment in new water supply assets to service the mining and industrial sectors.

SunWater no longer considers that total direct cost is relevant [to allocating non-direct costs across all of SunWater's service contracts] in this environment, as the nature of the investment cycle is different to operating existing assets. Furthermore, major capital projects are lumpy and will not generate operating expenditure until (and if) they are completed and commissioned.

Since 2006, SunWater has centralised a number of functions, changing the profile of centralised costs and the scope of activities. A more sophisticated approach is required that better targets the allocation of this expanded scope of centralised activities, rather than simply spreading the expanded scope of functions in the same manner as adopted for 2006-11 price paths.

SunWater has proposed a three-tier approach to assigning the cost of activities that have been centralised in Brisbane and regional offices for the purpose of determining the cost base for its assets and activities [at the service contract level].

SunWater submitted that its approach recognises the extent of causality of those costs and the degree to which they can be assigned to individual activities or assets as follows:

(a) direct costs are attributed directly to each asset or activity (of each service contract);

(b) indirect costs are allocated in proportion to total labour costs for each asset/activity; and

(c) overhead costs are allocated to all bulk water, distribution and non-irrigation service contracts, according to the proportion of total direct labour costs (DLCs) involved[27].

Costs are allocated to operating activities as well as renewals using the same cost allocation base (CAB).

SunWater has proposed total DLCs as the CAB for non-direct costs[28] on the basis that it:

(a) reflects activity and effort. DLCs are more likely to reflect the spread of labour across SunWater's business, particularly where a single FTE person may work across numerous service contracts;

(b) reflects labour costs. Labour accounts for about 43% of total operating costs (53% of total operating costs if electricity is excluded). This makes it one of the most dominant costs of SunWater's business, and a strong overall cost driver;

(c) is a proxy for other cost drivers. DLCs are directly related to a number of other possible CABs (such as the number of customers, assets that require intensive management or expensive refurbishment and the volume of transactions). As all of these tasks involve SunWater staff (and thereby incur labour costs), DLCs are a good proxy for causality, as it can be measured consistently across SunWater's business; and compared between dissimilar Service contracts or activities; and

(d) is consistent across service contracts. Both regulated and non-regulated service contracts show a high proportion of labour costs relative to other expenses. This ensures that cost allocation between service contracts is both consistent and equitable.

In doing so, SunWater had regard to IPART's endorsement of State Water's proposal to allocate costs to each valley (equivalent to SunWater's schemes) based on the proportional number of

[27] While labour is the major driver, a small portion of overhead costs are assigned to non-labour costs (excluding electricity) using a 5% loading for these costs. For example, if the purchase of chemicals costs $100, $5 in overhead is allocated to that purchase in recognition that the purchase and use of materials also has some bearing upon centralised costs. This loading is not applied to large development and dam safety projects, costs such as procurement and legal are directly charged and hence it is not necessary to apply the 5% loading.
[28] As set out above, a small amount of overhead is allocated based on 5% of non-labour costs (excluding electricity).

FTEs. SunWater notes that State Water's salaries and wages accounted for similar proportions of total costs as did SunWater's[29].

SunWater has also countenanced the possibility of applying different CABs to different types of costs, as adopted by GAWB in the Authority's 2005 investigation. However, SunWater asserted that this approach adds complexity, and requires judgements about relationships between different cost groups and any nominated driver. They further propose that multiple CABs may increase the scope for error, as they require different cost relationships be found when only weak relationships exist, consequently creating illusory precision[30].

Other Stakeholders

Generally, stakeholders were concerned about the quantum and proportion of non-direct costs allocated to service contracts. Specific concerns were also raised about SunWater's proposed cost allocation methodology.

Level of Non-Direct Costs Allocated to Service contracts

BRIG (2011a) requested that the centralised costs identified in SunWater NSPs receive close scrutiny, as they make up a large proportion of total costs.

BRIAIC (2011a) submitted that indirect and overhead charges to the Burdekin-Haughton WSS and distribution systems were excessive, ranging from 162% to 175% of total DLCs over the 2012-17 regulatory period. BRIAIC considered that the Authority should be examining whether or not this is efficient.

CANEGROWERS (2011c) considered that service contract indirect and overhead costs of 60% were unacceptable, despite the views of the Authority's consultants. CANEGROWERS suggested that the review has been undertaken with a skewed focus that benefits non-irrigation customers over irrigation customers, which must be reversed.

CCC (2011) submitted that efficient head office charges attributed to the St George WSS have increased from $399,367 per annum in 2001 to $1,588,000 per annum in 2010-11. They contend that this massive increase cannot be justified. St George irrigators must not be held financially responsible for such massive blowouts in costs, or of SunWater's inability to manage its budget.

Cotton Growers and QFF (2011a) contended that there was nothing in SunWater's centralised costs submission (2011a) to suggest that a bottom up approach to costing had been adopted. They also raised concerns about the cost allocation of Strategy and Stakeholder Relationships seemed to be very high ($1.8 million per annum) for what it is achieving. In their second submission (2011b), they questioned the magnitude of indirect and overhead costs as a percentage of scheme costs (over 50% of total operating costs) and highlighted the lack of justification for its magnitude in the consultants' reports.

MDIAC (2011) raised concern that there may be cross subsidisation of administration costs between the water supply schemes and SunWater's commercial consultancy projects, and that the level allocated to the schemes in their area seems excessive.

PVWater (2011a) requested a breakdown between separate indirect and overhead costs, broken down into either regional or central office costs. PVWater also proposed that the allocation of

[29] IPART (2010), p114. IPART's decision treats FTEs and spending on wages and salaries as a single driver.
[30] SunWater (2011g), p9. SunWater refers to the GAWB approach in 2005 resulting in costs allocated on the basis of customer numbers being disproportionately high for small customers.

overhead and administrative costs between irrigation and SunWater's other service contracts should be carefully examined.

PVWater (2011b), Eton Irrigator Advisory Committee (2011a), CANEGROWERS (2011a), MSF (2011a), MBIA (2011) and Cotton Australia and QFF (2011a) have all submitted that indirect and overhead charges to particular schemes are excessive, particularly compared to SunWater's total overhead and indirect costs.

SunWater's Proposed Allocation Methodology

BRIAIC (2011a), CANEGROWERS (2011a), and MSF (2011) all expressed concern about the appropriateness of using DLCs as the base for allocating indirect and overhead costs.

BRIAIC disagreed with SunWater's proposed overhead and indirect cost allocation methodology, and request that alternative options are considered. Similarly, Lower Burdekin Water requested that the Authority examine carefully the methodology for allocating administrative overheads.

BRIAIC (2011b) supported Deloitte's proposal to review alternative CABs [beside DLC] to allocate non-direct costs.

BRIG (2011a) also stated that the allocation of labour costs is inequitable as the use of contractors varies across different schemes.

CANEGROWERS (2011c) highlighted that alternative CABs would be more appropriate for a number of resource centres (Table 6.24). As a minimum, items [resource centres] with 60% or more of direct and indirect costs should be attributed to each scheme in proportion to how the direct and indirect costs are attributed to schemes. This is likely to be the case for Infrastructure Management (Regions; Asset Management) and Infrastructure Development but also perhaps others including Infrastructure Management (Water Accounts) and legal [Corporate Counsel].

Table 6.24: CANEGROWERS' Proposed CABs

Resource Centre	*CANEGROWERS' Comments*
Infrastructure Management (Regions)	Overhead costs allocated in proportion to directly billed costs (Targeted[31] DLCs).
Finance	Transactions (depending on the proportion of Finance costs spent on budgeting and reporting activities).
Human Resources	FTEs or DLCs
Strategy and Stakeholder Relations	Service contracts, with the exception of distribution service contracts, as including it suggests that services are provided twice.
HSEQ	FTEs or DLCs. Service contracts are a poor cost driver.
Legal [Corporate Counsel]	Service contracts, although it should not be charged to both bulk and distribution systems. Would be appropriate to allocate overhead costs in proportion to those that are directly billed (Targeted DLCs).
Procurement	Both the number and value of transactions, but probably value is the more important driver.
ICT	FTEs
Infrastructure Management (Water Accounts)	Customer numbers, although if the majority of costs are directly billed to schemes, then the residual costs can be attributed to the schemes in the same proportion (Targeted DLCs).
Infrastructure Management (GM)	Profits or total direct costs
Infrastructure Development	Mostly consists of direct cost, so the residual should be attributed back to each scheme in proportion to how direct costs are apportioned on this specific item (Targeted DLCs)

Source: CANEGROWERS (2011c).

CANEGROWERS (2011a) also identified concerns that using DLCs as the CAB for indirect and overhead costs will favour capital intensive activities and schemes over labour intensive ones, raising the issue of whether it is fair to penalise schemes that have been maintained in an outdated way rather than modernised and automated.

CANEGROWERS described the total values of overhead items assigned to irrigation service contracts as: '…staggering and bordering on unbelievable. The total cost items appear to be multiples of what efficient costs should be' (2011a). Also it is considered that the majority of CEO and Board focus would be on making money, and that these functional costs (as with Strategy and Stakeholder Relations and Corporate Counsel) are currently over allocated to irrigation service contracts.

CANEGROWERS provided a number of examples of individual service contacts with indirect and overhead costs forecast to increase beyond amounts they considered reasonable. It was proposed that the Authority should look at the indirect and overhead costs required to manage

[31] Targeted DLC refers to allocation of labour costs to service contracts associated with either a regional resource centre or Infrastructure Development (specialist central unit).

its non-irrigator service contracts and high priority customers, and charge costs beyond that amount to irrigators. Alternatively, they suggest looking at the overhead costs involved if all irrigation service contracts were locally managed (as per PVWater). At the very least, CANEGROWERS (2011c) requested that a thorough analysis of the overhead costs attributed to individual activities within schemes be undertaken to see if they are efficient and asserted that none of the Authority's consultants have done this thus far.

LBW (2010) requested that the Authority's review consider the allocation of lower bound costs (including operations, maintenance, administration and asset renewals) between customers.

MSF (2011a) are concerned by some of the alternatives proposed by Deloitte. MSFL took issue specifically with customer numbers, IM water accounts and transactions. Lower Burdekin Water (2011) is concerned if allocation volumes should be nominated as the cost base.

Other Concerns

G. Dunsdon (2011) commented that irrigators would like to see a comprehensive cost allocation breakdown on their invoices just as they receive from other suppliers.

Other Jurisdictions

Review of Bulk Water Charges for State Water

As part of their recent review of State Water bulk water charges, Atkins and Cardno (2009) assessed the allocation of corporate expenditure between State Water valleys (equivalent of water supply systems).

State Water proposed to allocate corporate costs (including CEO and Board office; Finance; Strategy, Policy and Compliance; Human Resources; and Information Systems and Communication) in proportion to the salary and wage charges of functional activities. State Water categorise as functional activities operations (customer service and water delivery) and maintenance (maintenance services and asset management). State Water applied their allocation methodology for corporate costs across both regulated and non-regulated portions of their business.

Atkins and Cardno supported the use of FTEs as the cost base for common costs, including corporate (based on salaries and wages making up approximately 56% of total costs). IPART have adopted the recommendations relating to cost allocations, as proposed by Atkins and Cardno.

Review of Rural Water Prices for Goulburn-Murray Water 2005

Halcrow (2005) report that as for the Essential Services Commission's 2006 price review, Goulburn-Murray Water utilised a number of CABs for corporate/shared costs. These are summarised in Table 6.25.

Table 6.25: Goulburn-Murray Water – Basis of Allocation of Shared Costs

Corporate Cost Category	*Basis of Allocation*
Corporate governance Strategy and development Finance Records and reception Information technology Environmental management plan	Service share of total expenditure
Human resources	Service share of labour expenditure
Water administration	Service share of Assessments
Water systems (production)	Service share of bulk water entitlements
Manager district services	Direct allocation to District
Research and development	Allocated to District and Diversion services based on share of total expenses
Total channel cost	Allocated to Distribution works and gravity fed irrigation based on share of total expenses.

Source: Halcrow (2005).

<u>GAWB 2005 Investigation of Pricing Practices</u>

The Authority (QCA, 2005) supported GAWB's proposed general administration costs allocation methodology, whereby 10% of general administration costs were to be evenly distributed between GAWB customers and the remaining 90% was assigned to GAWB's demand based functions.

The Authority recommended that the relative management effort between the three major segments is inversely proportional to the volume of water delivered to each segment of GAWB's infrastructure and general administrative cost weightings of:

(a) 0.5 x ML delivered for supplies out of Awoonga Dam;

(b) 1.0 x ML delivered for supplies to raw water customers; and

(c) 2.0 x ML delivered for supplies to treated water customers.

Authority's Analysis

In seeking to review the appropriateness of SunWater's allocation methodology the Authority, and Deloitte, sought clarification and further information on a number of matters from SunWater.

Essentially, the following additional details regarding SunWater's allocation methodology have been discerned.

SunWater Methodology

For the first stage of its assignment of non-direct costs, SunWater distinguishes between two types of cost centres (resource centres and indirect cost centres) to assign its costs to service contracts.

Resource Centres

The resource centres listed in Table 6.26, form the starting point for all overhead costs relevant to this investigation. They are the SunWater business units primarily responsible for employing staff and incurring non-labour overhead costs.

Costs not directly attributed from resource centres to service contracts and other cost centres (indirect cost centres and other resource centres), are termed ‘residual’ costs which are then allocated across the entire business as overheads.

There are three types of resource centre, which are classified according to the nature of their overhead costs, as per Table 6.26.

(a) Brisbane Overhead

Brisbane overhead (residual) costs are apportioned across the entire SunWater business. Brisbane overhead resource centres include the CEO, Board, Internal Audit and Corporate General manager.

The apportionment is achieved by aggregating all the overhead costs of Brisbane resource centres and dividing by the forecast DLCs of the business to determine a loading rate.

This loading rate is applied to each dollar of direct labour charged to either a service contract or an indirect cost centre across SunWater’s business[32].

(b) Local Overhead

Local overhead resource centres include almost all of the Infrastructure Management resource centres (i.e. Asset Management, Water Accounts, North, South, Central and Far North.

Local overhead costs are allocated in a similar way to Brisbane overhead costs. In this case, the sum of the costs of all local overhead resource centres is divided by the forecast direct labour costs of the business.

This loading rate is applied to each dollar of DLCs in a similar way to the loading rate for Brisbane overhead.

(c) Mixed (Local and Brisbane) Overhead

Example of a mixed overhead resource centres are Finance, HR, Corporate Counsel and ICT. They are considered ‘mixed’ resource centres, as their work program contains a relatively balanced mix of Brisbane and local tasks.

Mixed overhead costs are apportioned in a similar manner to Brisbane and local overhead costs.

[32] Labour charged to an overhead resource centre can attract an overhead loading, but SunWater estimates this at less than 1% of its costs base in 2011-12 (Deloitte 2011).

Table 6.26: SunWater Resource Centres (Type, Description, FTEs)

	Resource centre	*Overhead Type*	*Description*	*FTEs*
Executive	CEO	Brisbane	Oversight of the operations of SunWater. Includes the CEO and SunWater Board. The Internal Auditor reports directly to the CEO.	3
	Board	Brisbane	Not considered in the 2012-17 regulatory period price review.	
	Internal Audit	Brisbane	Not considered in the 2012-17 regulatory period price review.	
Corporate	Corporate Operations	Brisbane	Not considered in the 2012-17 regulatory period price review.	
	Plant Account		Not considered in the 2012-17 regulatory period price review.	
	Finance	Mixed	Responsible for accounts payable and receivable, finance reporting and analysis, cash and funds management; and budgeting and planning.	23
	Corporate Counsel	Mixed	Responsible for legal issues and managing property portfolio such as housing and land-based issues.	22
	Procurement	Mixed	Undertaking major purchases for whole of SunWater (minor purchases undertaken by relevant cost centres).	
	Human Resources	Mixed	Responsible for workforce planning, recruitment and exit, training, leadership development, performance management, payroll services, remuneration advice, and industrial relations.	10
	Corporate General Manager	Brisbane	Office for the GM of corporate. Provides administrative support to other corporate resource centres.	
	Information Communication Technology	Mixed	Responsible for managing network infrastructure including business systems analysis, infrastructure support (IT and phone), information governance (hard copy and library function) and IT service desk.	28
Infrastructure Management	Services Delivery		Responsible for WSS operations and maintenance. Not considered in the 2012-17 regulatory period price review.	34
	Water Accounts	Local	Responsible for water accounting, ROP/ROL compliance, and customer service (enquiries, accounts and contracts).	14
	Asset Management	Local	Responsible for strategic asset management (asset strategy and planning and asset performance and compliance).	38
	IM General Manager		Not considered in the 2012-17 regulatory period price review.	198.5

	Far North	Local	Day to day operations of service contracts within the Far North region.	
	Central	Local	Day to day operations of service contracts within the Central region.	
	South	Local	Day to day operations of service contracts within the South region.	
	North	Local	Day to day operations of service contracts within the North region.	
Infrastructure Development	ID General Manager	Indirect	Not considered in the 2012-17 regulatory period price review.	95.2
	Business Development		Not considered in the 2012-17 regulatory period price review.	
	North	Local	Responsible for all new infrastructure projects carried out both internally to SunWater and with external client for North region.	
	South	Local	Responsible for all new infrastructure projects carried out both internally to SunWater and with external client for South region.	
	Project Management	Local	Implementation of infrastructure development projects.	
	Project Proposals	Local	Developing proposals for infrastructure development projects.	
Strategy and Stakeholder Relationships		Mixed	Responsible for water planning, corporate relations and business strategy. SSR are also responsible for strategic external communications such as website and advertising.	12
Health, Safety, Environment and Quality		Mixed	Responsible for all workplace health and safety, environmental issues and quality assurance and management.	19

Source: SunWater (2011a); Deloitte (2011a); P. McGahan, pers. comms. 16 Sept 2011; and K. Esson, pers. comms. 7 Sept 2011.

Indirect Cost Centres

Indirect cost centres (see Table 6.27) contrast with resource centres in that they do not employ staff. However, this does not mean that labour costs are not part of indirect cost pools as part of the labour employed by resource centres is charged to indirect cost centres. Indirect cost centres are similar to resource centres in that the costs charged to indirect cost centres (including labour) are allocated to service contracts using a loading factor.

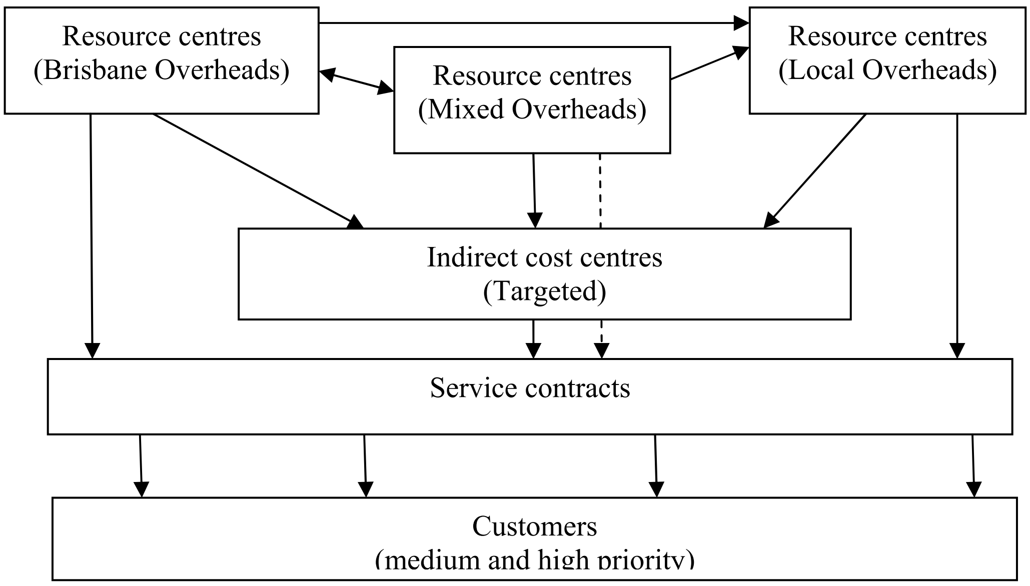
However, this apportionment occurs in a more targeted manner than for resource centres, as indirect costs are allocated only to those service contracts that receive some benefit from the indirect cost centre. For example, the costs of the Headworks Indirect Cost Centre are allocated only to those bulk water service contracts with headworks supported by the cost centre.

The loading rate for indirect costs is determined by dividing the costs of an indirect cost centre by the forecast total DLCs of those service contracts for which the indirect cost centre provides support. The rate is then applied to every dollar of direct labour charged to these particular service contracts.

Indirect cost centres are also generally associated with particular resource centres because most of the labour costs charged to an indirect cost centre emanate from the associated resource centre. For example, the Pump Stations and Pipelines Indirect cost centre is part of the Infrastructure Management: Asset Management Resource centre. In 2011-12, SunWater forecasts that all of Pump Station's labour costs will derive from Asset Management staff.

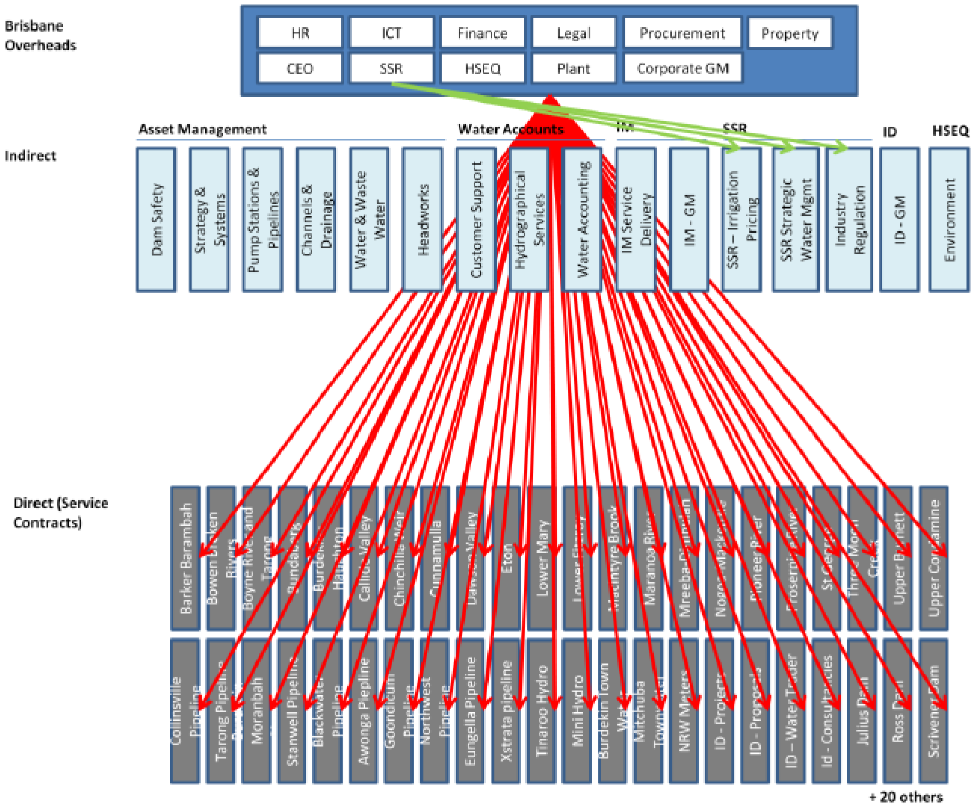
Figure 6.2 shows the general pathways of cost assignment across SunWater's business. Figure 6.3 illustrates the breakdown of overhead costs between service contracts in more detail, while Figure 6.4 shows the allocation of indirect costs to service contracts.

Figure 6.2: Cost Interactions



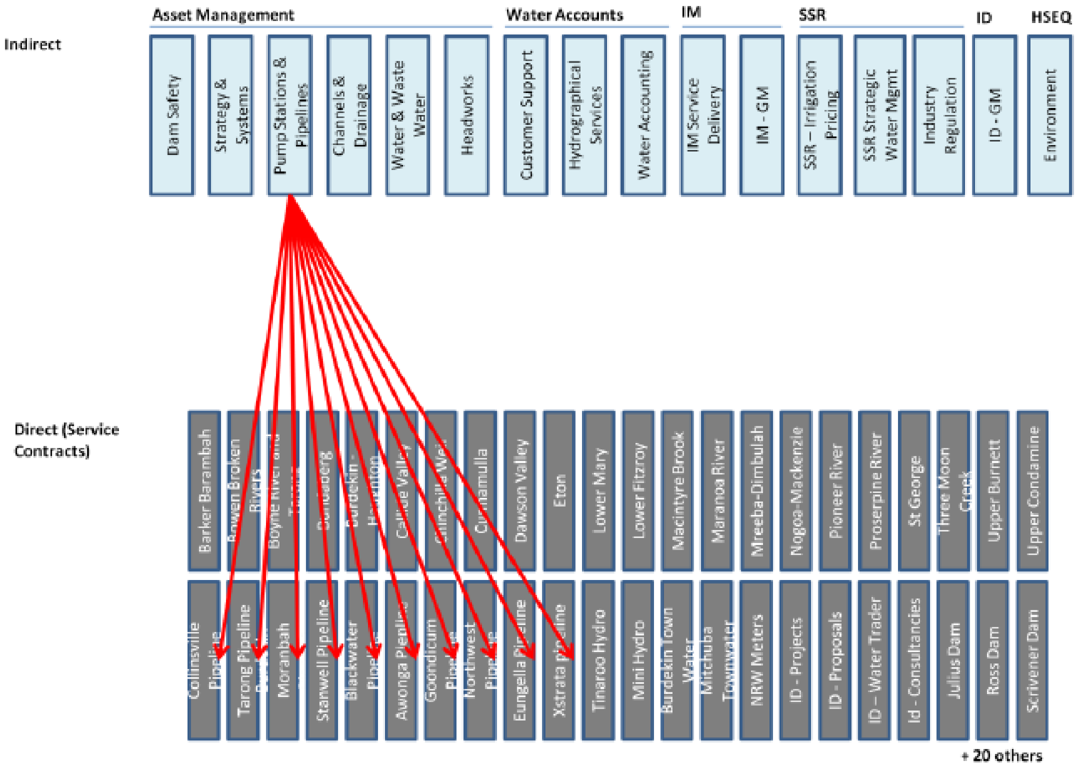
Source: QCA Analysis.

Figure 6.3: Assignment of SunWater's Brisbane Overhead Costs



Source: SAHA (2011).

Figure 6.4: Assignment of SunWater's Indirect Costs



Source: SAHA (2011).

Table 6.27: SunWater's Indirect Cost Centres

Resource centre	***Indirect cost centre***
HSEQ	Environment
Infrastructure Development	IM GM : Man. & Admin
IM : Services Delivery	Flood room
	IM – General Manager
	IM Services Delivery : Man. & Admin
IM : Asset Management	Dam Safety
	Headworks
	Strategy & Systems
	Pump Stations & Pipelines
	Irrigation & Drainage
	Water & Waste Water
Strategy and Stakeholder Relationships	Strategic Water Management
	Irrigation Pricing
IM : Water Accounts	Customer Support
	Hydrographic Services
	Water Accounting

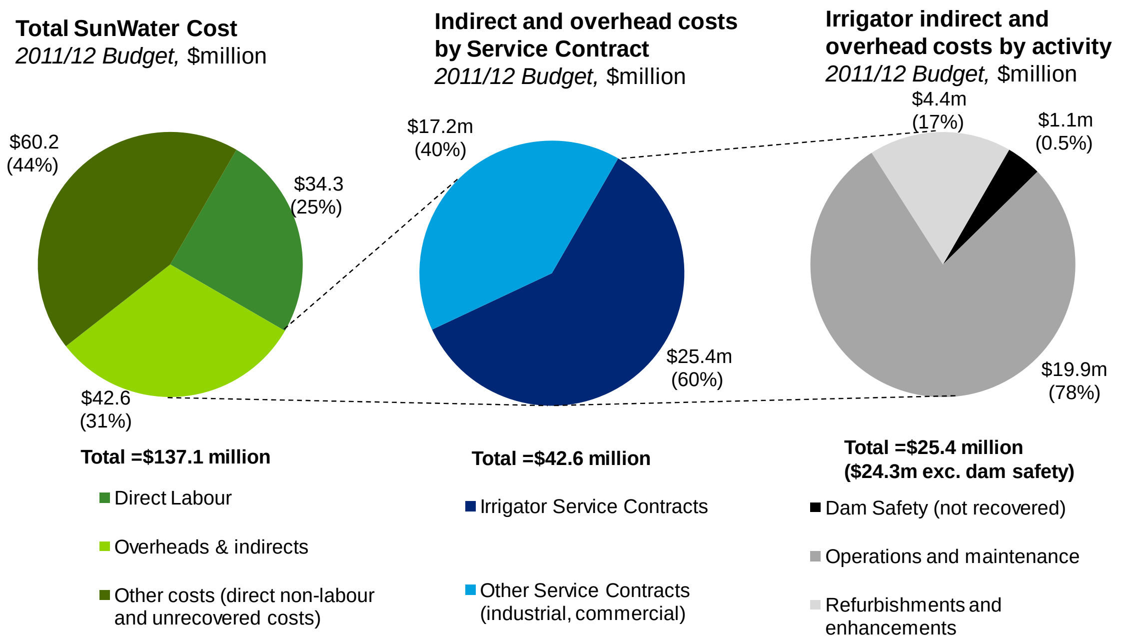
Source: M. Judkins, pers. comms, 28 July 2011.

<u>Review of SunWater's Stage 1 Methodology</u>

Figure 6.5 shows the proportion of SunWater's total 2011-12 budgeted expenditure SunWater proposed to allocate to irrigator and non-irrigator service contracts and the irrigator proportion broken up by activity.

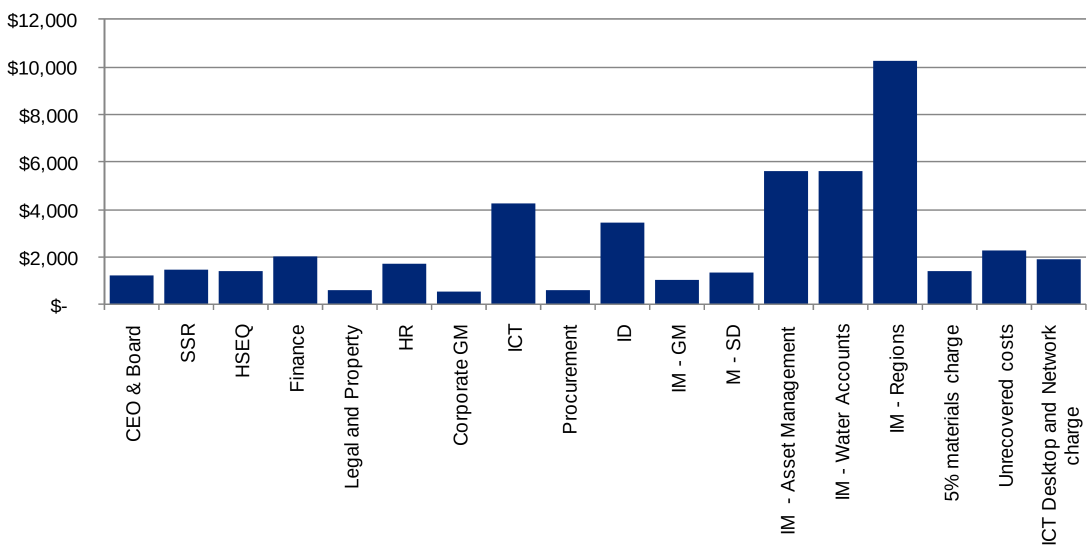
Figure 6.6 illustrates the magnitude of overhead costs from each resource centre. Figure 6.7 shows the proposed 2011-12 non-direct cost assignment between irrigator and non-irrigator service contracts, by resource centre.

Figure 6.5: Allocation of Total Expenditure to Irrigator Service contracts (nominal $'000)



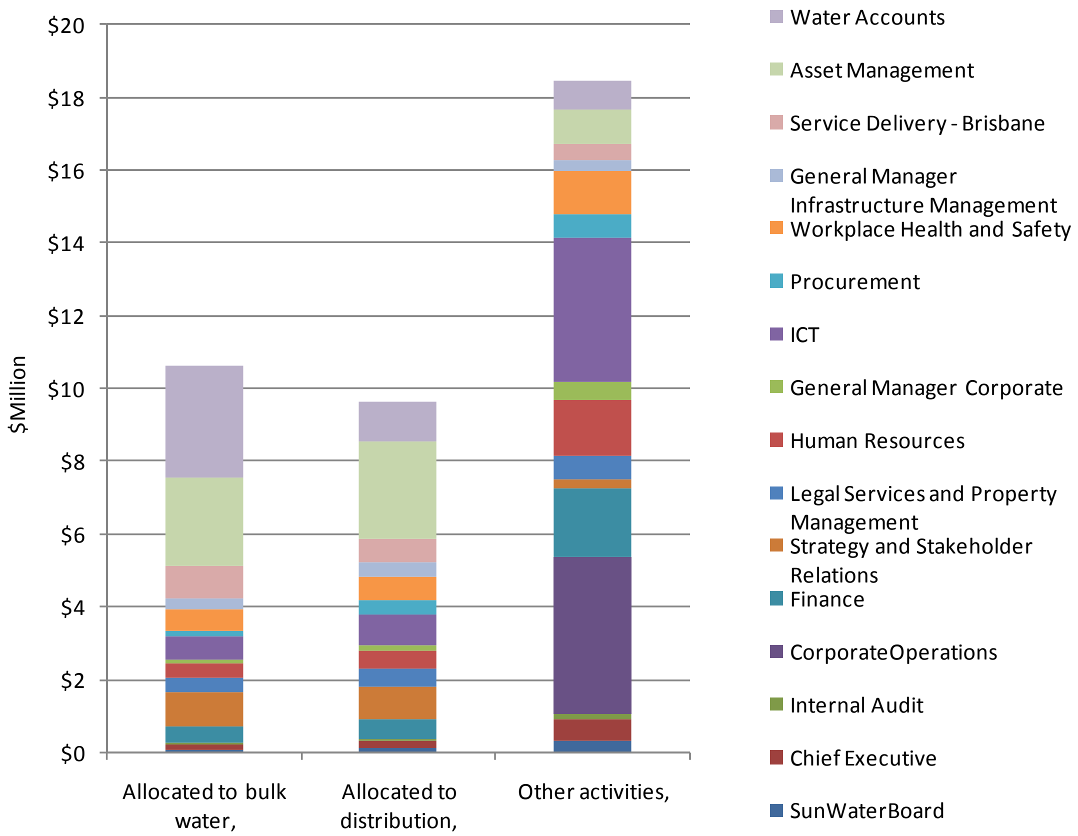
Note: As per the Ministerial Direction the Authority is not considering the recovery of dam safety upgrades in prices of capital expenditure. Source: Deloitte (2011a).

Figure 6.6: Breakdown of Non-Direct Costs by Resource Centre (Real 2011-12 $'000)



Source: Deloitte (2011a).

Figure 6.7: Allocation of Overhead Costs by DLCs as CAB 2011-12 (nominal $'000)



Source: SunWater (2011a).

<u>Deloitte Analysis</u>

The Authority sought independent expert advice from Deloitte in relation to the reasonableness of SunWater's methodology for the allocation of indirect and overhead costs to its service contracts and customers. In particular, the Deloitte focussed its analysis on SunWater's proposal to allocate non-direct costs according to direct labour costs.

Deloitte recommended that an appropriate cost allocation methodology should:

(a) directly attribute costs whenever possible;

(b) consider the inherent accuracy of the data source for each CAB;

(c) treat similar types of costs consistently;

(d) make appropriate trade-offs between simplicity and accuracy; and

(e) be aligned with others in the industry[33].

Deloitte assessed SunWater's proposed cost allocation methodology against these principles.

Consistent with these principles, and for each of SunWater's resource centres, Deloitte identified those CABs most likely to provide a reasonable basis for allocating SunWater's

[33] Deloitte (2011a), p53.

indirect and overhead costs based on the ability of the CABs to proxy for resource use within each resource centre.

To inform its decision, Deloitte obtained information on how and why SunWater's employees within each resource centres spend their time. On that basis, Deloitte developed a three tier matrix ranking possible CABs against each of the overhead cost resource centres. Deloitte adjusted the ranking matrix to account for views expressed by irrigator representatives in consultations and submissions (Figure 6.8).

SunWater and the Authority reviewed Deloitte's initial proposals, which were subsequently modified to reflect the causal relationships identified by SunWater. Rather than allocating the total pool of indirect and overhead costs using one particular CAB (which is what SunWater proposed), Deloitte considered alternative CABs. The CABs selected for further analysis against each resource centre are set out in Table 6.28.

Figure 6.8: Deloitte's Cost Allocation Driver Summary

Strength of driver: Poor / Moderate / Strong

	SunWater proposed	Case Studies	Strength of driver								
			Direct Costed Labour	Direct O&M	Direct Total Costs	FTEs	Asset Value	Transactions	Output	Service Contracts	Customers
HR	Direct Costed Labour	FTEs: SWC Labour costs: GMWater Employee numbers: Country Energy	Strong	Moderate	Moderate	Strong	Poor	Poor	Moderate	Poor	Moderate
Finance	Direct Costed Labour	FTEs: SWC Capital expenditure: GMWater Direct Opex: GAWB, JEN, Ergon:	Poor	Moderate	Moderate	Poor	Moderate	Strong	Moderate	Poor	Strong
Strategy	Direct Costed Labour	FTEs: SWC Direct Opex: GAWB, JEN, Ergon:	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Strong	Moderate
HSEQ	Direct Costed Labour	FTEs: SWC: Direct Opex: GAWB, JEN, Ergon:	Strong	Moderate	Moderate	Strong	Moderate	Poor	Moderate	Strong	Poor
Legal/ Property	Direct Costed Labour	FTEs: SWC Direct Opex: GAWB, JEN, Ergon:	Moderate	Moderate	Moderate	Moderate	Strong	Moderate	Moderate	Strong	Strong
Procurement	Direct Costed Labour	FTEs: SWC Direct Opex: GAWB, JEN, Ergon:	Moderate	Moderate	Strong	Moderate	Moderate	Strong	Moderate	Moderate	Moderate
ICT	Direct Costed Labour	FTEs: SWC Capital expenditure: GMWater Direct Opex: GAWB, JEN, Ergon:	Strong	Moderate	Moderate	Strong	Moderate	Poor	Moderate	Moderate	Moderate
IM Regions	Direct Costed Labour	-	Strong	Moderate	Moderate	Moderate	Moderate	Poor	Moderate	Moderate	Moderate
IM Asset Mgmt	Direct Costed Labour	-	Moderate	Moderate	Strong	Moderate	Moderate	Poor	Moderate	Moderate	Moderate
IM Water Accounts	Direct Costed Labour	-	Moderate	Moderate	Moderate	Moderate	Poor	Moderate	Moderate	Moderate	Strong
IM – GM/Service Delivery	Direct Costed Labour	-	Moderate	Moderate	Strong	Moderate	Moderate	Poor	Moderate	Moderate	Moderate
ID	Direct Costed Labour	-	Moderate	Moderate	Strong	Poor	Strong	Moderate	Poor	Poor	Poor

Source: Deloitte (2011a).

Table 6.28: Deloitte's Alternative CABs for SunWater Resource Centres

Resource Centre	*Cost ($M)*	*Potential CABs*		
		Option 1	*Option 2*	*Option 3*
Human Resources	1.7	FTEs	Direct labour costs	Direct total cost
Finance	2	Transactions	Direct labour costs	Direct total cost
Strategy and Stakeholder Relations	1.5	Customer numbers	Direct labour costs	Service Contract
Health, Safety, Environment and Quality	1.4	FTEs	Direct labour costs	Direct total cost
Legal and Property	0.6	Direct labour costs	Direct total cost	Customer numbers
Procurement	0.6	Direct total cost	Transactions	Direct labour costs
Information and Communications Technology	4.3	FTEs	Direct labour costs	Direct total cost
Infrastructure Management (IM) Regions	10.3	Direct labour costs	Direct labour costs (targeted)	Direct total cost
IM - Asset Management	5.6	Direct labour costs	Direct total cost	Asset value
IM - Water Accounts	5.6	Customer numbers	Direct total cost	Direct labour costs
IM - General Manager and Service Delivery	2.4	Direct total cost	Direct labour costs	FTEs
Infrastructure Development	3.4	Direct labour costs (targeted)	Direct labour costs	Direct total cost
Board, CEO, Internal Audit and Corporate GM (not modelled, although DLCs adopted by Deloitte on basis that unlikely a more suitable CAB exists)	1.7	Direct labour costs	Direct labour costs	Direct labour costs

Source: Deloitte (2011a).

Deloitte modelled the cost allocation effect on service contracts of each of the CABs in Table 6.29, calculating the changes to indirect and overhead cost assignment to bulk, distribution and non-irrigator service contracts as a result of the different CABs.

Based on their results, Deloitte recommended CAB changes for only a few resource centres. The modelling results for those resource centres are shown in Table 6.29.

Table 6.29: Deloitte's Alternative CAB Modelling Results (nominal $M)

Resource Centre	*Total Cost (2011-12)*	*Proposed CAB*	*Implied Change to Proposed Non-direct costs by adopting Deloitte recommended allocation (%)*		
			Bulk	*Distribution*	*Non-irrigator*
Procurement	0.6	Direct total cost. A transaction based CAB, such as number of invoices received from suppliers or the number of suppliers was recommended for Procurement. If unavailable, direct total cost was recommended rather than DLCs.	10%	21%	-16%
Infrastructure Management (IM) Regions	10.3	DLC (targeted). Employees in the regions predominantly charge their time and expenses directly to Service contracts. Remaining costs (non-utilised labour and other costs that cannot be charged) are allocated via the CAB across all Service contracts. Deloitte recommend 'targeting' the remaining costs instead, so that non-utilised labour and other unchangeable costs are allocated with direct labour in that region only.	39%	36%	-36%
IM - Asset Management	5.6	Direct total cost. Direct total cost was considered the best option to use as a CAB for this resource centre, as it better captures the effort of Asset Management staff.	0%	2%	-2%
IM - General Manager and Service Delivery	2.4	Direct total cost. Deloitte considered that it was difficult to establish a clear driver of either effort or cost from this resource centre, but have assumed that the attention of senior managers is generally focussed on whichever areas have the largest financial impact on the business. Subsequently, they have recommended direct total cost as the preferred CAB.	-7%	2%	7%
Infrastructure Development	3.4	DLC (targeted). Employees in this resource centre generally bill their time directly to Service contracts. The residual costs (unutilised labour costs) are currently allocated via the overhead and indirect cost allocation driver. Deloitte recommend he CAB 'targeted DLCs' has been proposed, which ensures that non-utilised labour costs are most accurately apportioned.	-54%	-96%	76%

Source: Deloitte (2011a).

Deloitte proposed alternative CABs to those proposed by SunWater for:

(a) Procurement: change from DLCs to number of transactions (using transactions pertaining to vendors, suppliers or contractors);

(b) Infrastructure Management (Regions) and Infrastructure Development: change from DLCs to targeted DLCs;

(c) Infrastructure Management (Asset Management) and (GM and Service Delivery): change from DLCs to direct total costs;

(d) Infrastructure Management (Water Accounts): change from DLCs to multiple CABs, whereby service contract customer numbers are used for the customer driven proportion of this resource centre (approximately half of the residual costs), and the remainder assigned using DLCs;

(e) Finance: change from DLCs to split CABs, whereby the transactional element of this resource centre would be allocated according to the number of transactions per service contract, and the remainder assigned using DLCs.

Deloitte has also identified that the results of its analysis will differ slightly from comparisons obtained using SunWater's cost database due to:

(a) minor differences in the treatment of overhead allocations to indirect cost centres which were treated as 'given' in Deloitte's model, and not reallocated according to the various CABs;

(b) differences in how adjustments were made for unrecovered costs, ICT desktop and network charge, and the 5% materials charge. Whereas SunWater make these adjustments to the total overhead cost pool, Deloitte has made adjustments to the various resource centres weighted by cost; and

(c) differences in the treatment of overhead and indirect cost allocation to dam safety upgrades, as these costs are not to be recovered during the 2012-17 regulatory period.

Therefore, Deloitte stress that their results should be treated as indicative, and that a more detailed modelling exercise would need to be carried out to more accurately quantify the impact of using one or more of the proposed alternative CABs.

Deloitte also highlighted as unusual SunWater's current practice of treating unutilised labour as a whole of business overhead (residual) cost, rather than as standard on-cost of staff employment.

Changing this practice for those resource centres with high levels of directly costed labour (i.e. Infrastructure Management (Regions) and Infrastructure Development), and including unutilised labour as a loading factor for these resource centres would shift the cost of their unutilised labour from SunWater's overhead costs to service contracts utilising labour from those resource centres.

Although the quantitative impact on service contract overheads would be small, the resulting cost allocation would reflect a stronger causal relationship between benefits and costs, and reduce SunWater's total overhead costs.

<u>SunWater Response</u>

SunWater (2011cc) generally disagreed with Deloitte's findings on alternative CABs, on the following grounds:

(a) Deloitte's cost correlation assumptions were either incorrect or no more precise than the assumptions behind SunWater's DLCs. Although SunWater acknowledged that qualitative assessments were important, it argued that Deloitte had failed to demonstrate the superiority of its proposed CABs over DLCs which SunWater maintains has a strong positive correlation with the costs of centralised functions;

(b) SunWater suggested that a single CAB was preferable as it would provide a balance between simplicity and accuracy; ensure similar types of costs were treated consistently;

and require a single, accurate data source. SunWater also asserted that using a single CAB would ensure its business is aligned with other industry participants; and

(c) SunWater has estimated the cost of changing their financial systems to accommodate additional CABs at $0.4-0.45 million, plus a new 0.3 FTE to manage and administer the changed reporting procedures.

In relation to specific alternative cost allocation bases proposed by Deloitte, SunWater comment as follows:

(a) in relation to Procurement (Deloitte recommendation: either transactions or total direct costs):

  (i) the number of supplier transactions would be an unreliable indicator of causality, as relatively large numbers of invoices can be associated with minor items of expenditure (e.g. stationery), and vice versa (e.g. major procurement contracts);

  (ii) total direct costs would require the cost dataset to be weighted to account for the procurement effort involved in different cost items, adding effort and complexity to the cost allocation process; and

  (iii) supplier transactions would require SunWater to forecast the number of transactions for a particular period, which would be much less accurate than using forecasts of labour costs;

(b) in relation to Infrastructure Management (Asset Management) (Deloitte recommendation: total direct costs):

  (i) direct total costs includes many costs unrelated to Asset Management, and is not necessarily a better cost allocator than DLCs; and

  (ii) asset management expenditure in a regulatory period does not necessarily relate to total direct costs over the same timeframe. In certain circumstances good asset management may result in major expenditure being brought forward or deferred;

(c) in relation to Infrastructure Management (Water Accounts), for which Deloitte recommended a combination of customer numbers and DLCs, SunWater argued that:

  (i) customer numbers is not necessarily a good indicator of the generation of WAE-related enquiries. Some schemes have many small customers, who have few (if any) WAE-related enquiries; and

  (ii) in most schemes, batch processing is used for customer transactions, many transactions (for example, temporary trades) can be conducted online. Schemes with more complex ROP rules would require manual intervention and approval, and this effort would be more closely related to DLCs.

Finally, with regard to Infrastructure Management (General Manager and Service Delivery), SunWater submitted that in addition to direct total cost, and (Deloitte's proposed CAB) revenue, commercial risks, profitability, and operational complexity of a service contract are also likely to be indicators of management effort. SunWater submitted that these factors are just as likely to be related to DLCs as total direct costs.

Conclusion

The Authority has taken account of the above views and notes that there is substantial agreement between SunWater and Deloitte on the appropriate CAB (i.e. DLCs) for many of the resource centres.

The resource centres for which significant disagreement exists include Procurement, Infrastructure Management (Asset Management), Infrastructure Management (Water Accounts), and Infrastructure Management (General Manager and Service Delivery). These account for 39% of overhead expenditure, based on SunWater's cost forecasts for 2011-12.

Resource centres for which Deloitte has also suggested possible variations to SunWater's CAB proposal are Finance, Infrastructure Management (Regions) and Infrastructure Development.

The Authority believes that there are two main considerations involved in the selection of the appropriate CAB for each resource centre: whether the proposed alternative CABs proposed by Deloitte represent, in principle, superior methods of allocation to those proposed by SunWater and, if they do, whether the suggested changes are plausible or reasonable in terms of data availability, simplicity and cost of implementation.

It is not clear from Deloitte's analysis that any of the alternative CABs proposed are superior to DLCs. SunWater raises several issues that suggest DLCs are at least as plausible.

The Authority also notes that neither SunWater nor Deloitte have been able to quantify the correlations between their proposed CABs and the incurrence of indirect and overhead costs, restricting the selection of CABs to a matter of qualitative judgement.

The only quantitative assessments undertaken concern the changes to allocated costs that result from applying different CABs. In the Authority's view, although this does not represent a rigorous basis for CAB selection, quantification of correlation relationships in these cases is unlikely to be successful given the common and fixed nature of the costs.

No assistance is provided by regulatory precedent as there does not appear to be standard accepted cost allocation practices or methodologies in use across Australia's water utilities.

Although Deloitte has identified several alternative CABs, the Authority is of the view that, for most of these, the case for altering SunWater's proposal is not sufficiently strong given the additional complexities and costs involved in changing SunWater's databases and systems and the lack of in principle superiority of Deloitte's measures.

Similarly, the Authority does considers the efficiency gain to be achieved by splitting a resource centre across multiple CABs is unlikely to outweigh the implementation costs.

Further, the Authority does not find any reason to change SunWater's overall categorisation of costs or the two-stage method of cost allocation.

However, Deloitte's proposal to use regionally-based DLCs for Infrastructure Management (Regions) and Infrastructure Development is reasonable as this methodology would better align indirect and overhead costs, for example, from regional cost centres with their associated service contracts.

In response to specific stakeholder comments regarding the level of non-direct costs allocated to irrigation service contracts, the Authority notes that:

(a) due to SunWater's operational and cost restructure during the 2006-11, a number of costs that were previously considered to be direct costs or local overhead costs have shifted to what would previously have been described as Brisbane or business centre overhead. As a result, although non-direct costs may seem relatively high compared to allowances during the 2006-11 price paths, the change in costs is not entirely increased overhead and indirect costs per se;

(b) Deloitte's MAE analysis of SunWater's administrative functions was effective as a bottom up analysis, and consequently the Authority has adopted Deloitte's assessment of the prudency and efficiency of non-direct costs (that is, discounted by an amount of about $0.3 million for irrigation); and

(c) relevant available details are included in scheme specific reports.

In response to specific stakeholder comments regarding SunWater's proposed CAB, the Authority notes that:

(a) as part of Deloitte's review of SunWater's administrative prudency and efficiency, at least three CABs were considered and the cost allocation impacts modelled for each administrative resource centre. The Authority is satisfied that, in most cases, SunWater's nominated CAB represents an equally appropriate or superior base for the allocation of costs across all of SunWater's service contracts;

(b) by definition, a CAB base creates a link between overhead costs and service contracts, where there is no strong causal link to do so. This will inevitably lead to different levels of cost allocation across service contracts. The Authority is satisfied that its recommendations reflect the most appropriate CABs proposed by either stakeholders (including SunWater) or Deloitte;

(c) by definition, overhead costs do not directly apply to specific activities within schemes, and thereby cannot be allocated according to their relevance to individual service contract activities. As described above, the Authority's consultants have considered both the prudency and efficiency of SunWater's non-direct costs and (as discussed in this section) the veracity of the proposed cost allocation methodologies between both service contracts and customer priority groups;

(d) both Deloitte and the Authority have considered the CABs proposed by stakeholders, and have taken into account both the argument for using multiple CABs and their relative causality in reaching their cost allocation conclusions; and

(e) as discussed below, the Authority notes that the legislative, planning and contractual framework requires all WAE holders to contribute to the cost of delivering water from irrigation service contracts and to maintaining the capacity of delivering water, even when allocations are unavailable.

The Authority accepts that applying different CABs to different types of costs, as adopted by GAWB in the Authority's 2005 investigation, would add unnecessary complexity in this instance. Multiple CAB drivers may increase the scope for error, as they requires different cost relationships to be found when only weak relationships exist, consequently creating illusory precision.

Recommendation:

The Authority recommends non-direct costs be allocated to service contracts using DLCs (as proposed by SunWater with two exceptions:

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

(b) **the overhead component of Infrastructure Development should be allocated to service contracts on the basis of DLC from that respective resource centre.**

Cost Allocation Stage 2

Stakeholder Submissions

The second stage of cost assignment allocates the total fixed operating costs for each service contract between its high and medium priority customer groups. Variable operating costs are allocated by reference to water usage. SunWater proposes that only electricity costs are variable.

SunWater

Once total operating costs have been determined for each service contract (the sum of non-direct and direct costs), an appropriate division of fixed costs needs to be made between high and medium priority customer groups within the service contract.

For the 2012-17 regulatory period, SunWater (2011j) has proposed different approaches for the allocation of renewals and fixed operating expenditures to users. SunWater's proposed approach to the allocation of renewals expenditures is outlined in Chapter 5 – Renewals.

SunWater (2011j) has proposed to assign fixed operating costs in all bulk schemes to users on the basis of their unadjusted WAE (referred to by SunWater as water delivery entitlements or WDEs).

For distribution system customers, SunWater (2011h) has proposed the term water delivery entitlements (WDE) be used and should reflect a customer's share of distribution capacity. SunWater's proposal that each user's WDE be determined as amount of WAE held and serviced within a distribution system at the time of the preparation of the NSP. SunWater notes that for the 2012-17 regulatory period there is no practical difference between the distribution WAE and SunWater's proposed WDE.

This approach is proposed on the basis that operating costs and the level of activity are not affected by the type of WAE in a scheme, and are incurred regardless of the proportion of high or medium priority WAE.

To support its case for the change in its approach SunWater noted that:

(a) while on average more water will be available under a high priority WAE, the incremental cost of releasing water from storages is negligible (or in most cases nil);

(b) customers' water accounts must be managed in the same way, regardless of whether they hold medium or high priority WAE;

(c) the reporting requirements of ROLs require that water use is accounted for periodically (e.g. quarterly) regardless of water availability or the mix of high and medium priority WAE in each scheme;

(d) routine dam safety inspections and related activities are required for a given dam structure, regardless of the type or mix of WAE supplied from that dam;

(e) environmental, land and workplace health and safety activities relate to the nature of the asset and the potential environmental hazards they present. This bears no relationship to WAE type or the mix of WAE in a particular scheme; and

(f) corporate costs, including financial reporting and taxation obligations have no relationship to the type or mix of WAE held at water supply schemes.

As a result of the above approach, for example, where medium-priority customers hold 88.8% of the scheme's WAEs (as in the Burdekin-Haughton bulk water service contract), these customers would be allocated 88.8% of the fixed operating costs assigned to that service contract, while the remaining 11.2% is allocated to the high-priority WAE customers.

SunWater (2011j) concluded that if a bulk water scheme were to go from servicing 100% of medium priority WAEs to 100% of high priority WAEs (i.e. an equivalent, lesser nominal amount of high priority WAE), there would be no change in fixed operating costs.

SunWater proposed that HUFs only apply to the cost allocation of the renewals annuity. SunWater advised against the use of HUFs for the allocation of other non-headworks and non-asset related headworks costs on the basis that fixed operating costs are not related to the extent to which headworks are able to be utilised by different priority groups.

SunWater argued that rather, these fixed costs are driven by operational elements such as scheduling and delivery water, meter reading and maintenance, environmental management obligations, data management, compliance reporting, customer support and billing.

Other Stakeholders

BRIG (2010a) submitted that allocating office costs between river and channel irrigators on the basis of nominal allocation would appear to be unfair.

BRIG (2011d) suggested that maintenance costs are unlikely to be linked in any meaningful way to water usage in any given year. They consider it is likely that labour is deployed on maintenance when irrigation (operations) is not taking place so there may in effect be an inverse relationship.

BRIG also stated that SunWater's proposal to allocate costs to MP and HP customers using nominal WAEs is unfair. BRIG suggested that the charge should be based on expected average announced allocation, in that the owner of one ML of HP nominal allocation will use the distribution asset far more than the holder of one ML of MP nominal allocation.

CANEGROWERS (2011a) cited SunWater's assertion that all costs aside from electricity are fixed. CANEGROWERS concluded, therefore, that all costs (aside from electricity) are more likely to relate to asset maintenance than water delivery. On that basis, CANEGROWERS proposed that the same conversion factor should be used for operations and renewals, excluding electricity from both. CANEGROWERS also suggested that HUF requires more detailed explanation.

The MDIAC (2011) would like to see the operating costs allocated on a HP 3:1 MP ratio. Bowen Broken Water Supply Scheme Irrigators, (2011) also recommended that operating cost allocation should remain at three to one for high priority and medium priority allocations.

PVWater (2011a) does not support SunWater's proposal to allocate operating costs on the basis of total allocation. The submission notes that previous price path negotiations adopted hydrologic conversion factors for sharing of costs between water allocation groups. These factors are developed from the same models used to set water sharing rules for schemes. They considered these factors to be more appropriate for sharing operating costs, although they have not been calculated for the Pioneer ROP at this time. With hydrologic conversion factors not widely available PVWater contended that SunWater's proposed HUF methodology should also be adopted for allocation of operating costs.

Cotton Australia and QFF, (2011b) noted that the allocation of operating costs on a per ML basis regardless of the water priority, will put medium priority water users/irrigators at risk of large increases in water prices into the future. This would be brought about by medium priority being converted to high priority at 3:1 dropping the revenue base of the scheme and leaving irrigators to pick up the short fall.

Cotton Australia and QFF also noted the allocation on a 1:1 basis for operating costs suggests that a customer with higher level of access to service will pay the same price as one with a lesser access. They suggested that operating costs could be allocated based on reliability of the service availability being the difference between high and medium priority; 100% high – 80% medium.

BBWSSI (2011) submitted that the ratio for allocating operating costs between high and medium priority customer must remain at three to one (as it currently stands), as medium priority water allocation has a very low reliability in Bowen Broken WSS. BBWSSI highlighted that the principle of charging for water is 'user pays' and if SunWater cannot supply their 'product' [i.e. ensure water availability], then they should not be required to pay.

BRIAC (2010) proposed that cost sharing should be based on water storage volumes (80% high priority, 20% medium priority). They argue that high priority customers should be required to pay for the water that is stored to ensure their reliability. BRIAC (2011) further argued that the HUF factor for their scheme requires special consideration when considering the allocation of operating costs.

BRIAC (2011) also requested that overhead and indirect costs for their scheme take into account that some scheme infrastructure (i.e. pipeline) is dedicated to providing Tarong with water, and all costs associated with that infrastructure should be segregated from costs paid by irrigators.

BRIAIC (2011b) supported the replacement of direct costs as SunWater's CAB, as per discussions with Deloitte during Round 2 of consultation.

BFVG (2010b) considered that the price cap structure with a fixed Part A of 70% and [usage based] Part B of 30% has worked will in Bundaberg WSS.

Authority's Analysis

The Authority sought independent expert advice from its various consultants in relation to the reasonableness of SunWater's methodology for the allocation of its service contract fixed costs to medium and high priority customers.

ARUP (2011) submitted that high priority allocations provide a greater reliability for accessing water, and therefore there are times when water is delivered to high priority customers at the expense of medium priority customers. ARUP considered that SunWater's proposal to allocate fixed operational expenditure to high and medium priority groups on the basis of the relative share each group holds of the total allocation favours the high priority group, as it assumes the medium priority group will receive their full water allocations.

ARUP proposed that a more equitable system should make allowance for the fact that lower priority groups may not receive their full allocations of water as often as higher priority groups and therefore should not have to pay the same cost as priority groups that will. ARUP put forward that operational expenditure could be allocated on the basis of HUF in bulk schemes, as they considered the benefit the headworks (and thereby operational expenditure) derived by different priority groups to be related to their effective utilisation of that capacity.

ARUP proposed an alternative approach for cost allocation between priority groups in the distribution systems. That is, they proposed a distribution system utilisation factor (DSUF) as a proxy for relative benefits received by medium and high priority customers (in terms of WAE reliability). DSUF was based on twenty years of announced allocations. However, the announced allocation data is generally not available (or highly unreliable) and announced allocations are not considered to reflect the cost differentials related to servicing different priority groups.

Aurecon (2011) did not challenge SunWater's proposition that operating costs were generally fixed regardless of the type and mix of priority users within a scheme, or that total scheme operating costs will not change in response to future changes in the mix of priority users.

However, Aurecon did not support SunWater's proposal. Aurecon recommended that the existing operating cost allocation methodology utilising converted nominal allocation be retained, as it more closely follows the user pay principles that have been endorsed by stakeholders.

Aurecon viewed the proposed allocation methodology for operating costs using WAE as one dimensional and un-reflective of service and product delivery. In recent years, Aurecon considered it evident that, compared to high priority water deliveries, water deliveries to medium priority customers were more likely to vary. For many medium priority customers, allocations in dry years were negligible in comparison to deliveries to high priority customers highlighting the essence and significance of water reliability. Within many schemes, high priority customers are virtually guaranteed supply of allocation annually, whereas in recent years some medium priority customers received comparatively small allocation.

Aurecon considered that operating costs should be more equitably allocated under the general principal of the user pay notion, in which a greater share of operating costs is allocated to the beneficiaries of higher water usage on an annual basis. Clearly, high priority customers are disproportional greater beneficiaries of water usage on an annual basis over time, and correspondingly should proportional pay a higher share of scheme costs in contrast to medium priority WAE holders.

Through the course of the study, Aurecon identified a number of additional arguments that did not support SunWater's proposed allocation methodology including:

(a) providing a financial enticement for certain medium priority customers to convert to high, in order to reduce their annual operating cost exposure. High cost irrigators, particularly those within horticulture could be financially better off converting from medium to high priority (without any real change in annual water use);

(b) realising the potential conversion of significant quantities of medium priority to high. This would have negative financial ramifications for the remaining medium priority entitlement holders who would be exposed to a much higher proportion of total scheme operating costs; and

(c) transferring a higher proportion of total scheme costs to medium priority groups in schemes where operating costs increased in absolute terms between price paths at a higher rate than proposed renewal expenditures.

Deloitte (2011) highlighted that though the lack of a relationship between non-direct costs and customers creates difficulties in the allocation of costs, it is not necessarily a flaw that is unique to SunWater's cost allocation methodology, but a common challenge faced by businesses when allocating fixed overhead costs to its customers.

Deloitte (2011a) considered the implications of SunWater's proposed cost allocation methodology with sole regard for its impacts on non-direct costs. They identified that allocating operational costs between different priority groups on the basis of WAE would mean that non-direct costs assigned to operational costs (via DLCs) would be allocated differently to non-direct costs assigned to renewal expenditure, assuming that the proposed CAB of direct cost of labour was maintained.

Deloitte recommended that non-direct costs embedded in both capital and operational costs should be allocated to customer groups on the basis of a weighted factor that takes into account the differential in benefits received by priority groups, such as SunWater's HUF. Allocating the entirety of SunWater's non-direct costs in this manner would ensure they were allocated in a consistent manner, thereby aligning the methodology with Deloitte's cost allocation principles.

Aside from ARUP, none of the consultants discussed an alternative methodology for assignment between different priority distribution system customers.

SunWater has nine operations sub-activities, which have been categorised as either those potentially relating to headworks infrastructure (as for renewals expenditure and maintenance) or those potentially not relating to headworks (as follows).

The operations sub-activities that potentially relate to headworks or would be likely to deliver a higher standard of service per ML of high priority WAE are:

(a) customer management – enquiries about a customer's account and service delivery are directed to SunWater's customer support group, which also handles major transactions, such as property or WAE sales, and the associated contractual documentation and settlement advice [high priority WAE likely to receive a higher standard of service per ML of WAE];

(b) dam safety (not capital expenditure on upgrades) – for referable dam under the *Water Act 2000*, SunWater is required to have a comprehensive safety management program comprising policies, procedures and investigations to minimise the risk of dam failure. In general, routine dam safety inspections are carried out monthly or quarterly, which include monitoring of embankments, seepage and the general condition of the storages as defined in the dam surveillance specification. Audits and more thorough inspections are carried out annually and even more thorough compliance inspections and audits are carried out five yearly. The cost of documenting, recording and reporting on dam safety is significant;

(c) environmental management – includes monitoring stream environmental flows, measuring, recording and reporting water quality in storages, monitoring blue green algae and preparing ROP compliance reports on each of these;

(d) facilities management includes – managing SunWater's land portfolio to minimise costs (for example, local government rates and land taxes), managing public liability and security risks (trespassing and public access) by installing signage and fencing at storages, and providing upkeep to public recreational areas (typically a requirement for dam owners under planning laws and regulations);

(e) scheme management – financial reporting and input to accounts payable, input to the SAMP and providing information to insurers and brokers [high priority WAE likely to receive a higher standard of service per ML of WAE]; and

(f) water management – gathering and reporting data for ROP compliance on storage levels, water use, storage curves and storage capacities, applying water sharing formulas, participation in water planning processes including hydrologic modelling, reviewing draft WRPs and ROPs, customer consultation (helping customers identify options re amend ROPs), making submissions, proposing operating rules and liaising with DERM, and monitoring customer water use against WAE for excess or unauthorised water use [high priority WAE likely to receive a higher standard of service per ML of WAE].

The operations sub-activities that may not relate to headworks or are less likely to deliver a higher standard of service per ML of high priority WAE are:

(a) metering – SunWater reads customer water meters either monthly or quarterly and local staff enter meter reading data onto a centralised system;

(b) scheduling and delivery – include water ordering managed through a manual system where water users place telephone orders directly with the operator, staff schedule efficient water releases in the light of ongoing monitoring of storage levels and stream flows and release bulk water from storages; and

(c) workplace health and safety – SunWater is subject to the *Workplace Health and Safety Act 1995* and is required to ensure safe work practices for its activities at all workplaces. SunWater staff undertake regular training and a central group conducts regular safety audits and reviews of work practices.

In relation to bulk water supply schemes, the Authority therefore recommends that:

(a) fixed preventive and corrective maintenance costs be allocated to medium and high priority customers using HUFs (as for renewals expenditure) as maintenance expenditures have a similar purpose to renewals expenditures; and

(b) those components of fixed operations costs that are asset-related (dam safety, water and environmental management) be allocated to medium and high priority customers using HUFs while those components of fixed operations costs that are more related to service provision (scheduling, water delivery, customer service, account management) be allocated using current WAE. However, as SunWater does not disaggregate operations costs, it is proposed that 50% be allocated using HUFs and 50% using current nominal WAEs.

In response to specific stakeholder comments, the Authority notes that:

(a) adoption of the Authority's recommended cost allocation methodology will mitigate stakeholder concerns in bulk schemes regarding:

   (i) the ratio of operating cost allocation between medium and high priority customer groups; and

(ii) medium priority customer groups facing large real price increase in the future due to a high number of WAE holders converting their entitlements to high priority;

(b) maintaining service capacity incurs costs regardless of whether WAE holders receive their full entitlements. As per the user pay concept, it is appropriate that all WAE holders, including medium priority customers contribute toward the cost of maintaining delivery capacity to which they have contracted. The Authority's proposed CAB reflects the costs incurred in the provision of water to different priority users, thus remaining consistent with the principle of user pays; and

(c) prices and tariff structure are discussed in full in Chapter 7 – Draft Prices.

Recommendation:

The Authority recommends, that, for bulk WSSs:

(a) **fixed preventive and corrective maintenance costs be allocated to medium and high priority customers using HUFs; and**

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

In relation to distribution systems, the Authority outlined its views concerning the allocation of fixed renewals expenditures in distribution systems in Chapter 5 – Renewals. In summary, current nominal WAEs are seen as a superior CAB for distribution renewals expenditures as the available alternatives (ROP conversion factors, WPCFs) do not readily relate to distribution system cost characteristics or parameters.

Similar arguments would apply to the maintenance and compliance component of fixed operating expenditures in distribution systems. The service provision component of fixed operations costs is also likely to be related to current nominal WAEs as discussed above for bulk schemes.

High priority entitlements in the eight distribution systems account for no more than 1% of total current nominal WAEs. Moreover, when adjusted using ROP conversion factors or WPCFs, high priority entitlements account for no more than 2% of total WAEs in any one scheme.

On this basis the price impact of using these different bases for allocating fixed operating costs in distribution systems is likely to be immaterial. Moreover, although high priority WAE has greater reliability, this is primarily derived from a greater share of storage capacity rather than distribution capacity.

While the Authority supports efforts by SunWater to allocate fixed costs on the basis of a customer's share of distribution system capacity, the Authority does not support the introduction of SunWater's proposed new terminology, Water Delivery Entitlement, for a number of reasons.

Firstly, the necessary DERM-approved policy framework will not be in place for the 2012-17 regulatory period. Until such time that more robust methods for determining a users' share of distribution capacity, unadjusted WAE should be used to allocate all fixed operational costs to customers.

Secondly, it is not proposed at this stage to be a tradeable entitlement but may be interpreted as such by customers if so named.

Recommendation:

The Authority recommends that, for distribution systems, fixed operating costs be allocated to medium and high priority customers using current WAEs.

A separate issue is the allocation of insurance premiums between medium and high priority customer groups. SunWater has proposed to allocate direct operations costs (including insurance costs) on the basis of nominal WAEs. This would seem appropriate to distribution systems where capacity costs are not considered to be differentiated on the basis of HUFs.

However, for bulk schemes, it is proposed that they be allocated on the basis of HUF, which would better reflect the utilisation of the capacity by different customer groups (as, for example, for preventive and corrective fixed costs).

Recommendation:

The Authority recommends that, within bulk service contracts, insurance premiums be allocated between medium and high priority customers on the basis of HUFs, and for distribution systems on the basis of nominal WAEs.

6.8 Escalation

Although necessary for price determination, credible forecasts of future operating costs are difficult to produce, particularly over long time horizons. For this reason, future costs are often estimated using today's values and then projected forward using an appropriate escalation rate.

This section assesses SunWater's proposed escalation rates for direct and non-direct operating costs.

Stakeholder Submissions

SunWater

SunWater (2011b) has proposed the following approach to the forecasting of its direct and non-direct cost components.

Where SunWater has proposed that its costs rise in line with inflation, it has adopted the mid-point of the Reserve Bank of Australia's (RBA's) target range for consumer price inflation at the time of its submission, being 2.5% per annum.

<u>Direct Cost Components</u>

<u>Labour</u>

SunWater proposes that salaries and wages increase at 4% per annum in nominal terms until the completion of SunWater's current EBA in June 2012. From July 2012, the expenditure forecasts assume that salaries and wages will increase in line with inflation.

<u>Electricity</u>

In its NSP and initial submission (2011h) on electricity, SunWater proposed that electricity costs increase in line with the general inflation rate (2.5% per annum), with annual adjustments during the regulatory period to account for differences between forecast and actual electricity costs. SunWater argued that these adjustments are necessary as annual adjustments to its franchise tariffs via the Benchmark Retail Cost Index (BRCI) are beyond its control.

In response to concerns raised by the Authority's consultants, SunWater (2011ak) later revised its electricity cost forecasts. SunWater proposed to escalate electricity prices by 10.5% per annum over the regulatory period reflecting the average in the BRCI between 2008 and 2012.

SunWater noted that, although the RBA regularly publishes updates to the CPI, SunWater's preferred index is the BRCI. SunWater's indexation of prices by the estimated BRCI has been implemented in an attempt to reduce the potential 'unders and overs' claimed by SunWater through the proposed pass through arrangements.

In addition to the annual escalation of electricity prices by BRCI, SunWater proposed electricity costs include two price adjustments to accommodate the impacts of the proposed price on carbon:

(a) 10% increase in 2013 to coincide with the introduction of the tax; and

(b) 1% increase in 2016 to reflect the commencement of the carbon trading scheme.

These increases are based on the Australian Treasury's modelling of the impacts on electricity prices of a $23/tonne carbon tax.

Table 6.30 outlines the escalation factors proposed by SunWater.

Table 6.30: SunWater's Forecast of Electricity Price Increases

	2010-11	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
BRCI Increases		6.6%	10.5%	10.5%	10.5%	10.5%	10.5%
Forecast CPI		2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Index for Real Increase in Electricity Prices	100%	104.0%	112.1%	120.8%	130.2%	140.3%	151.3%
Carbon Pricing Impact		0%	10.0%	0%	0%	1%	0%
Index for Real Increases including Carbon	100%	104.0%	123.3%	132.9%	143.2%	155.9%	168.0%

Source: SunWater (2011ak).

Materials and Contractors

SunWater proposes that these costs rise by 4% per annum in nominal terms. This proposed increase is based on two sources of data - forecasts and historical data.

SunWater forecast information is based on Macromonitor's[34] Australian Construction Cost Trends 2010 report (2010). In particular, this source forecast that construction costs will grow by 4.5% in 2009-10, above 5% in 2010-11 and around 6% in 2011-12; and engineering construction costs will grow by 4.9% in 2010-11 and 6% in 2011-12.

[34] MacroMonitor is an Australian-based industry research and forecasting company. One of its main functions is the production of industry reports that focus on specific aspects of business activity in each industry, such as cost and price data. Viewed on 19 October 2010.

This report predicts that Queensland will have the highest rate of increase for construction costs with costs of construction inputs such as labour, metals and other materials, fuel, and plant and equipment hire costs anticipated to rise.

However, while the report predicts strong growth in construction costs in the short to medium term, it predicts a reduction in cost inflation rates by 2014-15.

SunWater's historical analysis draws on quarterly Producer Price Index (PPI) data published by the Australian Bureau of Statistics (ABS, 2011c).

SunWater submits that, of the available PPI indexes, the building construction and non-residential building construction indexes represent the most relevant sources of historical data for movements in the costs associated with construction materials, and therefore were the most suitable to use in calculating a cost escalation factor for contractors and materials. For the period June 2000 to June 2010, SunWater estimated that the building and non-residential building indexes increased by annual compound growth rates of 4.5% and 3.9%, respectively.

SunWater also suggested that the correlation between indicators of investment activity in non-residential building work and the building and non-residential building indexes implied that continuing strong growth in non-residential building activity should maintain upward pressure on the costs associated with materials and contractor services.

On the basis of these considerations, SunWater concluded that it would be reasonable for it to adopt 4% per annum as the cost escalator for materials and contractor costs, even though the evidence examined suggested that this was likely to be a conservative estimate of the likely future increases in these costs.

Other Direct Costs

SunWater has submitted that costs designated in its NSPs as other direct costs (such as insurance, local authority rates, land tax, etc.) are escalated in line with inflation.

Non-direct Costs

SunWater has submitted that all its indirect and overhead costs (which include the labour costs assigned to non-direct cost pools) are escalated in line with inflation.

Other Stakeholders

A. Voss (2011) commented that pricing [from the previous price paths] was supposed to be CPI regulated, yet irrigator prices have increased by 15.75%. He considered that the rise demonstrates SunWater's lack of transparency.

CANEGROWERS (2011a) considered that it does not make sense to increase labour costs by 4% until 2012 and then reduce the escalation rate to 2.5% (in line with inflation) after this date. If increases in labour costs beyond 2012 are to be offset through productivity improvements, CANEGROWERS questioned why SunWater has not done the same historically and up until 2012 and what incentives there are for SunWater to restrain labour increases until 2012. CANEGROWERS suggested that the same logic applies to materials and contractor costs.

With regard to electricity, CANEGROWERS (2011a) submitted that SunWater's initial proposal (to escalate by CPI, but adjust the base costs via a pass through mechanism) provides absolutely no incentive for SunWater to decrease electricity costs. CANEGROWERS argued that SunWater should be focussed on trying to decrease electricity costs by implementing economically feasible changes. This could include negotiating new prices with suppliers, using off peak tariffs, installing more efficient pumps, building new or modifying existing balancing storages, or diverting water from rivers at more energy efficient locations.

CDI (2010) recommended that only the openly advertised and transparent CPI should be used to accommodate increased costs in the future.

CHCHIA (2010a) stated that if indexation is to be used, CPI is the preferred method as it is a transparent process. Previously, SunWater has indicated that it would prefer an indexation method using power costs. CHCHIA strongly objected to this proposal as power is a very small portion of scheme operating costs.

Cotton Australia and QFF (2011b) claimed that SunWater's proposed methodology (of forecasting costs based on current unit costs with adjustment where price rises are expected) indicates that, if indexation is applied on top of these amounts, SunWater will effectively be double dipping.

With regard to electricity, Cotton Australia and QFF suggested that, as electricity is a very small portion of total costs in Emerald and Nogoa-Mackenzie, SunWater was facing a very small price risk, and that escalation by CPI would be appropriate.

DVIG (2010) stated that current prices have been escalated each year by CPI and that, if any indexation is to be used [in the 2012-17 regulatory period], CPI is the preferred method as it is a transparent process. DVIG strongly objected to SunWater's proposal to use an indexation method that utilised power costs, as power is a very small portion of scheme operating costs.

MIS (2010) supported using CPI as the method for annual cost escalation.

Other Jurisdictions

Recent Decisions by the Authority

GAWB Investigation of Pricing Practices 2010

The Authority maintained a view that indexes based on three years observations at the peak of the construction cycle did not provide appropriate escalation factors and that GAWB had not proposed an alternative approach.

The Authority therefore proposed that CPI should be applied over the 2010-15 and 2015-30 periods for operations, maintenance and chemicals costs.

SEQ Grid Service Charge 2011-12

The Authority recommended an indexation rate of 2.5% for 2011-12 service charges, on the basis that there was a reasonable expectation that the RBA would be able to maintain inflation within this band over time (QCA 2011).

QR Network 2010 Draft Access Undertaking

The Authority required that QR adopt the midpoint of the RBA's targeted inflation band (2.5%) to index future operational costs. Indexation of maintenance costs were to occur in line with a separate index—the Maintenance Cost Index (MCI)—developed by QR to reflect changes in its central Queensland maintenance costs. QR was also required to publish changes in its MCI each year, with the release of its annual maintenance report (QCA 2010b).

Subsequent to the 2010 decision, the Authority approved adjustments to QR's allowable revenues, to reflect the difference between forecast and actual CPI and MPI levels (QCA 2011d).

Decisions by Interstate Regulators

Melbourne Metropolitan Water Price Review 2009-10 to 2012-13 – Essential Services Commission

In reviewing Melbourne metropolitan water prices, the ESC (2009) applied CPI for operating inputs such as electricity and chemicals, but allowed a 1.5% real increase in labour costs over the regulatory period.

Water and Wastewater Price Review 2008 – Independent Competition and Regulatory Commission

The ICRC (2008) adopted a more conservative wages growth forecast of 4.7% nominal per year compared to ACTEW's proposed 5.45%. The ICRC noted that ACTEW's wages rates were already higher than industry-related market rates.

State Water

Although IPART has noted that there is no individual inflation measure that accounts for all industry price determination factors, CPI is considered to be the simplest option, as well being relatively timely in its release; and carrying a high degree of credibility and familiarity with the public. However, in some instances, price increases may be approved above the CPI due to other factors (PwC, 2010a).

Authority's Analysis

As part of their assessment of the prudency and efficiency of SunWater's operating costs, the Authority's consultants were required to examine the appropriateness of proposed cost escalation methods.

Direct Labour

Halcrow (2011) commented that, by assuming labour costs will rise by the general inflation rate, SunWater may have underestimated the likely actual movement in the cost of labour as measured by the growth in both the Labour Price Index for the Electricity, Gas, Water and Waste Services Industry (above 4% since 2006); and the Labour Price Index for Queensland (for all industries), which has typically ranged between 3 and 4%.

Aurecon (2011) and ARUP (2011) agreed with Halcrow's view, whereas GHD (2011) found that the information provided by SunWater was insufficient to justify a cost escalation rate for labour above CPI.

Deloitte cited a recent report by Deloitte Access Economics which forecasts an average increase in the labour costs facing Queensland's utilities sector of 4.3% per annum between 2011-12 and 2017-18 (2011d).

Direct Materials and Contractors

ARUP considered that SunWater's use of the Macromonitor data reflects the most up to date and appropriate assessment of the water sector and that SunWater's proposed 4% per annum escalation factor was appropriate given the trends predicted in Macromonitor's report. This was supported by ARUP's observations that the sector would need to continue to compete with the energy and gas sectors for materials and skilled contractors, both of which are forecast to experience significant growth.

Aurecon advised that their recent assessments of mining projects and associated infrastructure, particularly in regional Queensland, support SunWater's assertion that non-residential building construction within Queensland will grow strongly in the short to medium term, particularly in the regions, and that an escalation rate of 4% per annum for materials and contractors seems reasonable.

Both Halcrow and GHD considered that SunWater had not provided sufficient rationale for its proposed escalation factor of 4% per annum for direct materials and contractor services, and that these costs should be escalated at the general rate of inflation.

Direct Electricity

GHD (2011) considered that SunWater failed to provide sufficient justification for their proposal to escalate electricity at CPI, in lieu of Benchmark Retail Cost Index (BRCI). GHD rejected this approach and recommend that electricity be escalated at the relevant BRCI rate.

Halcrow (2011), ARUP (2011) and Aurecon (2011) did not provide recommendations with regard to SunWater's proposed electricity escalation factor.

The Authority acknowledges SunWater's move to the use of an estimate of future franchise tariff increases for the escalation of electricity prices over the regulatory period. The Authority notes that, since its introduction in 2007-08, the BRCI has increased at rates significantly above CPI (Table 6.31).

Table 6.31: Queensland Electricity Price Increases 2001-12

	2001-02	*2002-03*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*
CPI	2.68%	3.17%	2.53%	4.13%	2.56%	5.12%	2.02%	3.20%	3.84%	
BRCI						11.37%	9.06%	11.82%	13.29%	6.60%

Source: Australian Competition Tribunal (2011); QCA (2007); QCA (2009); QCA (2009); QCA (2010c); and QCA (2011c).

Although significant increases may continue in the short run due to factors such as the proposed implementation of a tax on carbon, it is not certain the scale of increases proposed by SunWater or as seen in recent BRCI decisions will continue for the next five years.

Instead of accepting SunWater's approach, the Authority proposes a forward looking escalator drawn on the experience of the BRCI and the known forward decisions of the Australian Energy Regulator, as follows:

(a) to reflect the impact of rising distribution costs (38.56% of total electricity costs), the Authority proposes to adopt the average increase implicit in the Australian Energy Regulator's (AER) price paths for Queensland electricity distribution businesses for 2011-15 (the AER increase in respect of 2010-11 will be excluded as it is already reflected in SunWater's current costs);

(b) to reflect the impact of rising transmission costs (10.74 % of total electricity costs), the Authority has adopted the average increase implicit in the AER's current determination for Powerlink's transmission network. Although the 6% average increase for the AER's current determination is reflected in SunWater's current costs, the Authority has used this same increase as the basis for forecasting transmission costs in 2012-17 in this Draft Report. Prior to the Final Report, the Authority will consider adopting Powerlink's recently proposed a transmission cost price path for 2012-17;

(c) to reflect energy cost increases (41.33% of total electricity costs), the Authority proposes to adopt the average BRCI increase in energy costs over the past five years;

(d) to reflect retail operating cost increases (4.37% of total electricity costs), the Authority proposes to use an escalator previously used in the Authority's recent BRCI decisions, which reflects estimated wage increases (60%) and estimated CPI (40%). In calculating this escalator, the Authority proposes to use wage increases of 4% per annum and CPI increases of 2.5% per annum; and

(e) to reflect the rate of increase in the benchmarked 5.00% retail margin (that is, 5% of total electricity costs) applied on top of all other costs under the BRCI, the Authority propose to use the weighted average of the other increases.

As shown in Table 6.32, the Authority's proposed methodology results in an electricity cost escalation factor of 7.41% per annum.

Table 6.32: Electricity Escalation Factor 2012-17

	Unweighted Increase	*Weighting*	*Weighted % Increase*
AER Network	6.82%	38.56%	2.63%
AER Powerlink	6.00%	10.74%	0.64%
Energy Costs	8.75%	41.33%	3.61%
Retail Operations	3.40%	4.37%	0.15%
Retail Margin[35]	7.41%	5.00%	0.37%
Grand Total		**100.00%**	**7.41%**

Source: Australian Competition Tribunal (2011); AER (2007); QCA (2007); QCA (2009); QCA (2009); QCA (2010c); and QCA (2011c).

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

However, should SunWater sustain further material cost increases due to unanticipated electricity tariff rises over the regulatory period, the Authority proposes to address this via consideration of cost past through or end of period adjustments.

Non-direct costs

Deloitte (2011a) considered that SunWater's proposal to escalate non-direct costs by the general rate of inflation was a relatively conservative approach given the expected upward pressure on costs from Queensland's rapidly expanding resources sector. Deloitte concedes that it is

[35] Note that as the 5% retail margin is applied on top of all other factors, its rate of increase necessarily reflects the weighted average of all other factors.

appropriate to escalate some of these costs by the general inflation rate as they are unlikely to be affected by general cost pressures, however they found it difficult to distinguish these, either on the basis of cost category or geographical location, on the basis of the information available.

Authority's Conclusions and Recommendations

In principle, the Authority accepts that ABS index data is an objective and authoritative source of information. This data, supplemented by other information, such as industry studies and water sector investment trends, can provide a useful guide to future cost movements, at least in the short to medium term.

However, the Authority also considers that cost escalation factors should represent the underlying cause of cost incurrence as closely as is reasonable. One problem with available indexes, such as the PPI construction cost indexes (referred to by SunWater), is that they are at best an imperfect match with SunWater's operating activities. In particular, the building cost indexes used by SunWater are more closely related to commercial, industrial and community service building activity than they are to operating and maintaining the civil engineering infrastructure associated with water storage and supply.

A further problem is that these indexes comprise a mix of cost components, including direct (labour, materials, plant and equipment, etc.), and non-direct, and do not neatly align with the specific cost components used by SunWater (e.g. the specific labour classifications, and direct materials and contractor services procured by SunWater).

Notwithstanding these issues, the Authority considers that the use of appropriate ABS labour and construction indexes to estimate cost escalation factors is probably a reasonable approach given the limited information available on disaggregated cost indexes.

The Authority has examined the road and bridge index and the Queensland Engineering Construction Activity Implicit Price Deflator (QECAIPD) to provide additional insight into civil construction cost movements.

Updated compound estimates (June 2001-June 2011) for the PPI indexes used by SunWater as well as estimates over the same 10-year period for the road and bridge and QECAIPD indexes are shown in Table 6.33[36].

[36] The Authority considers that a 10-year estimation period should be used in order to obtain a reasonable balance between short-term and long-run influences to arrive at a plausible basis for forecasting.

Table 6.33: Operating Cost Escalation Factor Estimates

Index	*Escalation Factor Estimates**
Building Construction Index (QLD)	5.2%
Non-residential Building Construction Index (QLD)	5.0%
Queensland Road and Bridge Index	5.1%
Queensland Engineering Construction Activity Implicit Price Deflator (QECAIPD)	4.2%
Labour Price Index – All Industries (QLD)	3.8%
Labour Price Index – Construction (Australia)	4.2%
Labour Price Index – Electricity, Gas, Water, & Waste Services (Australia)	4.4%

Note: Estimates are compound annual growth rates based on the most recent available data – June 2001 to June 2011, except QECAIPD which is March 2001 to March 2011. .Source: ABS (2011a), ABS (2011b) and ABS (2011c).

With regard to the escalation of operating costs, the Authority concludes as follows:

(a) the Authority agrees with most of its consultants that SunWater's proposal to escalate labour costs at the general inflation rate is likely to be conservative. Labour price indexes and other evidence suggest that labour costs in Queensland are likely to rise by around 4% per annum, and probably more than this in regional Queensland where the continuation of strong growth in the resources sector is likely to maintain upward pressure on labour (and other) costs;

(b) SunWater's proposal to escalate its direct materials and contractor costs by 4% per annum seems reasonable when compared with ABS construction cost index data. Increased demand from mining, manufacturing and construction sectors for the materials and contractor services procured by SunWater are likely to result in real increases in the prices of these materials and services over the regulatory period;

(c) SunWater's proposal to escalate other direct costs and all non-direct costs by the general inflation rate (2.5% per annum) is reasonable given the nature of these costs which are primarily generated by administrative and management functions; and

(d) the Authority does not agree with SunWater's updated proposal to escalate electricity costs by 10.5% per annum plus adjustments for a carbon price (including an additional 10% in 2013 and 1% in 2016). The Authority considers that electricity should be escalated by 7.41% per annum based on an approach outlined above. Should SunWater sustain material cost increases above this level (for example, due to franchise tariff increases or those resulting from a carbon price) over the 2012-17 regulatory period, the Authority will consider a case for cost pass-through either within period or at the end of the regulatory period.

In response to specific stakeholder comments, the Authority notes that:

(a) SunWater's revised submission on electricity (2011ak) includes a set escalation figure, as does the Authority's final recommendation. Although it can be anticipated that cost increases from regulatory changes, such as the proposed carbon price, would be passed through in future price reviews, the Authority's recommended escalation rate would maintain the incentive for SunWater to continue to maintain services – the issue of efficiency targets to promote least cost delivery is addressed in Chapter 7 – Draft prices;

(b) given that real electricity costs have risen at levels substantially above the CPI during the 2006-11 price paths, it would be neither prudent nor efficient to adopt the CPI as the escalation factor for electricity;

(c) the Authority's proposed escalation factor incorporates prices increases in network, transmission, distribution and retail operations, not only changes in energy costs;

(d) while electricity costs may be relatively small for some service contracts, the Authority considers it appropriate that SunWater adopt a consistent escalation factor for inputs across its business, unless there are good grounds to consider that they should vary;

(e) although electricity forecasts for the 2006-11 period may have been escalated by CPI, SunWater had no control over actual price increases during this period. The Authority's consultants did not identify imprudent or inefficient electricity use during the 2006-11 price paths, however, the Authority notes SunWater's Energy Management Program Plan which should lead to a real reduction in electricity usage (regardless of price changes); and

(f) in relation to comments regarding labour and materials, the Authority has recommended escalation factors that reflect likely cost increases. The Authority considers that efficiency gains are better dealt with explicitly, and separately to cost escalation.

As noted in Chapter 5 – Renewals, the Authority is not persuaded that the cost pressures responsible for the current escalation necessarily will be sustained over the long term (that is, the Authority's recommended 20 year planning period). For this reason, the Authority concludes that costs beyond the regulatory period should be the general inflation rate (that is, 2.5% per annum).

Recommendation:

The Authority recommends that:

(a) **labour costs, direct materials and contractors should be escalated by 4% per annum;**

(b) **other direct costs and non-direct costs should be escalated by 2.5% per annum;**

(c) **electricity should be escalated by 7.41% per annum; and**

(d) **should SunWater sustain material cost increases in electricity above the escalated level, consideration should be given to cost pass through, either within-period of at the end of the regulatory period.**

6.9 Working Capital

The Authority has interpreted the Ministerial Direction to allow for SunWater's revenue stream to include an appropriate allowance for working capital.

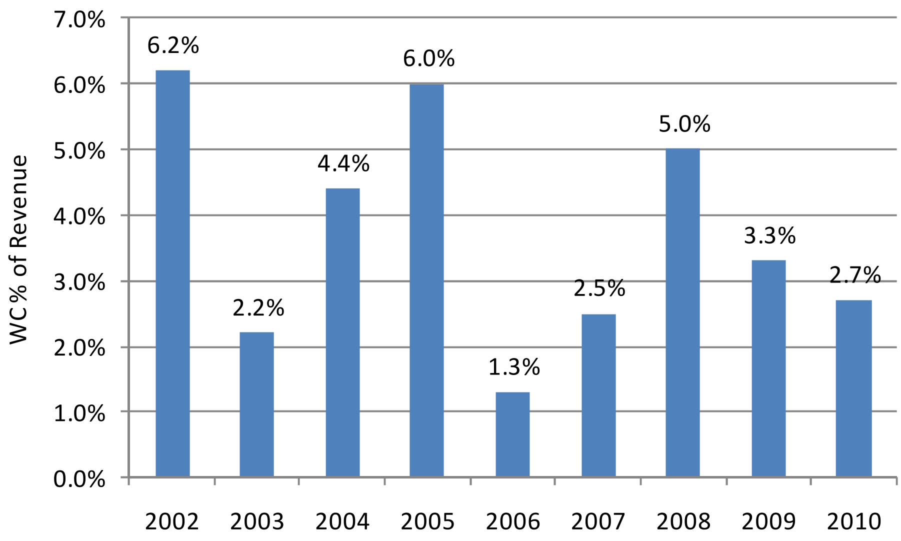
Stakeholder Submissions

SunWater

SunWater defines working capital as accounts receivable (trade debtors) adjusted for any impairment allowance, less accounts payable (trade creditors), plus inventories (SunWater 2011af). SunWater have proposed a working capital allowance of 3.3% of revenues.

In support of their proposal, SunWater have provided the last 10 years of data for working capital as a percentage of revenue (F), highlighting that a simple average over that period would suggest working capital of 3.7% of revenue, but that the period over which working capital is averaged is highly significant (Figure 6.9). SunWater contend that the current working capital allowance (3.3%) is well within the reasonable historical average range (1.3% to 6.2%) and is consistent with existing practice.

Figure 6.9: SunWater's Working Capital as a Percentage of Revenue 2002-10



Source: SunWater (2011af).

SunWater argues that the period chosen for averaging must be long enough to offset short term volatility while ensuring that longer term trends are reflected in the data. SunWater proposes that if working capital is to be reviewed annually, then a relatively short averaging period may be appropriate (e.g. a rolling three or four year average). However, if the percentage of working capital is likely to be set for an extended period of time, then a longer term average would be more appropriate (e.g. using the past 10 years of data).

<u>Other Stakeholders</u>

WA Thomas (2011) suggested that the working capital required for the efficient funding of operational costs should be provided from overdraft or commercial bill facilities, and that any ensuing interest costs should be included and recovered as operational costs.

Other Jurisdictions

Deloitte (2011b) have reported on a number of methodologies used to calculate working capital for water and other resource utilities (including past decisions by the Authority).

Burdekin-Haughton Water Supply Scheme – April 2003

In determining prices for the Burdekin-Haughton Supply Scheme, SKM advised the Authority that the industry average for working capital was equal to 5.08% of sales revenue. The Authority noted that this proportion was consistent with previous decisions, and included an allowance of $0.6 million.

GAWB Investigation of Pricing Practices – June 2010

In its 2005 GAWB price investigation, on the basis of advice from its consultants SMEC, the Authority recommended that a working capital allowance should be included in the asset base, and that this should reflect trade debtors (accounts receivable) less trade creditors (accounts payable) plus inventories.

In its 2010 GAWB price review, the Authority accepted GAWB's proposed allowance for working capital which was calculated on the same basis as in 2005

2011-12 SEQ Grid Service Charges

In December 2010, the Queensland Water Commission released a manual for setting the 2011-12 SEQ Grid Service Charges. This manual provided the Authority with guidelines on the methodology to be applied and the processes to be followed in investigating and setting out the recommendations on Grid Service charges for 2011-12.

The manual states that an allowance for working capital is to be included in the Grid Service Charges, to provide an allowance for the timing difference between receivables and payables. The manual states the following formula for the calculation of the working capital allowance:

$$\left[Annual\ A/C\ receivable \times \frac{Average\ creditor\ days}{365} - Annual\ A/C\ payable \times \frac{Average\ debtor\ days}{365} \times WACC\right]$$

Based on the SEQ Grid Service Charges Manual mentioned above, the Authority analysed debtor and creditor days, noting that working capital allowance may include critical spares, or inventory. The allowance recommendations were: $23 million (LinkWater); $30.6 million (WaterSecure); and $36.1 million (Seqwater).

Essential Services Commission of Victoria

In its September 2000 Electricity Distribution Price Determination for 2001-05, the Victorian Office of the Regulator General (now the Essential Services Commission of Victoria or ESCV), rejected the Victorian electricity distributors' proposals for working capital allowances.

The basis for the decision was that, given the assumption regarding return on capital implicit in the building block formula that payments are received at year end, while in practice, utilities receive payments from customers throughout the year, there is already an excess net present value revenue for the return on assets component that would more than compensate for working capital requirements.

The decision was not challenged by the electricity distributors and working capital has not been approved in subsequent pricing reviews.

State Water Corporation 2010-14 – IPART

In its Final Report on the Bulk Water Charges for the State Water Corporation (State Water) 2010-14, IPART included an allowance for working capital in the return on capital.

IPART acknowledged that State Water is exposed to annual variability in the availability of water, which creates a revenue volatility risk and results in a cost to State Water, through a requirement for working capital.

IPART agreed an allowance should be made for this in the revenue requirement and decided that the best approach to addressing risks associated with revenue volatility was to include a volatility allowance in the notional revenue requirement.

IPART calculated the revenue volatility allowance based on the volatility of historical (previous 20 years) of water extractions around the mean.

Australian Energy Regulator

In determining the access arrangements for the Epic Energy Moomba – Adelaide Pipeline in 2002, the ACCC engaged the Allen Consulting Group (ACG) to advise whether an explicit allowance for working capital was appropriate given the cash flow assumptions in its revenue modelling.

The ACG's report provide a detailed analysis of the implications of cash flow modelling for working capital, concluding that there is no rationale for including an additional allowance to provide a return on working capital.

Accordingly, since 2002, the AER has consistently held the view that under a building block framework, regulatory allowances for working capital funding are unnecessary.

Authority's Analysis

Deloitte (2011b) has reviewed SunWater's proposed working capital requirement. Deloitte noted that, although some national and interstate jurisdictions have not approved working capital allowances, it considered that an allowance may be appropriate for SunWater on the basis that:

(a) SunWater has a relatively smaller customer base, and will subsequently have less regular revenues than gas or electricity distribution businesses;

(b) the Authority has set a strong precedent in setting working capital allowances for Queensland water companies; and

(c) DERM officers have confirmed in correspondence with Authority staff that a working capital allowance should be provided for SunWater over the 2012-17 regulatory period.

Moreover, the Authority notes that no rate of return on existing assets (as at 30 June 2012) is provided to SunWater under the Ministerial Direction, but the Authority is required to take into account SunWater's legitimate commercial interests.

Assessment of SunWater Approach

SunWater has used the following formula to calculate its working capital requirements, based on the Authority's approach in other price reviews.

Total working capital	=	current assets – current liabilities
	=	average trade debtors (net provision of bad debts) + inventory – trade creditors

Although, in principle, Deloitte agreed with this definition of working capital, it disagreed with SunWater's definitions of current assets and current liabilities, as follows.

Current Assets

SunWater classified its current assets into two broad categories: receivables and other current assets. Receivables represent invoices outstanding (net of bad debt provisions), while other current assets comprise accrued revenue, GST receivables and prepayments.

Deloitte considered that SunWater had correctly taken into account its receivables, but had failed to account for other current assets, thereby underestimating its current assets.

Table 6.34 shows a comparison of SunWater's and Deloitte's calculations of current assets for the past three years. Current assets increase by a significant amount when expanded to include accrued revenue and GST receivables.

Table 6.34: Comparison of Deloitte and SunWater's Current Asset Calculations 2007-10 (Nominal $'000)

	Deloitte Analysis			*SunWater Analysis*		
	2007-08	*2008-09*	*2009-10*	*2007-08*	*2008-09*	*2009-10*
Trade debtors	12,367	9,697	9,138	12,367	9,697	9,138
Term trade debtors	27	49	38	27	49	38
Less provision for impairment	(1,100)	(1,100)	(1,100)	(1,100)	(1,100)	(1,100)
Receivables	**11,294**	**8,646**	**8,076**	**11,294**	**8,646**	**8,076**
GST receivables	1,079	1,562	1,054			
Accrued revenue	14,841	15,473	13,273			
Other current assets	**15,920**	**17,035**	**14,327**			
Total	**27,214**	**25,681**	**22,403**	**11,294**	**8,646**	**8,076**

Source: SunWater (2011af).

Current Liabilities

SunWater categorised its current liabilities into four broad categories: payables, provisions, borrowings and other.

Deloitte advised that current borrowings reflect current debt which needs to be refinanced in the short term, and is not considered part of the working capital requirement.

Of the three remaining categories, SunWater included only the trade payables component. Deloitte recommended that other creditors and accruals, and employee benefits should also be included in calculating working capital requirements. This was because they represent services SunWater had procured from other creditors in the course of providing water services to its customers, for which it has yet to pay. Similarly, employee benefits incurred during the normal course of business represent employee benefits expensed but not yet paid.

Deloitte also assessed whether unearned annuities should be included as a current liability. It considered that the unearned annuity represents a mismatch between the revenue received from the renewals annuity and corresponding refurbishment expenditure. As the economic cost of this mismatch is taken into consideration in setting the following year's annuity, Deloitte concluded that including the unearned annuity balance in the working capital requirement was not appropriate.

Table 6.35 shows a comparison of SunWater's and Deloitte's calculations of current liabilities for the past three years. Current liabilities increase by a large margin when expanded to include other creditors, accruals and employee benefits.

Table 6.35: Comparison of Deloitte and SunWater's Current Liabilities Calculations 2007-10 (Nominal $'000)

	Deloitte Analysis			*SunWater Analysis*		
	2007-08	*2008-09*	*2009-10*	*2007-08*	*2008-09*	*2009-10*
Trade creditors	4,495	7,365	4,118	4,495	7,365	4,118
Other creditors & accruals	14,050	15,025	16,814			
Payables	**18,545**	**22,390**	**20,932**	**4,495**	**7,365**	**4,118**
Employee benefits	4,980	4,888	4,239			
Provisions	**4,980**	**4,888**	**4,239**			
Other current liabilities	640	0	0			
Other liabilities	**640**	**0**	**0**			
Total	**24,165**	**27,278**	**25,171**	**4,495**	**7,365**	**4,118**

Source: SunWater (2011af).

<u>Inventories</u>

Deloitte recommended that, as SunWater's calculations indicated that it used the inventory amounts which reconciled with historical accounts, they were accordingly appropriate.

Based on the analysis above, Deloitte concluded that SunWater's forecast working capital requirement for its entire business of $6.543 million was excessive and recommended the alternative working capital requirement of 0.9% of revenues as shown in Table 6.36. This is the average working capital requirement over 2008-09 and 2009-10 from continuing operations.

Table 6.36: Deloitte's Proposed Working Capital Requirements for SunWater 2007-10 (Nominal $'000)

	Deloitte Analysis			*SunWater Analysis*		
	2007-08	***2008-09***	***2009-10***	***2007-08***	***2008-09***	***2009-10***
Receivables	11,294	8,646	8,076	11,294	8,646	8,076
Other current assets	15,920	17,035	14,327	0	0	0
Current Assets	**27,214**	**25,681**	**22,403**	**11,294**	**8,646**	**8,076**
Payables	18,545	22,390	20,932	4,495	7,365	4,118
Employee benefits	4,980	4,888	4,239	0	0	0
Other current liabilities	640	0	0	0	0	0
Current Liabilities	**24,165**	**27,278**	**25,171**	**4,495**	**7,365**	**4,118**
Inventories	**2,444**	**2,639**	**2,572**	**2,444**	**2,639**	**2,572**
Working Capital	**5,493**	**1,042**	**-196**	**9,243**	**3,920**	**6,530**
Average Working Capital		**3,268**	**423**		**6,582**	**5,225**
Revenue from continuing operations		**198,568**	**196,442**		**198,568**	**196,442**
% of revenue		**1.6%**	**0.2%**		**3.3%**	**2.7%**

Source: SunWater (2011af).

The main differences between Deloitte's recommended approach, and SunWater's proposed approach are:

(a) whereas SunWater proposes using long term historical averages, Deloitte has restricted its analysis to the last three years only. Although Deloitte agrees that, in the absence of reliable scheme-specific forecast data, estimates based on historical data are an acceptable alternative, it considered that estimates based on the last three years were more appropriate. This is because working capital estimates are extremely sensitive to debtor and creditor days, which may have varied historically, and therefore recent historical data will better reflect the current terms of trade; and

(b) Deloitte included all relevant current assets and current liabilities in its definition of working capital, whereas SunWater used a narrower definition.

Conclusion

In summary, Deloitte recommended that:

(a) SunWater be allowed to recover the economic cost of maintaining an annual working capital requirement in setting prices for each of its irrigation schemes, based on 0.9%[37] of forecast revenue for each scheme multiplied by the approved regulatory WACC. Linking

[37] Average percentage over the three years reviewed.

working capital requirement to revenue should adequately compensate SunWater for increases in working capital requirements due to revenue growth; and

(b) the economic cost of working capital is added to SunWater's forecasts of efficient annual operating costs to be recovered through the annual revenue requirement calculation for each irrigation scheme.

Deloitte also raised the following qualifications in relation to the working capital methodology:

(a) ideally, SunWater's working capital requirements should be calculated on the basis of forecasts of the efficient cash flows for its irrigation schemes, rather than using an approach which averages historical accounting information for the whole of SunWater's business. However, in the absence of reliable forecasts, historical data was considered an acceptable second-best approach;

(b) for future revenue and price determinations, the Authority should review the need for additional funding for working capital requirements given the assumptions of the building block model and the timing of all cash flows; and

(c) the use of average debtor and creditor amounts could distort the actual working capital requirements for the irrigation schemes, if the terms of trade vary significantly between the irrigation schemes and other business activities of SunWater. SunWater's irrigation schemes represent only about 25% of total revenue in 2009-10.

The Authority accepts Deloitte's recommendations in relation to the appropriate working capital allowance for SunWater.

However, while recognising Deloitte's qualifications, the Authority considers that the calculated working capital allowance, representing less than about 0.1% of revenues, is so small as to make these distinctions of little consequence.

Recommendation:

The Authority recommends that:

(a) **SunWater be allowed to recover the economic cost of maintaining an annual working capital requirement in setting prices for each of its irrigation schemes, based on 0.9% of forecast revenue for each scheme multiplied by the approved regulatory WACC; and**

(b) **SunWater explore the feasibility of basing future capital working capital requirements on efficient forecasts of revenue and cash flows from SunWater's irrigation schemes, rather than relying on historical, whole of business data.**

7. DRAFT PRICES

The Ministerial Direction requires the Authority to recommend prices (and tariff structures) for SunWater's recommended tariff groups in the 22 bulk water supply schemes and eight distribution systems of relevance to irrigation.

The Authority estimated total efficient allowable costs for each service contract including renewals, operating, maintenance and administration costs. These were adjusted for revenues (that is, revenue offsets) arising from leases, drainage charges, drainage diversion charges and other miscellaneous charges.

In bulk WSSs, fixed costs were allocated between high and medium priority WAE on the basis of HUF for all renewals and operating costs (except for 50% of operations costs). Whereas, in the distribution systems, fixed costs were allocated between high and medium priority WAE on the basis of current nominal WAE (and not the previous water pricing conversion factors).

The Authority engaged Indec to identify the proportion of fixed and variable costs (when viewed within the context of water usage) in each service contract. Indec considered whether a causal relationship could be expected between costs and water usage, undertook a statistical analysis of past costs, and considered the most appropriate management approach to deliver services. The Authority has recommended the adoption of Indec's recommendations.

To estimate the variable cost per ML, the Authority divided Indec's total variable costs (for all sectors), including electricity, by all sectors' water use during a typical year for each service contract. The typical year was based on the past eight years of water use but with the three lowest water use years removed (effectively a five year average). This variable cost was adopted as the volumetric charge for irrigation. The Authority's cost-reflective fixed tariffs flow on from this recommended approach.

The Authority has published its cost-reflective volumetric and fixed tariffs. However, to reflect the Government's pricing policies (outlined in the Ministerial Direction) the Authority has adjusted the cost reflective tariffs to arrive at its recommended draft irrigation prices, which seek to address either the Government's requirement to maintain prices, or to introduce price increases in a way that moderate impacts on irrigators (that is, price paths).

For the purpose of maintaining prices, where current prices would generate revenue in excess of the Authority's recommended efficient costs for 2012-17, the 2006-11 revenues (rather than prices) are proposed to be maintained in real terms. The Authority calculated the required revenue based on 2010-11 (not 2011-12) prices and the average water use by irrigators during 2006-11. All revenues in excess of efficient costs are recovered through the fixed tariff.

By contrast, for tariff groups where water revenues from current prices are less than the revenues implied by cost reflective tariffs, the Authority has recommended price paths with a $2/ML real price increase per annum, until prices reach the Authority's recommended efficient cost level. Such increases were generally acceptable to irrigators and the Government in 2005-06 (as part of setting 2006-11 prices). The Authority also notes that the original Ministerial Direction was amended to exclude consideration of capacity to pay from the Authority's brief. Under this approach, some service contracts will not achieve full cost reflectivity over 2012-17.

For all recommended prices, the resulting cost-reflective volumetric tariffs are proposed to be adopted for each service contract from 1 July 2012, on the basis that they will simultaneously provide an efficient price signal to customers and manage SunWater's short-term volume risk.

For the purpose of establishing recommended prices, it was necessary to first estimate the revenue that would be received, during 2012-17, from the volumetric tariffs. For this purpose the Authority assumed average water use consistent with the past 10 years of water use by irrigators. Secondly, the remaining revenue required was divided by current irrigation WAE, to generate recommended fixed tariffs.

The Authority found that most bulk scheme water prices will immediately cover efficient costs. However, in general, the revenues from distribution systems are likely to be insufficient to immediately meet efficient costs, due to increases in SunWater's renewals and operating costs.

The Authority has accepted SunWater's proposal to unbundle bulk WSSs and distribution systems. Accordingly, in bulk WSSs, the Part A tariff reflects fixed bulk costs and the Part B reflects variable costs. However, in distribution systems, a new Part C tariff reflects fixed distribution costs and the Part D reflects variable distribution costs. Distribution customers, therefore, will be charged transparent and cost-reflective Tariffs A to D.

7.1 Background

Ministerial Direction for 2012-17

The Authority is required to recommend prices for water delivered to irrigators from 22 SunWater bulk water supply schemes and 8 distribution systems and, for relevant schemes, for drainage, drainage diversion and water harvesting. These prices are to apply from 1 July 2012 to 30 June 2017.

The prices are to recover the following allowable costs:

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

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

Where current prices are already above the level required to recover allowable costs, water prices are to be maintained in real terms using an appropriate measure of inflation (as recommended by the Authority).

For certain schemes or segments of schemes nominated in the Ministers' Referral, prices are to increase in real terms at a pace consistent with the increase in prices over 2006-11 or until such time as the scheme reaches allowable costs, whereupon prices are maintained in real terms.

In schemes or segments of schemes where the Authority calculates tariffs that would otherwise result in a price increase for irrigators that is higher than the Authority's measure of inflation:

(a) the Authority must consider phasing in the price increase in order to moderate price impacts on irrigators but at the same time have regard for SunWater's legitimate commercial interests;

(b) the price path may be longer than one price path period provided the Authority gives its reason for the longer timeframe; and

(c) the Authority must give its reasons if the recommendation is not to phase in the new prices.

Previous Review

Irrigation water prices were set for 2006-11 by SunWater after negotiations with its customer representatives via a two-stage process.

The first stage involved the State-wide Irrigation Pricing Working Group (Tier 1) which defined the efficient lower bound costs and then set reference irrigation tariffs for consideration by the Scheme Irrigation Pricing Working Groups (Tier 2) working groups.

In the second stage, which involved the Tier 2 working groups, scheme-specific issues were taken into account and the irrigation tariffs to apply for the next five-year price path were negotiated (within the context of the recommendations made by Tier 1 and Government policy).

The maximum real tariff increases were capped at $10 per ML over the five-year price path, prior to annual indexation (based on the Brisbane – All Groups CPI).

The Government policy required that all SunWater WSSs achieve lower bound pricing by the end of the price path (however, some SEQ schemes were granted a six- or seven-year price path). No reduction in the tariffs was permitted if the current tariff was above the lower bound costs. There was also to be no additional rate of return achieved by SunWater and no customer funding of priority spillway upgrades for the duration of the price path.

For schemes comprising bulk and distribution systems, the prices were bundled together, that is, the lower bound costs were established for the combined bulk and distribution activities.

Interim Prices for 2011-12

On 1 July 2011, the Minister for Energy and Water Utilities extended the prices set for the 2006-11 price path to 30 June 2012 by applying a CPI increase to all tariff groups.

In addition to CPI, all eight distribution systems and five of the river service contracts incurred increases of $2/ML (Bowen Broken Rivers, Callide Valley, Macintyre Brook, Maranoa River and Pioneer River WSSs). An increase of $1/ML was applied to the St George WSS River segment. In general, the increases applied to Part A charges.

Comparison of Previous and Current Review

For the purposes of establishing prices for 2012-17, the Authority has recommended, or been required to adopt, a number of positions on key issues which differ from those adopted for the 2006-11 price paths (Table 7.1).

Table 7.1: Regulatory and Pricing Assumptions: Previous and Current Review

	Previous Review	***Current Review***
	2006–11 Price Path	***2012–17 Regulatory Period***
Form of Regulation	All SunWater WSSs chose a price cap form of price control except for Bowen Broken River, Cunnamulla and Macintyre Brook WSSs which opted for a revenue cap.	The Authority recommends an adjusted price cap for all schemes.
Lower Bound Costs	Lower Bound costs include efficient operational, maintenance and administration costs, and prudent and efficient expenditure on renewing existing assets through a renewals	As for 2006-11 but also an allowance for working capital.

	Previous Review 2006–11 Price Path	Current Review 2012–17 Regulatory Period
	annuity. Costs also include recreational management, electricity and compliance costs. Revenue offsets apply to lower bound costs.	
Return on capital	Prices do not include a return on capital unless prices are already above lower bound costs.	As for 2006-11, consistent with the Ministerial Direction.
Tariff Structure	There was one tariff structure for each of SunWater's schemes, with no differentiation between bulk water supply and channel distribution. Tariffs were generally based upon a ratio of 70% Part A (fixed) component and 30% Part B (volumetric) component. The volumetric components sometimes incorporated fixed costs. Where revenues exceeded lower bound costs, the additional revenue was recovered through the Part B charge.	The Authority recommends that separate tariffs be adopted for bulk water supply and distribution (unbundling). For cost reflective tariffs: (a) Part A (bulk fixed) – a fixed charge per ML of annual WAE, to recover all fixed costs; (b) Part B (bulk variable)– a charge per ML of usage, to recover all bulk variable costs; (c) Part C (distribution fixed) – a fixed charge per ML of annual WAE, to recover all distribution system fixed costs; and (d) Part D (distribution variable) – a charge per ML of usage, to recover all distribution system variable costs. Where adjustments to tariffs are required for the maintenance of past revenues, adjustments are made to the fixed tariffs.
Tariff Groups	Fifty-two tariff groups were nominated by SunWater across 27 SunWater schemes (including the south east Queensland schemes).	As per the Ministerial Direction the tariff groups nominated by SunWater are required to be adopted. Relevant details appear in the scheme reports. Five schemes in south east Queensland that are now managed by Seqwater are not part of the current review.
Cost Allocation	Fixed costs allocated by using water pricing conversion factors applied to HP WAE to allocate more costs per ML of HP WAE (relative to MP WAE) in bulk and distribution systems. A portion of fixed costs contained in Part B Volumetric tariffs allocated by water use.	The Authority recommends cost allocations as follows: (a) Bulk - Fixed renewals, maintenance and 50% of operations costs allocated by HUF. 50% of operations by WAE; (b) Distribution system – Fixed costs all allocated by WAE; and (c) Only variable costs reflected in volumetric tariffs – all allocated by water use.
Distribution Losses	The costs associated with distribution losses were allocated to distribution customers.	The Authority recommends the same approach as for 2006-11.
Free Water Allocations	Lower bound costs were not allocated to "free" water allocations.	The Authority found that SunWater should continue to meet, and bear the costs of legacy arrangements. Whereas pre-existing rights to free water should be maintained where they continue as part of a current agreement, legislation or Government policy. Customers with continuing rights to free water should not bear the costs associated with that water. However, where free water was not able to be substantiated, costs have been allocated to those WAE.
Termination Fees	SunWater currently charges a fee equivalent to 10 years of fixed distribution charges (discounted at the	The Authority recommends that termination fees be based on 20 years of the fixed distribution costs discounted at the recommended WACC, plus GST –

	Previous Review	Current Review
	2006–11 Price Path	2012–17 Regulatory Period
	relevant annual bond rate) plus GST-with the balance of costs allocated to remaining customers. This is equivalent of up to 9.4 times the fixed distribution charge (including GST).	with the balance of costs allocated to SunWater. This is equivalent to up to 13.8 times (including GST) the Authority's relevant cost-reflective fixed tariff (not the recommended fixed tariff).
Drainage Charges	Drainage charges apply as a fixed charge per hectare of irrigable land in four distribution systems and part of the fixed charge in the Mareeba-Dimbulah distribution system.	The Authority recommends that drainage charges be maintained in real terms and offset against total scheme revenues for the purposes of setting prices.
Drainage Diversion Charges	Drainage diversion charges may apply per installation or in accordance with water use in four distribution systems.	As above, the Authority recommends that drainage diversion charges be maintained in real terms and offset against total scheme revenues for the purposes of setting prices.
Distribution System Water Harvesting Charges	Irrigators paid a SunWater Part B water charge for each ML of harvested water delivered plus a lease fee and a DERM water charge (in the case of St George Distribution System).	The Authority recommends that charges should reflect the distribution system volumetric (Part D) charge plus the DERM water harvesting charge per ML (where relevant). If a lease fee is applied, it should be determined in the market and the revenue retained by SunWater.
Storage Rental Fees	Storage rental fees applied in 3 schemes with revenue applied as an offset.	Storage rental fees to be removed (subject to the adoption of the Authority's recommended tariff structures).

7.2 Total Costs

Based on the methodology outlined in previous chapters, the Authority has determined the total efficient costs for all sectors for each service contract (WSS and distribution system). This is comprised of:

(a) prudent and efficient renewals costs used as a basis for estimating the renewals annuity (see Chapter 5);

(b) efficient direct operating costs (see Chapter 6);

(c) efficient indirect and overheads operating costs including a working capital allowance (see Chapter 6); and

(d) revenue offsets identified on a service contract basis (see further below).

Revenue Offsets

Submissions

<u>SunWater</u>

As noted in SunWater's NSPs, revenue offsets in most schemes include flood margin leases, rental from SunWater houses, and income from miscellaneous fees and charges.

SunWater submitted that in order to offset the costs of land, particularly flood margin areas, SunWater provides access to adjoining landholders for approved activities. These leases are administered by SunWater's Property Group, who negotiate the lease terms and conditions and perform the invoicing. The revenues received from these leases offset the costs of the relevant scheme's operation.

In some schemes there are significant revenue offsets from other sources. For example, flood mitigation charges to Council accrue significant revenue offsets in the Proserpine WSS. SunWater also proposed that revenue from the fixed access charge in the Mareeba Dimbulah WSS should be treated as an offset to the Part A charge.

SunWater proposed that drainage charges and drainage diversion charges be offset against irrigation customers' revenues in the four affected distribution systems (Burdekin-Haughton, Emerald, St George and Mareeba-Dimbulah).

SunWater further proposed that adjustments for revenue caps in the three schemes affected should also be treated as revenue offsets or uplifts. SunWater proposed a one-off adjustment in 2011-12.

Other Stakeholders

CANEGOWERS (2011) requested a comparison between revenue from leases and the legal and other overhead costs associated with the leases.

BRIG (2011) sought clarity on how revenue from successful insurance claims is treated and whether it is considered operational revenues or renewals revenue.

CANEGROWERS (2011b) submitted that storage and carry-over fees not be included as revenue offsets since the fees reflect the full cost. CANEGROWERS submitted that these fees should either be proven to reflect efficient costs or should be scrapped and included in water charges.

Authority's Analysis

SunWater's broad scheme-based revenue offsets are generally relatively minor and have not been subject to review by the Authority. These revenue offsets are deducted from the scheme total costs, that is, the offsets are effectively shared between irrigation and other scheme users. This includes the flood mitigation revenues in the Proserpine WSS.

The Authority proposes that revenue from access charges in the Mareeba-Dimbulah WSS should be treated as part of total revenue for the service contract as other customers also pay the access charge.

In an earlier chapter, the Authority recommended that current drainage charges be maintained in real terms and treated as revenue offsets. While drainage charges would normally be attributable only to irrigation, the Authority has been unable to separate the costs associated with drainage and drainage diversions from total operating and maintenance costs for each distribution system, that is, non-irrigation users are effectively contributing to costs of drainage. Accordingly, drainage charge and drainage diversion charge revenue are netted from total distribution system revenue. Nevertheless, the Authority notes that in distribution systems where drainage charges apply, irrigation is either the only or the dominant customer.

In regard to revenue cap adjustments, the Authority considers that these adjustments relate to unders and overs from the previous price path and should apply to the irrigation sector only. The Authority has therefore offset them against irrigation scheme revenues in the relevant schemes (Bowen Broken WSS, Cunnamulla WSS and Macintyre Brook WSS).

In response to CANEGROWERS, the Authority notes that:

(a) a comparison of lease revenue with attributable overheads has not been possible or practical in the time available for the Authority's review;

(b) revenue from insurance claims would be offset against the relevant costs incurred. In some cases where insurance claims are pending, for example with the fabri-dams, the Authority has excluded the costs incurred until the associated legal matters are resolved; and

(c) storage and carry-over fees are to be removed (also proposed by SunWater) and are no longer an issue for revenue offsets. This issue is discussed in more detail in Chapter 3.

Total revenue offsets for each scheme are detailed in the Volume 2 reports.

Summary of Total Costs

Total Costs for 2006-07 to 2016-17, as proposed by SunWater and the Authority are in Table 7.2.

Table 7.2: Comparison of Total Costs 2006-17 (Real $'000 2012-13)

Costs	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Renewals Expenditures											
SunWater	11,281	12,104	10,891	18,027	14,619	14,563	9,000	8,715	8,727	10,024	17,222
QCA							7,988	7,451	7,943	8,949	15,504
Renewals Annuity											
SunWater	10,215	10,291	10,396	11,142	11,466	14,984	15,120	15,365	15,423	15,578	15,579
QCA							13,129	13,518	13,621	13,879	14,125
Operations											
SunWater	22,760	21,971	24,807	25,672	27,298	24,001	24,956	25,349	25,186	24,727	24,346
QCA							24,214	24,412	24,074	23,456	22,925
Electricity											
SunWater	5,937	4,971	4,634	6,864	3,424	7,938	9,410	10,143	10,931	11,900	12,825
QCA							7,968	8,263	8,677	9,093	9,528
Preventive Maintenance											
SunWater	11,685	8,894	9,527	9,346	8,311	11,102	11,545	11,737	11,738	11,622	11,448
QCA							11,193	11,296	11,212	11,020	10,776
Corrective Maintenance											
SunWater	8,756	10,021	9,422	7,719	11,976	6,774	7,038	7,168	7,214	7,186	7,096
QCA							6,826	6,903	6,897	6,820	6,687
Revenue Offsets											
SunWater	-3,136	-3,041	-3,057	-2,876	-2,584	-2,584	-2,584	-2,584	-2,577	-2,557	-2,542
QCA							-2,613	-2,613	-2,606	-2,586	-2,571
Working Capital											
SunWater	0	0	0	0	0	0	0	0	0	0	0
QCA							41	42	42	42	42
Total Costs											
SunWater	56,217	53,107	55,729	57,866	59,890	62,214	65,485	67,179	67,915	68,456	68,752
QCA							60,759	61,822	61,917	61,724	61,512

Total costs for each for each service contract for 2012-13 are summarised below (Table 7.3).

Table 7.3: Total Scheme Costs by Components 2012-13 All Sectors (Real $'000)

WSS	*Renewals Annuity*	*Direct Costs*	*Indirect & Overhead*	*Revenue Off-sets*	*Return on Working Capital*	*Total Efficient Costs*
Bulk Supply						
Barker Barambah	242	372	354	-19	1	950
Bowen Broken	324	568	410	-12	1	1,291
Boyne River and Tarong	17	180	194	-15	0	377
Bundaberg	544	553	597	-24	1	1,672
Burdekin-Haughton	769	1,401	1,687	-95	3	3,765
Callide Valley	364	443	455	-9	1	1,255
Chinchilla Weir	4	35	35	-4	0	70
Cunnamulla Weir	5	25	28	-2	0	56
Dawson Valley	-63	399	522	-5	1	853
Eton	527	828	598	-2	1	1,952
Lower Fitzroy	49	118	160	0	0	328
Lower Mary	-4	109	172	-2	0	274
Macintyre Brook	266	371	529	-11	1	1,156
Maranoa	5	15	16	0	0	36
Mareeba-Dimbulah	26	439	520	-78	1	908
Nogoa-Mackenzie	424	1,004	1,239	-54	2	2,614
Pioneer Valley	131	432	470	-10	0	1,023
Proserpine	197	460	353	-169	1	841
St George	653	431	539	-12	1	1,611
Three Moon Creek	105	155	177	-2	0	436
Upper Burnett	187	320	378	-8	1	878
Upper Condamine	538	448	512	-6	1	1,493
Distribution						
Bundaberg Distribution	1,545	5,244	2,204	-152	6	8,846
Burdekin Distribution	2,381	9,072	3,560	-630	10	14,394
Emerald Distribution	623	993	720	-427	1	1,910
Eton Distribution	545	1,384	721	-4	2	2,648
Lower Mary Distribution	452	452	308	-13	1	1,200
Mareeba Distribution	1,845	2,204	1,612	-591	3	5,074
St George Distribution	253	731	699	-202	1	1,482
Theodore Distribution	174	662	585	-55	1	1,367

7.3 Fixed and Variable Costs

The Ministerial Direction requires the Authority to have regard for the fixed and variable nature of the underlying costs in recommending prices/tariff structures.

For the 2006-11 price paths:

(a) the volumetric charge (previously referred to as the variable charge) was not directly linked to variable costs. Rather, it reflected variable costs together with the balance of fixed costs not recovered by the Part A tariff. The proportion of the fixed charge reflected in Part B was determined in consultation with customers; and

(b) for many schemes, a 70% fixed (Part A) and 30% variable (Part B) tariff structure was considered appropriate because it reflected the existing (past) tariff structures.

As SunWater is unable to manage the volume risks (see Chapter 3 – Regulatory Framework), the Part A charge should reflect fixed costs to ensure revenue adequacy, and the Part B charge should reflect only variable costs.

The tariff structures agreed for 2006-11 varied considerably between WSSs (see Chapter 4 – Pricing Framework).

Stakeholder Submissions

SunWater

SunWater (2010b) submitted that the current tariff structure does not provide any meaningful information for irrigators as the consumption charge does not reflect any particular cost.

SunWater (2010d) proposed that the tariff structure be revised so that the fixed charge recovers fixed costs and the consumption charge recovers variable costs – noting that the Ministerial Direction requires the Authority to have regard to the fixed and variable nature of SunWater's underlying costs when considering tariff structures.

SunWater (2010d) submitted that only electricity pumping costs are variable and therefore, the consumption charge should recover only the electricity cost required to pump a ML of water.

Other Stakeholders

BRIG (2010a) suggested that maintenance costs in any single year are unlikely to be linked in a meaningful way to water usage. It is likely that labour is deployed on maintenance when irrigation (operations) is not taking place so there may in effect be an inverse relationship.

CANEGROWERS (2011b) submitted that:

(a) the definition of fixed costs needs to be explored. Variable costs are not only costs that are variable directly in line with water use but are also costs that vary in bands with water use;

(b) a certain renewals, corrective and preventive maintenance program may be necessary for usage above 60%, but could be reduced for usage between 30% and 60%, and again for use below 30%;

(c) costs are variable if they fluctuate year to year, but the fluctuations are not related to water use. For example, labour costs vary significantly year to year in the Bundaberg bulk NSP which suggests that these costs are not fixed for this NSP. Given the breakup of scheme costs for 30 NSPs, the issue is not whether SunWater's costs are fixed overall but whether they are fixed for individual service contracts;

(d) corrective maintenance may not be a fixed cost, noting that it relates to unforeseen breakdowns and could vary significantly year to year; and

(e) contractor costs are not a fixed cost and suggested that true fixed costs for SunWater could be determined by seeing what costs would occur after several years of zero water use with an expectation of zero water use in the next few years.

Cooinda Cotton Co. (2011) noted that previous work states that the breakdown of fixed versus variable costs is 68:32 for the St George WSS. Given that the fundamental nature of the scheme has not changed, there can be no argument that this has now changed to 95:5 as claimed by SunWater.

The MDIA (2011) submitted that the Authority needs to fully investigate the variable costs for the scheme to ensure that all variable costs are included as this will impact on cost allocation.

MSF (2010) does not believe the bulk and distribution NSPs provide transparent costs and clearly identify the fixed and variable costs. MSF does not agree with SunWater's claim that the only variable cost is electricity and believe that other costs would also be variable. For example, when irrigation water use on cane farms is high, it results in increased maintenance costs for irrigation systems. That is, some maintenance costs should be considered variable in addition to electricity.

Other Jurisdictions

In Chapter 4 – Pricing Framework it was noted that:

(a) IPART (2010a) set a two-part tariff comprising a fixed and a usage charge (at a ratio of 70:30) for all metered users, and a one-part tariff for users without a meter for unregulated charges;

(b) Murray Irrigation Limited (MIL) (NWC, 2010) set a fixed to variable charge ratio of approximately 78:6 with the balance (16%) collected through an infrastructure access and other charges;

(c) in Victoria, Southern Rural Water (SRW) (PwC, 2010a) estimated that its costs are approximately 90% fixed and 10% variable, in a normal year. In two of the three pricing districts, all costs are recovered through a fixed charge. In the third district, costs are recovered by a two-part tariff which recovers approximately 80% of costs through the fixed charge with the remainder recovered through a variable charge;

(d) in South Australia, the Central Irrigation Trust (CIT) (NWC, 2010) sets the tariff structure to reflect the cost structure. In 2008-09, CIT employed a two-part tariff with a 20:72 fixed entitlement to usage charge ratio with the balance collected through separate charges; and

(e) the ERA (2006) was directed to determine the most appropriate level and structure of bulk water storage charges to the South West Irrigation Cooperative (Harvey Water). ERA noted that the water storage costs incurred by the Water Corporation are, by nature, largely fixed and therefore are generally independent of the volume of water.

Authority's Analysis

The Authority engaged Indec to provide a view on which of SunWater's costs are most likely to vary with water use for the purpose of determining the most appropriate tariff structure for the 2012-17 regulatory period. Indec's report (2011c) is on the Authority's website.

SunWater did not provide any analysis of cost data for the purpose of establishing which costs were fixed and which were variable.

Indec's review focussed on an analysis of whether:

(a) costs would be expected to vary with water usage. Indec undertook a qualitative assessment based on analysis of cost drivers;

(b) costs historically vary with water usage. For this analysis, Indec performed extensive econometric analysis using available quarterly historical data; and

(c) costs could be varied using Indec's recommended (prudent and efficient) management approach reflecting SunWater's operating environment.

Indec's analysis was undertaken on a scheme wide basis (that is, it included irrigation as well as other customer sectors).

Expected Relationship Between Costs and Water Use

Indec's qualitative assessment was that the costs of water harvesting and storage, water distribution and accounting are semi-variable and the costs of administration are relatively fixed.

<u>Fixed Cost</u>

Indec considered that costs that can be expected not to change with water use are the indirect and overhead costs associated with operations and maintenance activities. These costs include office facilities and equipment, finance and accounting, human resources, legal, IT, procurement, regulatory compliance and company secretarial costs.

At the asset level, Indec noted that some costs associated with large dams, such as conducting routine inspections, monitoring and inspection of embankments, keeping the dam logbook, reporting observations and measurements, storage and flow data are also of a fixed nature.

<u>Variable Cost</u>

Indec indicated that currently, only electricity costs can be expected to be variable [that is, closely and directly related to change in water usage].

<u>Semi-variable Cost</u>

Semi-variable costs are costs which [typically] have a fixed minimum component and a variable component that does not exhibit a constant relationship with incremental units of usage [but do vary in a less direct manner].

Examples of costs that Indec consider are likely to be semi-variable for operations activities include labour, materials, contractor and other costs for:

(a) water scheduling and delivery activities – if there is no water to be delivered, scheduling and delivery activities are not required. Once there is water to be delivered, there is more likely to be a step-wise cost associated with customer water use than a one-to-one cost increase;

(b) water trading activities – water trading only occurs if water delivery occurs. Once there is water to be delivered there will be costs associated with water trading and those costs are likely to increase step-wise rather than one-to-one;

(c) customer service – for new schemes customer acquisition depends on whether there is water to be delivered and the number of new customers depending on the volume of water available. However, customer service costs per customer are likely to increase step-wise rather than one-to-one in relation to the volume of water delivery per customer;

(d) external contract management – activities which depend on SunWater's number of schemes, customers and suppliers;

(e) credit management, public affairs and human resources – activities that relate more strongly to customer numbers than to the volume of water delivery; and

(f) meter reading – generally undertaken at certain intervals when there is water to be delivered, but the increase in meter reading costs is generally related to customer numbers which is only indirectly linked to water use.

Examples of costs that Indec consider are likely to be semi-variable for preventive maintenance activities include labour, material, contractor and other costs for unscheduled condition monitoring, servicing, weed control management costs and desilting.

In contrast to the cost of undertaking scheduled preventive maintenance activities which are generally indirectly variable over time in relation to the volume of customer water use, the cost of unscheduled activities [can] depend on whether there is water to be delivered but not on the volume of water delivery.

Examples of cost types that Indec consider are likely to be semi-variable for corrective maintenance activities include labour, material contractor and other costs for unscheduled correction and emergency management costs. This activity can [typically] only be performed when there is no water in the channel. [There is also a case to consider that these costs may vary with periods of high water usage where breakdowns can be expected.]

<u>Conclusions</u>

On the basis of the analysis above, Indec concluded that with the exception of electricity to pump water (a variable cost), and some indirect and overhead costs (fixed), many other expenditure types can be expected to be semi-variable in relation to variations in customer water use. That is, labour, material, contractor and other costs can be expected to have fixed and variable components in relation to water use but with both typically being more closely related to whether water is delivered rather than to specific water usage.

Actual Cost and Water Use Relationship 2006-11

Indec (2011c) performed an econometric analysis on SunWater's (available) 2006-11 quarterly historical cost data to establish which costs are fixed, variable or semi-variable with water use.

From an econometric point of view, Indec has considered collectively the values of:

(a) R-squared, a measure that summarises the extent to which the statistical relationship that is estimated explains the data. The higher the value of the R-squared, the higher is the explanatory power of the statistical relationship;

(b) significance of F, a measure of the collective statistical significance of all explanatory variables in the regression; and

(c) p-value, a measure of statistical significance of a single explanatory variable, for example water use, in the regression. The lower the value of the p-value, the higher the statistical significance of the explanatory variable, with a p-value of 0.01 or less indicating a very high level of statistical significance and a p-value of 0.1 being a standard cut-off point for statistical significance.

For the purpose of this analysis, Indec only considered the result of regressions where the R-squared is at least 0.60 and significance of F and p-value of 0.05 or less. The Authority performed its own statistical analysis on the same datasets.

Indec's R-squared threshold of 0.60 was justified on the basis that this was the level considered by Indec to be statistically significant. While the Authority noted that an R-squared of at least 0.80 is usually preferred, there is no hard and fast rule with regard to this statistic. R-squared is not necessarily critical and there is no formal criterion for choosing a minimum R squared. Lower values might still be relevant, particularly if p values are lower than 0.05. The Authority therefore accepts that Indec's 0.60 threshold is reasonable for the purposes of this analysis.

The p-value is likely to be the most relevant statistic, particularly if below 0.05, as this could signal a significant relationship between the two variables.

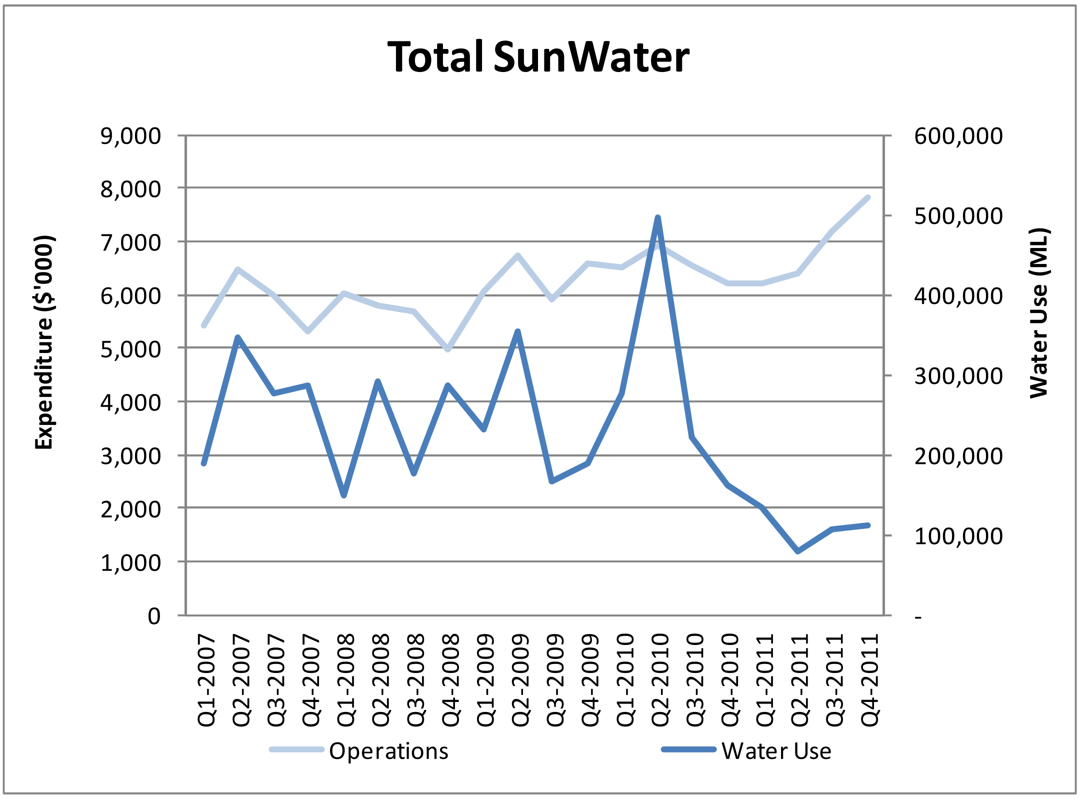
Cost Variability by Activity

Operations

Indec (2011c) analysed quarterly historical data and noted that historically, operations expense in isolation appears unrelated to water use over the 2006-11 period (Figure 7.1). The Authority's analysis showed that the R-square and p-value were 0.0087 and 0.6952 respectively.

Indec found that even after removing the data for the last three quarters of 2011[38], the correlation between overall operations expense and water use between the first quarter (Q1) 2007 and Q1 2011 is weak. Removing the data for the last three quarters resulted in an R-squared and p-value of 0.1091 and 0.1953 respectively.

Figure 7.1: SunWater's Total Operations Costs and Water Use 2006-11 (Nominal)



[38] Indec excluded Q2-2011 to Q4-2011 due to water use in those quarters being unusually low (outlier).

Source: SunWater (2011an); SunWater (2011ao)

Indec noted that operations and maintenance should be considered in total rather than stand-alone, as it is established practice to reallocated personnel within these activities. Cost semi-variability is attributed to the reallocation of operations staff to 'opportunity' maintenance and renewal activities (or operations activities in other scheme) during periods of low water use and the use or otherwise of contractors.

Preventive and Corrective Maintenance

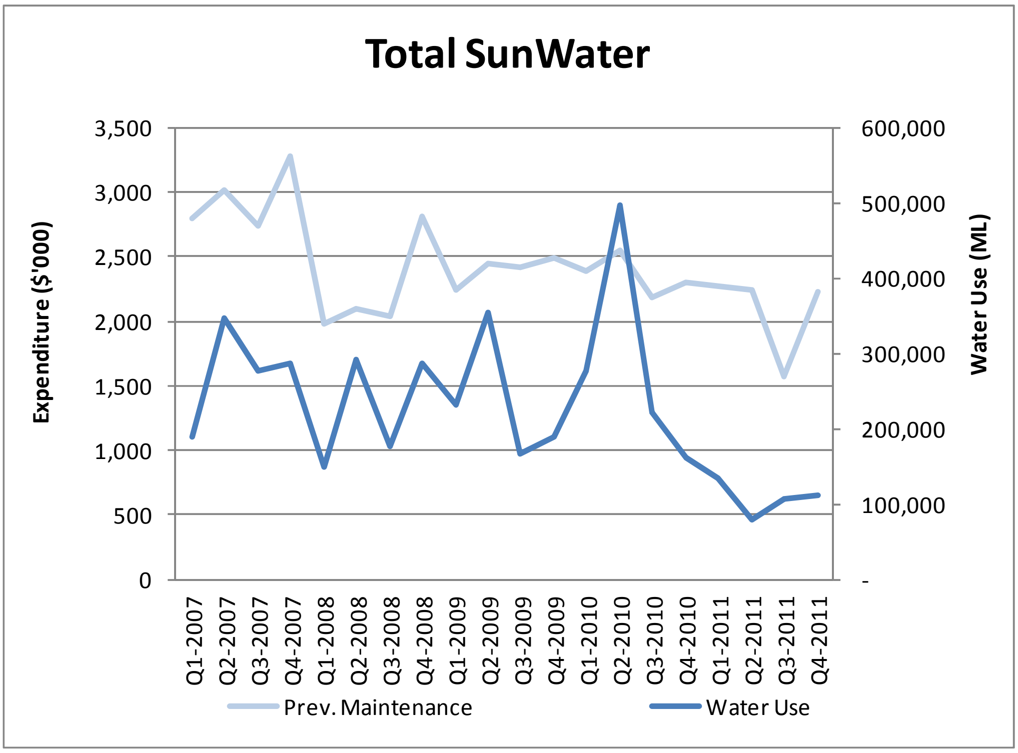
Indec (2011c) analysed quarterly historical data and noted that historically, maintenance expense in isolation appears unrelated to water use over the 2006-11 period (Figure 7.2 for preventive maintenance and Figure 7.3 for corrective maintenance).

For preventive maintenance, the R-squared is 0.265 and the p-value is 0.0201. Although this did not meet Indec's decision rule, Indec considered that historically preventive maintenance expenses varied with water use, albeit weakly.

For corrective maintenance, the R-square and the p-value were 0.022 and 0.5336 respectively, indicating that historically corrective maintenance [in isolation] expense is unrelated to water use.

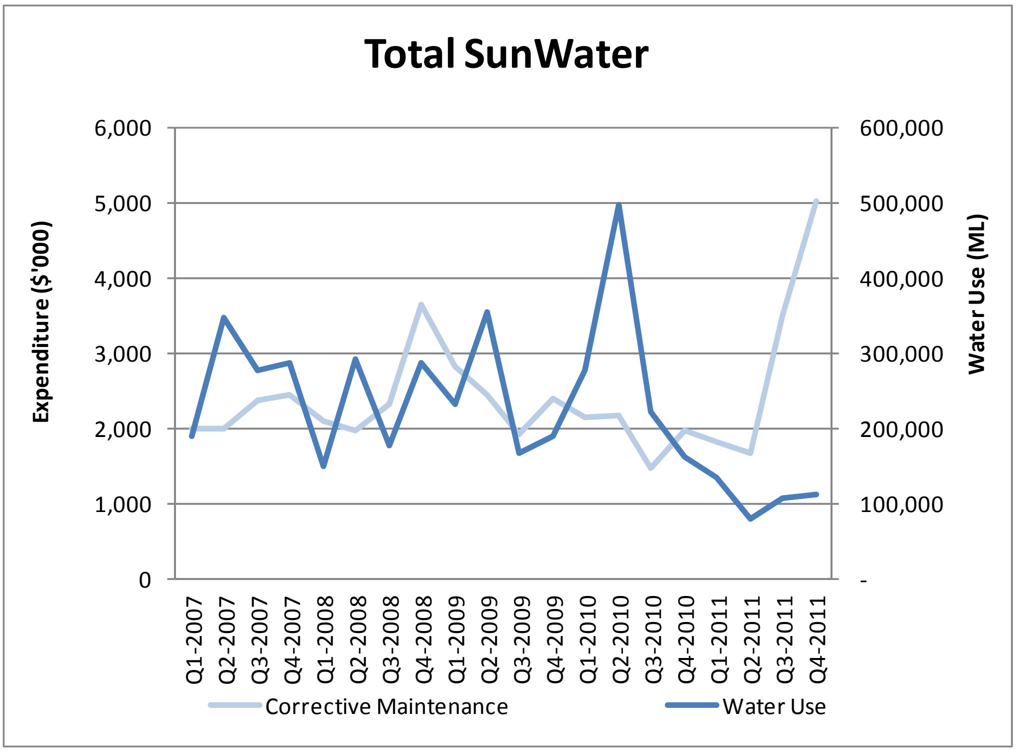
Further, Indec noted that the sudden spike in corrective maintenance expense in the last quarter illustrates the influence of extreme weather events on costs.

Figure 7.2: SunWater's Total Preventive Maintenance Costs and Water Use 2006-11 (Nominal)



Source: SunWater (2011an); SunWater (2011ao)

Figure 7.3: SunWater's Total Corrective Maintenance Costs and Water Use 2006-11 (Nominal)



Source: SunWater (2011an); SunWater (2011ao).

Indec noted that cost semi-variability is attributed to the reallocation of maintenance staff to 'opportunity' maintenance or operations activities either in within the scheme or in other scheme during periods of low water use and the use or otherwise of contractors as well as deferment of non-essential planned and unplanned maintenance activities.

Combined Operations and Maintenance

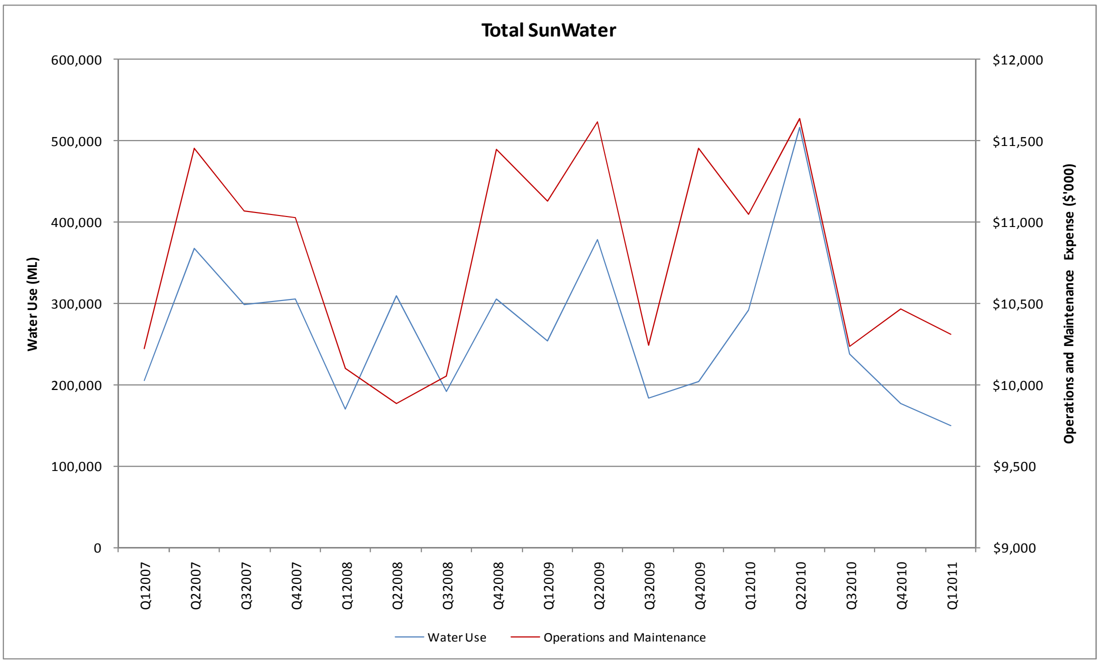
Indec noted that operations and maintenance activities have to be considered as one factor rather than individually to take account of SunWater's established practice of re-allocating personnel within operations and maintenance activities.

Indec noted that operations and maintenance personnel do at times contribute to refurbishment and enhancement activities. However, in periods of low water demand, operations and maintenance personnel are more likely to be diverted to planned and corrective (unplanned) maintenance activities (within the operations and maintenance budget).

After removing the historical data for the last three quarters of 2011, Indec found water use to explain the combined operations and maintenance expense and water use between Q1-2007 and Q1-2010 (Figure 7.4), albeit only moderately. The R-squared and p-value were 0.46 and 0.0026 respectively. While the p value was in line with Indec's decision rule, the R-squared was lower than the threshold.

Based on the [historical] statistical analysis, for 2006-11, Indec found that historically combined operations and maintenance costs are semi variable costs.

Figure 7.4: SunWater's Total Combined Operations and Maintenance Expense and Water Use 2006-11 (Nominal)

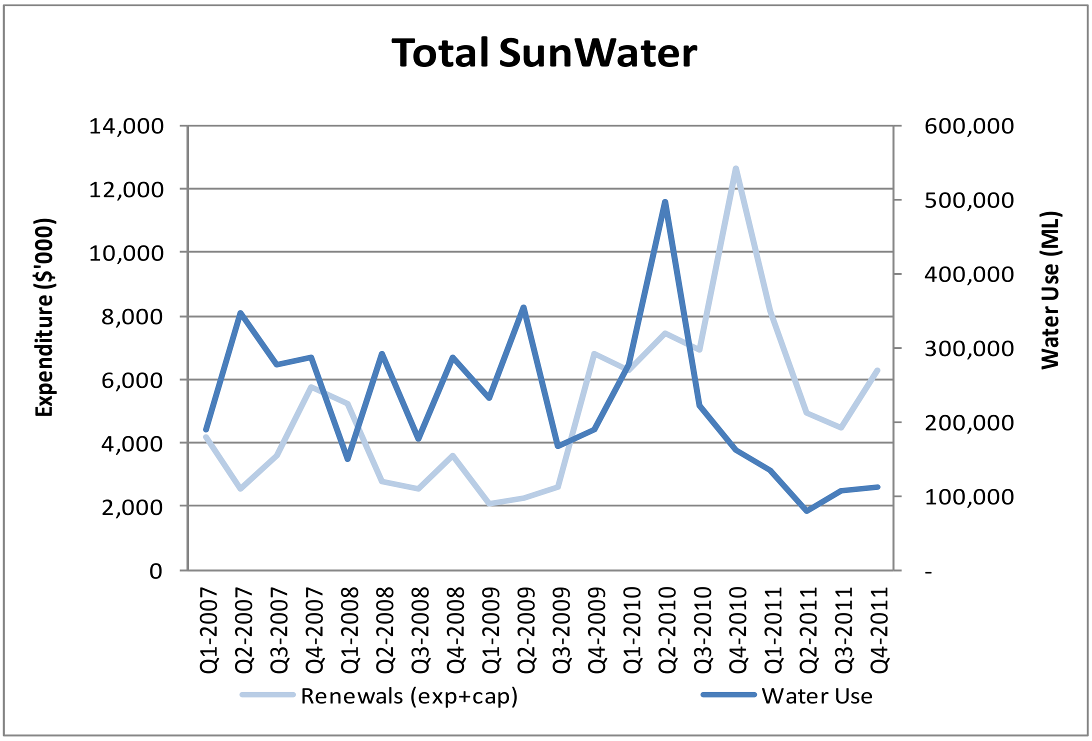


Source: SunWater (2011an); SunWater (2011ao); and Indec (2011c).

<u>*Renewals*</u>

Total quarterly renewals and enhancement expense and water use between Q1-2007 and Q4-2011 are shown in Figure 7.5. Indec noted that the two time series depicted in Figure 7.5 appear to display a similar pattern, albeit out of phase by two quarters. Specifically, renewals and enhancements expense appears to lag water use by two quarters. Indec indicated this could be due to a timing difference in processing renewals expenses or a reaction time lag to adjusting the program in response to changes in water use.

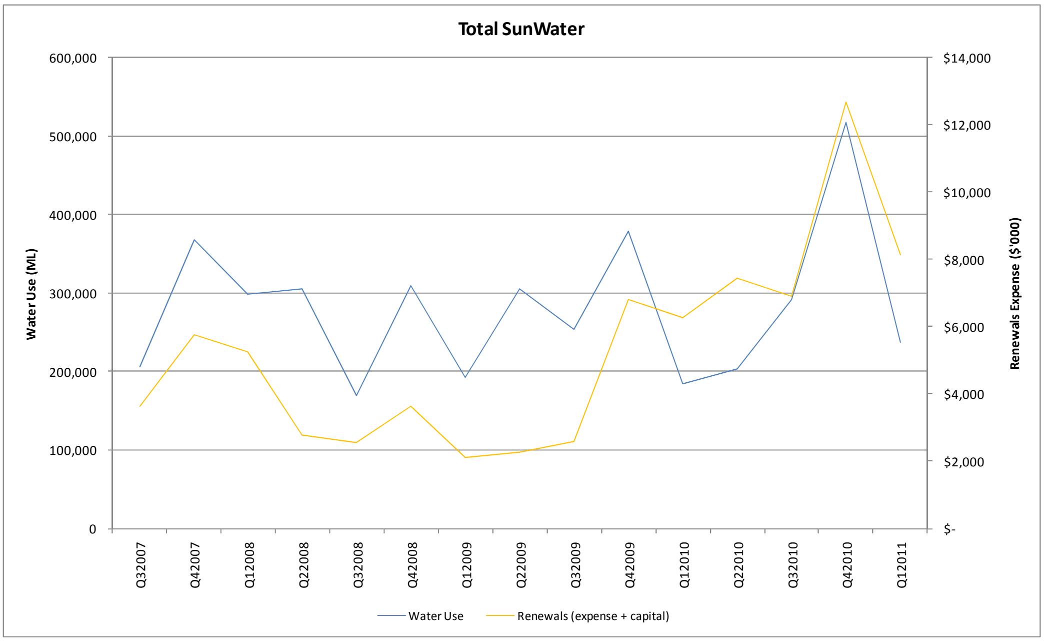
Figure 7.5: SunWater's Total Renewals Costs and Water Use 2006-11 (Nominal)



Source: SunWater (2011an); SunWater (2011ao).

Accordingly, Indec's analysis was based on removing the historical data for the last three quarters of 2011 and advancing the water use time series by two quarters. Indec found some correlation between renewals and enhancements expense and water use in the period Q3-2007 to Q1 -2011 (Figure 7.6).

Figure 7.6: SunWater's Total Renewals Costs and Water Use 2007-11 (Nominal)



Source: SunWater (2011an); SunWater (2011ao); and Indec (2011c).

The regression analysis outputs included an R-squared of 0.33 and p-value of 0.025. Indec concluded that, although the statistical results did not meet the criteria for a significant relationship, there is evidence of some weak correlation between renewals and water use.

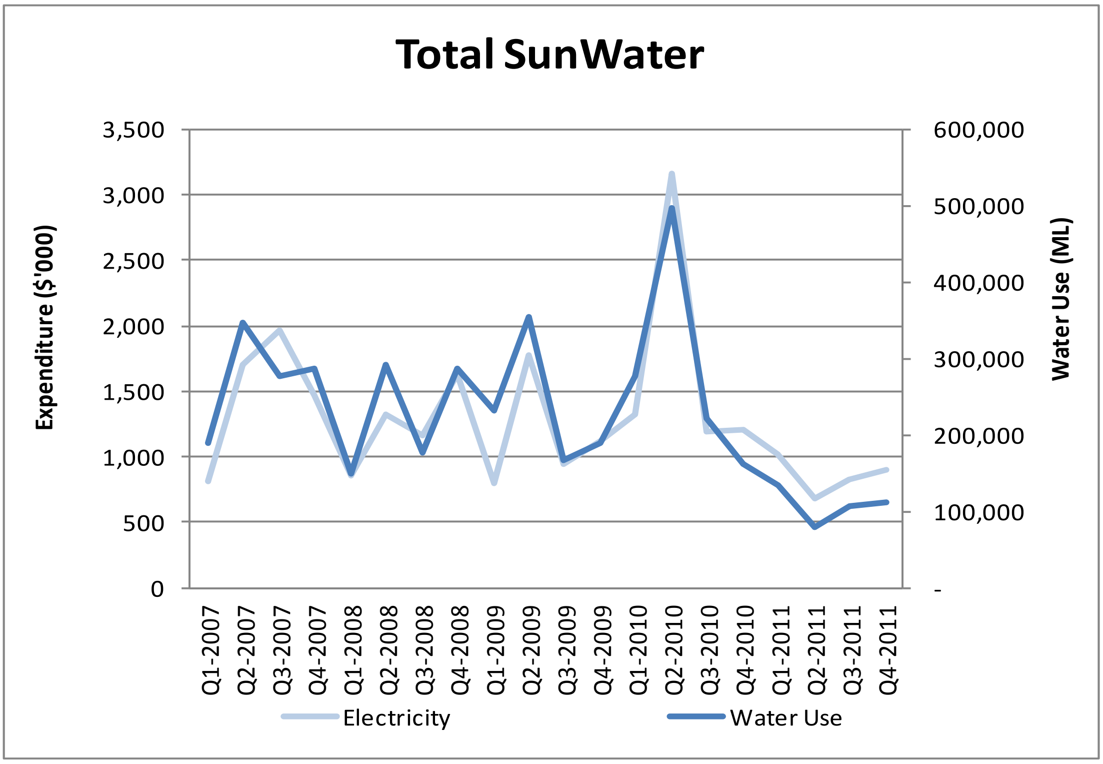
Indec also noted that cost semi-variability is attributed to the reallocation of labour to 'opportunity' renewals activities either within the scheme or in other schemes during periods of low water use and the use or otherwise of contractors as well as deferment of planned renewal activities.

Electricity

At a service contract level, Indec found that for 2006-11, electricity costs are variable (with water use) for the following five distribution systems: Bundaberg, Burdekin-Haughton, Theodore, Eton and Mareeba-Dimbulah (to supply the Paddy's Green area). In addition, Indec found that electricity costs are variable with water use in two bulk WSSs: Upper Condamine and Eton.

Electricity cost at SunWater level varied with water use over the same period (Figure 7.7).

Figure 7.7: SunWater's Total Electricity Costs and Water Use 2006-11 (Nominal)



Source: SunWater (2011an); SunWater (2011ao).

Indec noted that in the other three distribution systems (Emerald, Lower Mary and St George) electricity costs are only semi-variable with water use, most likely because water is more often delivered using gravity (not electricity).

Indec concluded that electricity costs are variable costs in contract areas where a significant proportion of water supply is pumped.

Cost Variability by Expenditure Type

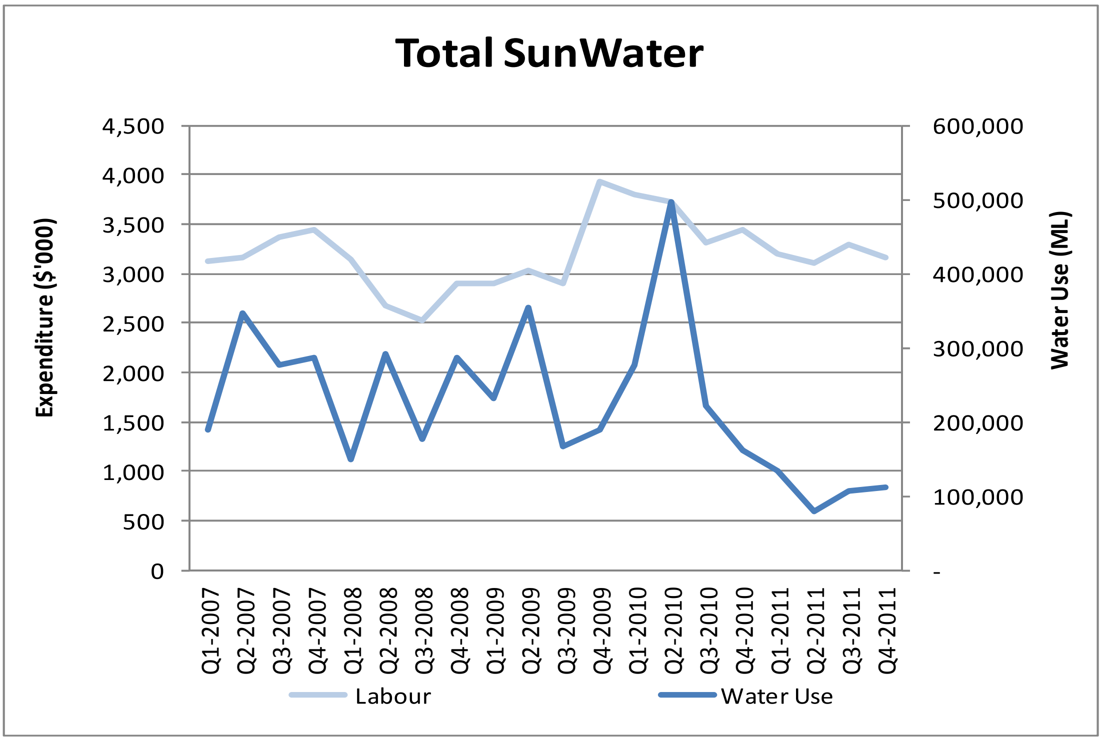
(a) Labour

Indec noted that the impact of varying operations and maintenance processes and sub-activities is likely to primarily affect labour expenses.

Historical labour cost behaviour is based on the approach of maintaining a relatively stable permanent direct operations and maintenance workforce. The workforce has historically been dimensioned on an assumed base workload. Peak workloads are covered by expanding the use of casual labour and contractors. Base workloads include budgeted operations activities, planned and corrective maintenance, and activities subject to a priority ranking.

Total SunWater quarterly labour cost and water use for the period 2006-11 is illustrated in Figure7.8.

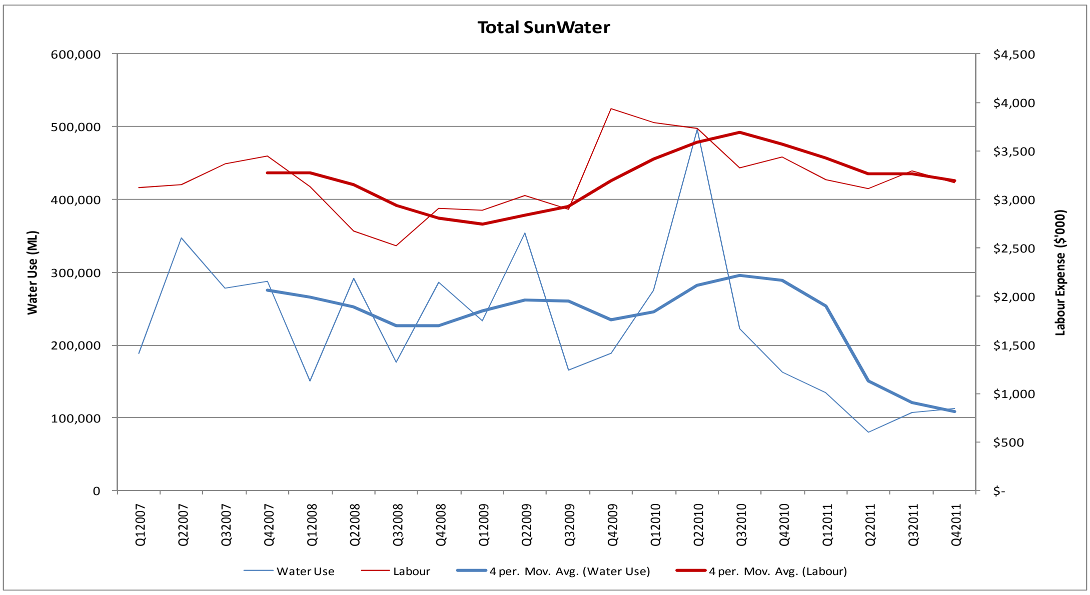
Figure 7.8: SunWater's Total Labour Costs and Water Use, Base and Moving Average Time Series 2006-11 (Nominal)



Source: SunWater (2011an); SunWater (2011ao).

Indec noted that although the base data shows little or no correlation with water use, the quarterly-moving averages of the two time series show a similar pattern (Figure 7.9).

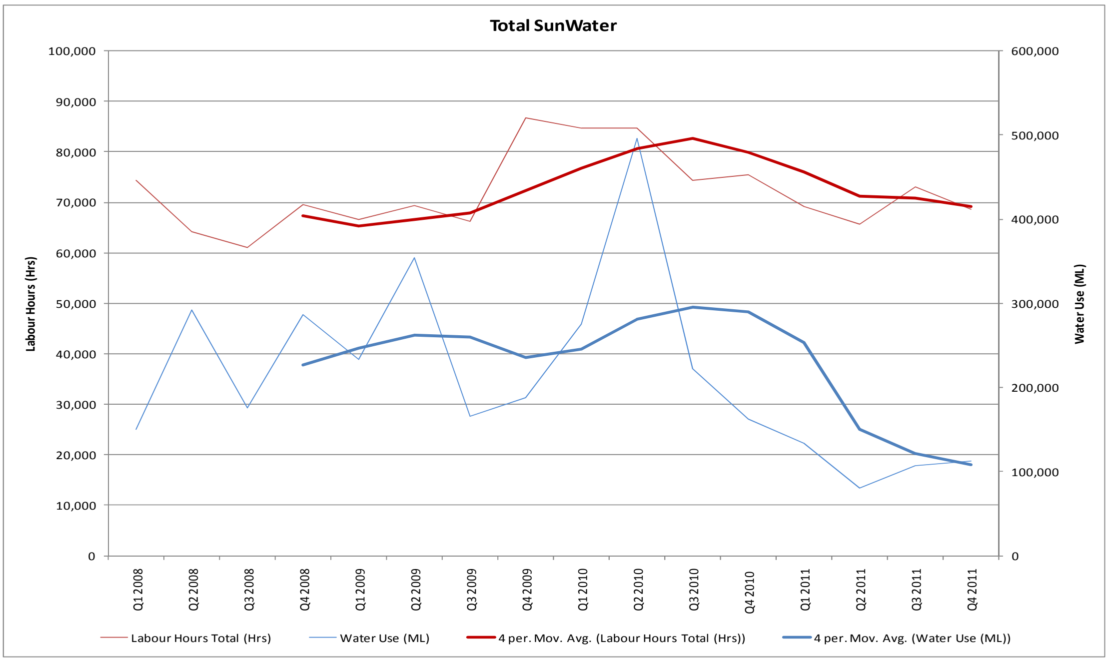
Figure 7.9: SunWater's Total Labour Costs and Water Use, Base and Moving Average Time Series 2006-11 (Nominal)



Source: SunWater (2011an); SunWater (2011ao) and Indec (2011c).

Indec found that this pattern is repeated in the comparison of labour hours and water use for the Q1-2008 to Q4-2011 (Figure 7.10) and concluded that SunWater is already varying labour with water use, albeit after a time lag of two to three quarters. The regression analysis outputs include an R-square of 0.49 and a correlation coefficient of 0.7, indicating that historically labour hours vary with water use.

Figure 7.10: SunWater's Total Labour Hours and Water Use, Base and Moving Average Time Series 2008-11 (Nominal)



Source: SunWater (2011an, 2011ao) and Indec (2011c).

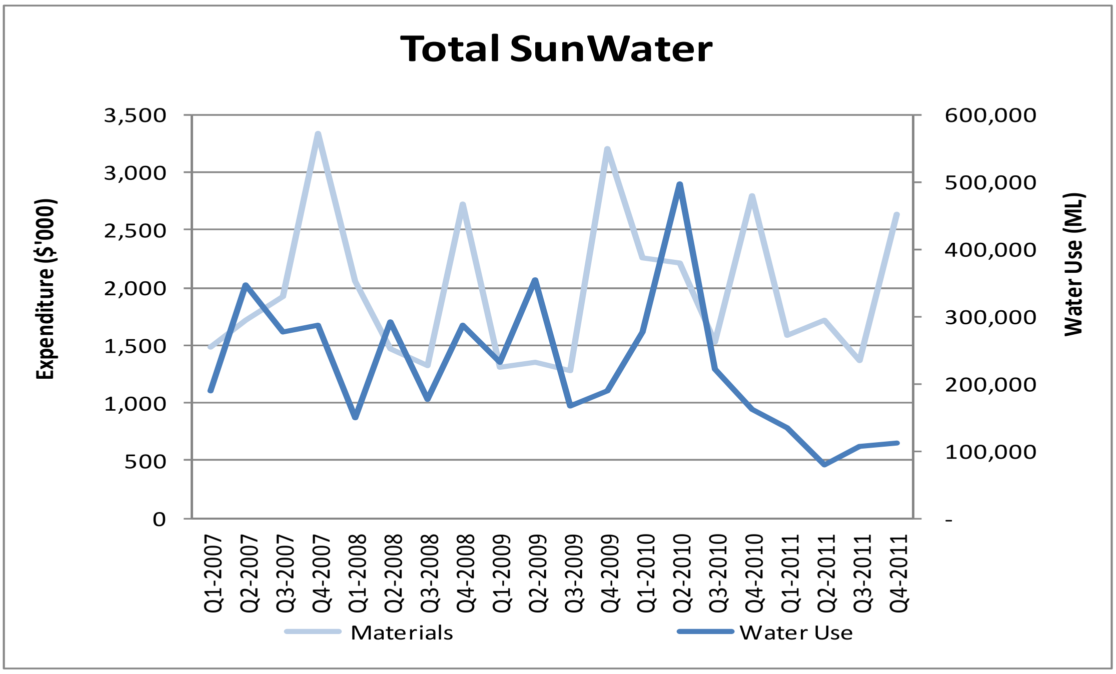
This was confirmed with Indec's review of Sources of Labour Bookings (Resource Centres and Corporate) as compared to water use in regional centres. Over the four-year period, annual bookings were correlated with water use, although Indec was unable to provide any statistical analysis due to the availability of only four annual observations.

Based on these findings, Indec concluded that historical operations, preventive and corrective labour expense are semi-variable costs. Indec note that it is clear from the events of 2011 that extreme weather events influence corrective maintenance labour.

(b) Materials

Indec did not directly compare materials costs with water use. However, Indec found that a reasonable correlation existed between materials and labour expenses for the period Q1-2007 and Q4-2011 (Figure 7.11).

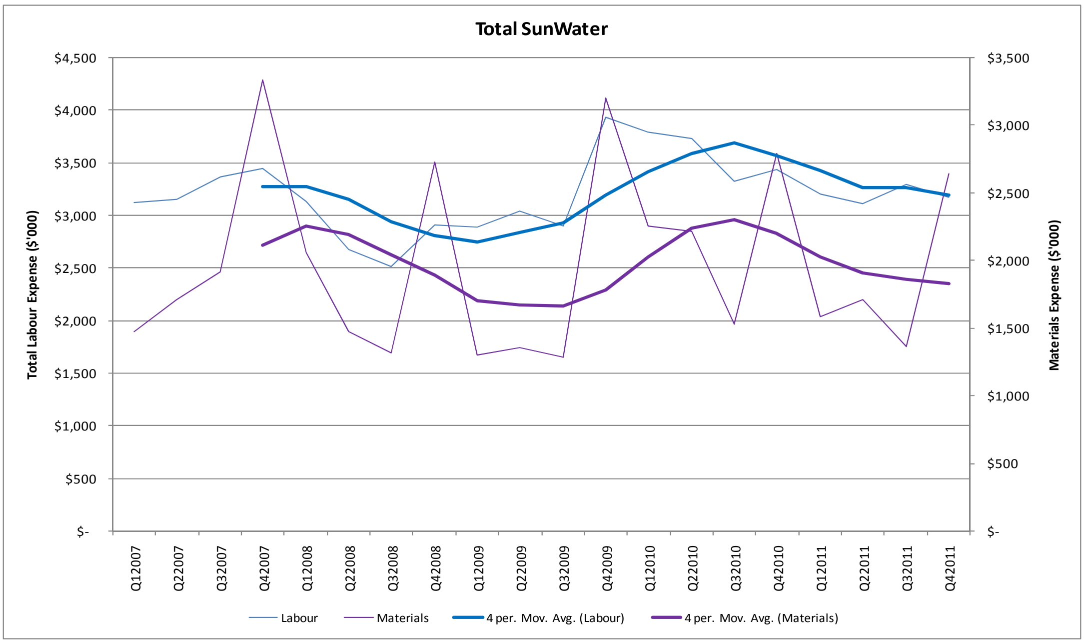
Figure 7.11: SunWater's Total Materials Costs and Water Use 2006-11 (Nominal)



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

However, when the four-quarter moving average of materials costs is plotted against the four-quarter moving average of labour costs, the two time series are more closely related (Figure 7.12).

Figure 7.12: SunWater's Total Materials and Labour Costs, Base and Moving Average Time Series 2006-11 (Nominal)



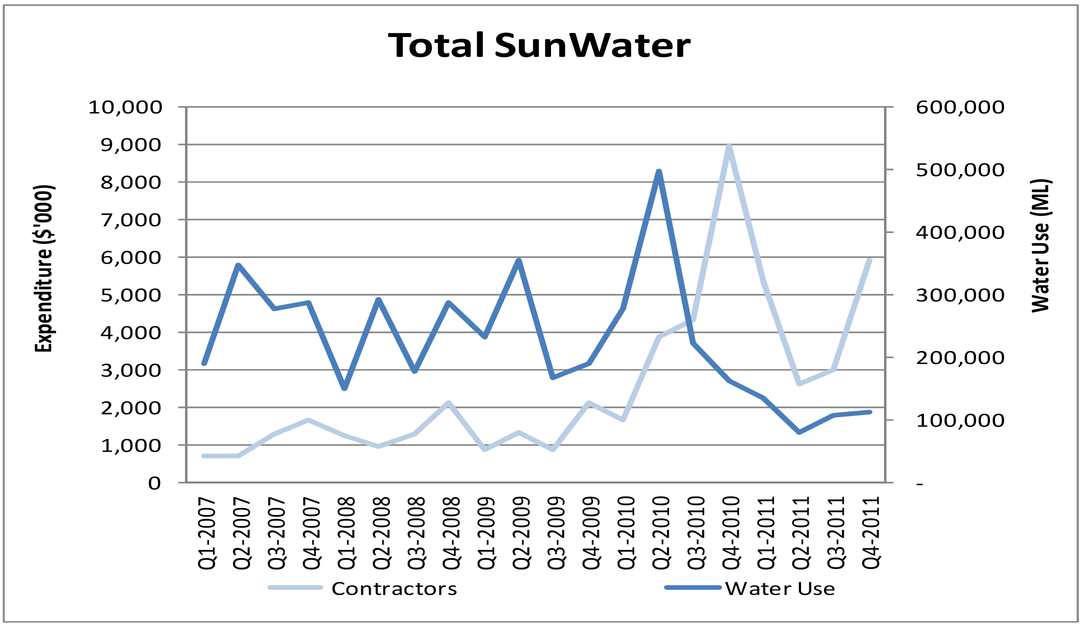
Source: SunWater (2011an); SunWater (2011ao) and Indec (2011c).

Based on its findings that labour costs are semi-variable and the correlation between materials and labour costs, Indec concluded that materials costs are semi-variable costs.

(c) Contractors

From the total quarterly contractors cost and water use data between Q1-2007 and Q4-2011 shown in Figure 7.13, the two-time series do not appear to follow a similar pattern.

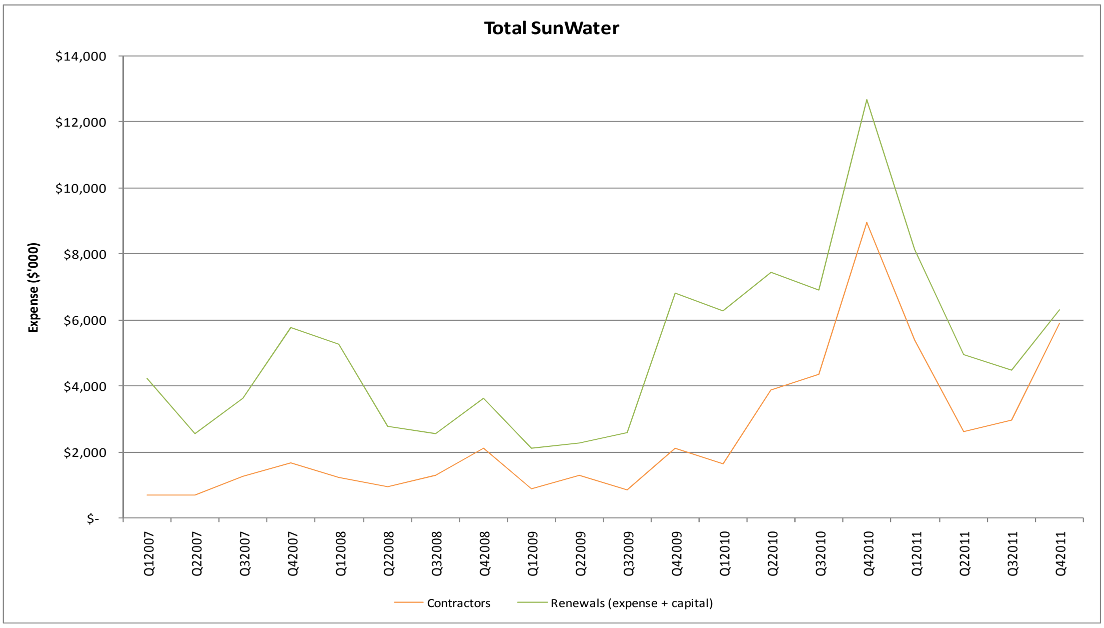
Figure 7.13: SunWater's Total Contractor Costs and Water Use 2006-11 (Nominal)



Source: SunWater (2011an) and SunWater, (2011ao).

However, Indec found that contractor expense varied with renewals and enhancements costs. Total SunWater quarterly renewals and enhancements, and contractor costs for the period Q1-2007 to Q4-2011 are shown in Figure 7.14. As would be expected, this exhibited a relatively strong relationship with an R squared of 0.82 and a p-value of 0.00.

Figure 7.14: SunWater's Total Renewals and Contractor Costs 2006-11 (Nominal)



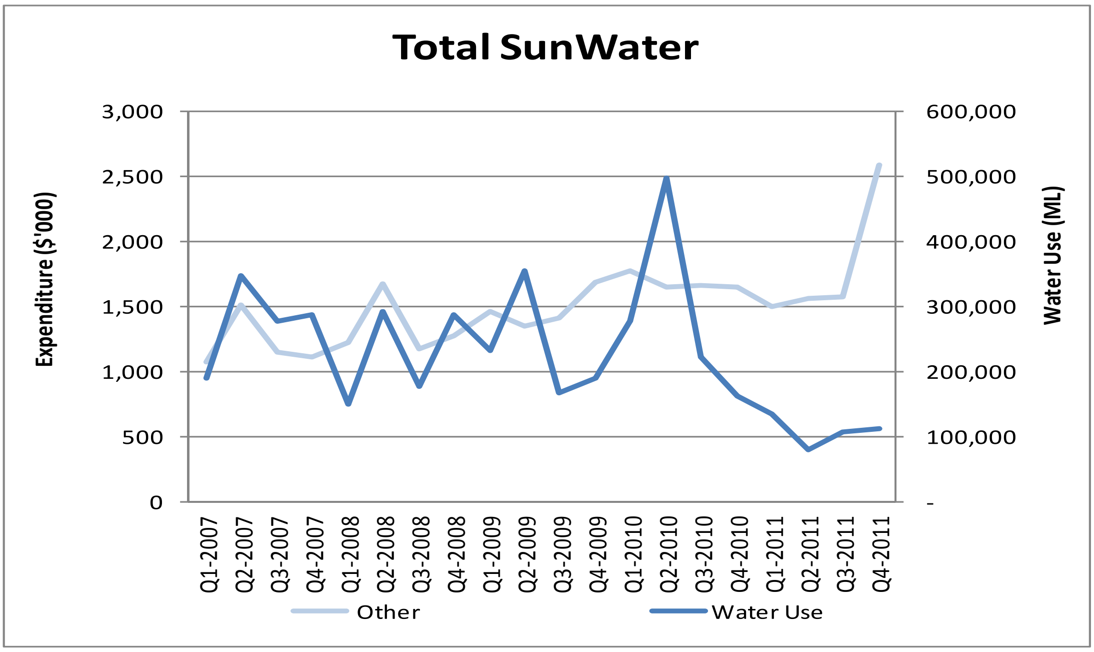
Source: SunWater (2011an); SunWater (2011ao) and Indec (2011c).

Consequently, on the grounds that renewals were semi-variable costs, and contractors costs are closely related to renewals, Indec concluded that SunWater's historical contractors costs are semi-variable costs.

Other Direct Costs

As shown in Figure 7.15, other direct costs for SunWater as a whole did not appear to relate to variations in water use over the same period.

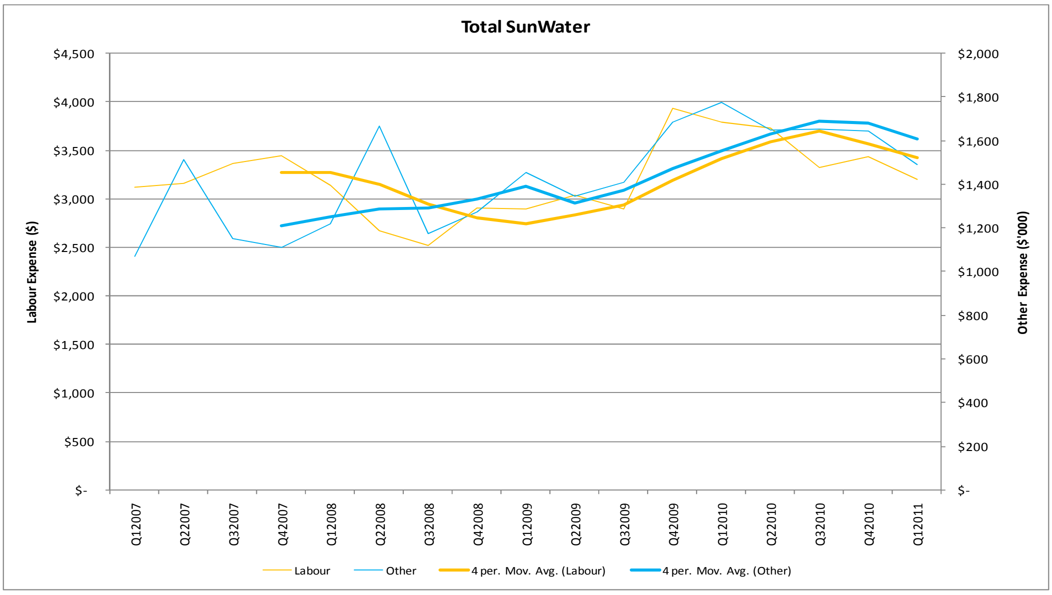
Figure 7.15: SunWater's Total Other Costs and Water Use 2006-11 (Nominal)



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

However, based on its analysis, Indec found that 'other' direct cost appears to vary to some degree with labour costs over the same period (Figure 7.16). However, regression analysis of the four-period moving labour and 'other' expenses averages suggested a weak correlation between the variables.

Figure 7.16: SunWater's Total 'Other' and Labour Costs 2006-11 (Nominal)



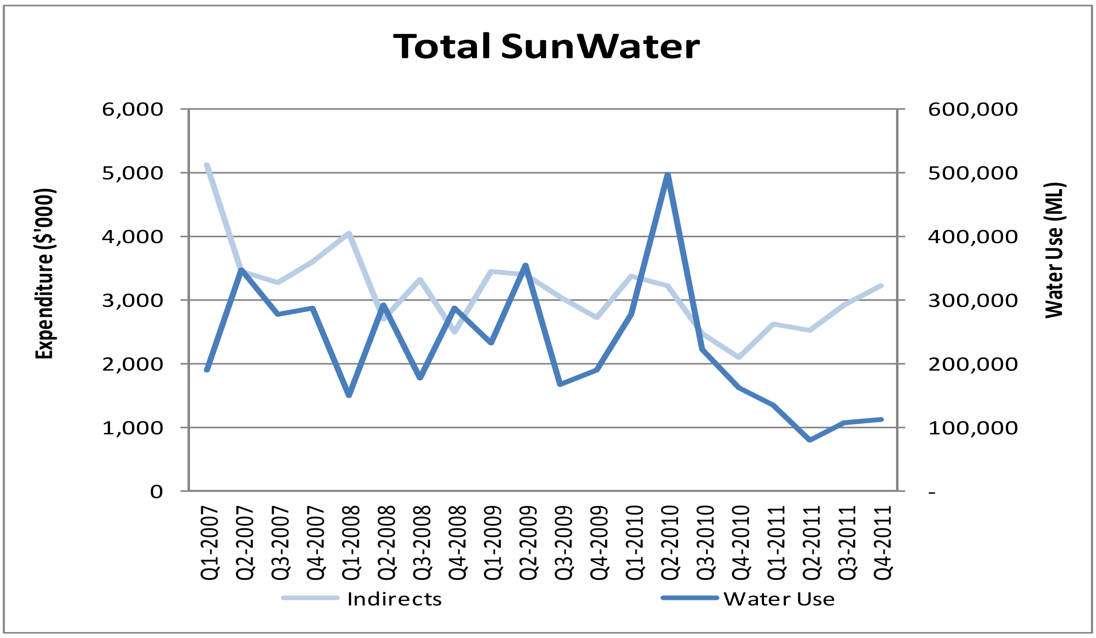
Source: SunWater (2011an); SunWater (2011ao) and Indec (2011c).

Indec has previously concluded that labour costs are semi-variable costs. Consequently, Indec concluded that SunWater's historical 'other' direct costs are also semi-variable costs.

Indirect costs

As shown in Figure 7.17, indirect costs for SunWater as a whole did not appear to relate to variations in water use over the same period.

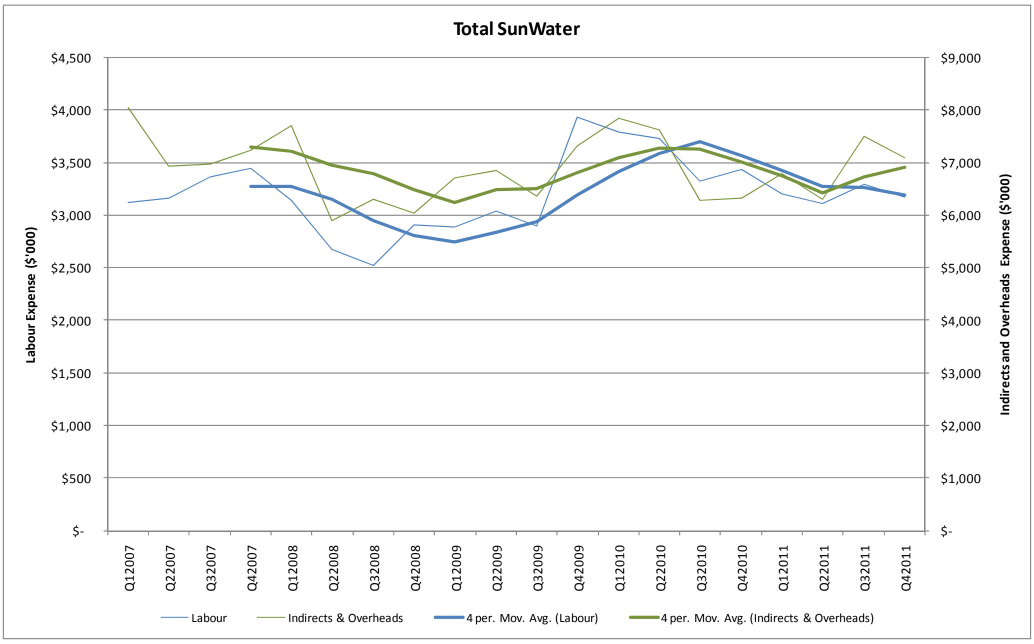
Figure 7.17: SunWater's Total Indirect Costs and Water Use 2006-11 (Nominal)



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

However, based on its analysis, Indec found that indirect and overhead costs appear to vary to some degree with labour costs over the same period, with an R-squared of 0.66 and a correlation coefficient of 0.81 (Figure 7.18).

Figure 7.18: SunWater's Total Indirect and Overhead Costs and Labour Costs 2006-11 (Nominal)



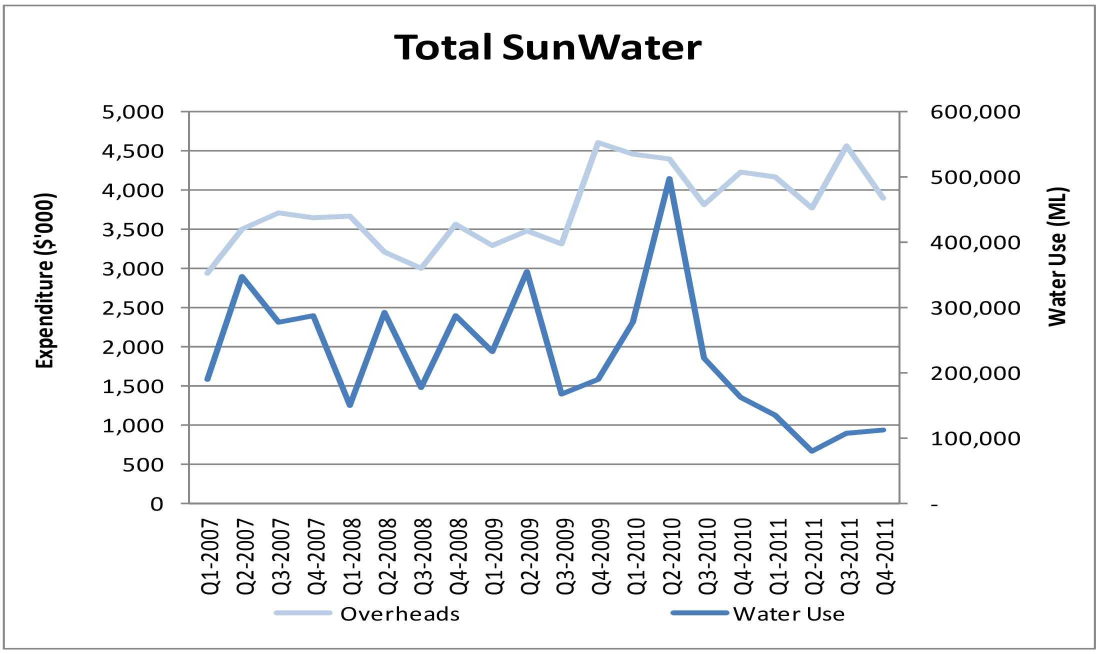
Source: SunWater (2011an); SunWater (2011ao) and Indec (2011c).

Indec has previously concluded that labour costs are semi-variable costs. Consequently, as indirect and overhead costs were found to be moderately correlated with labour costs, Indec concluded that SunWater's indirect and overhead costs are semi-variable costs.

Overhead Costs

As shown in Figure 7.19, overhead costs for SunWater as a whole did not appear to relate to variations in water use over the same period.

Figure 7.19: SunWater's Total Overheads Expenditure and Water Use 2006-11 (Nominal)



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

However, based on its analysis, Indec found that indirect and overhead costs appeared to vary to some degree with labour costs over the same period (Figure 7.18 above).

Indec already concluded that labour costs are semi-variable costs. Based on the correlation between indirect and overhead costs and labour costs, Indec concluded that SunWater's indirect and overhead costs are semi-variable costs.

Summary of Actual Costs and Water Use Relationship

In summary, therefore, Indec found that for 2006-11 based on quantitative analysis the costs associated with the following activities varied (or not) as follows (Table 7.4).

Table 7.4: Summary of Variability by Activity

Activity	*Cost Variability with Water Use at Scheme Level*	*Comment*
Operations	Semi-variable	Cost semi-variability is attributed to the: reallocation of operations staff to 'opportunity' maintenance and renewal activities (or operations activities in other scheme) during periods of low water use and the use or otherwise of contractors.
Preventive Maintenance	Semi- variable	Cost semi-variability is attributed to the reallocation of maintenance staff to 'opportunity' maintenance or operations activities either in within the scheme or in other scheme during periods of low water use and the use or otherwise of contractors as well as deferment of non-essential planned and unplanned maintenance activities.
Corrective Maintenance	Semi-variable	Cost semi-variability is attributed to the reallocation of maintenance staff to 'opportunity' maintenance or operations activities either in within the scheme or in other scheme during periods of low water use and the use or otherwise of contractors as well as deferment of non-essential planned and unplanned maintenance activities.
Renewals	Semi-variable	Cost semi-variability is attributed to the reallocation of labour to 'opportunity' renewals activities either in within the scheme or in other scheme during periods of low water use and the use or otherwise of contractors as well as deferment of planned renewal activities.
Electricity	Variable	Indec found that electricity cost is a variable cost for 5 of the distribution systems and 2 of the bulk schemes.

Source: Indec (2011c).

Accordingly, Indec has concluded that all costs by activity were variable to some extent with water use in 2006-11. An exception is electricity, which is generally highly variable with water use in five distribution systems and two bulk schemes. In three distribution systems electricity pumping costs are semi-variable at a scheme level due to a preponderance of gravity feed.

Most cost items are categorised as semi-variable which means they contain an element of fixed costs as well as a component that varies with water use. Indec has not been able to separate semi-variable costs between their fixed and variable components.

In summary, Indec also found that for 2006-11 based on quantitative analysis the costs associated with the following expenditure types varied (or not) as follows (Table 7.5).

Table 7.5: Summary of Variability by Activity

Expenditure Type	*Cost Variability with Water Use at Scheme Level*	*Comment*
Labour	Semi-variable	Cost semi-variability is attributed to the reallocation of labour during periods of low water use within and between schemes
Materials	Semi-variable	Cost semi-variability is established indirectly through the correlation between materials costs and labour costs
Contractors	Semi-variable	Cost semi-variability is established indirectly through the correlation between contractor costs and renewals and enhancements costs
Other Direct Costs	Semi-variable	Cost semi-variability is established indirectly through the correlation between other direct costs and labour costs
Indirect Costs	Semi-variable	Cost semi-variability is established indirectly through the correlation between indirect costs and labour costs
Overhead Costs	Semi-variable	Cost semi-variability is established indirectly through the correlation between overhead costs and labour costs

Source: Indec (2011c).

Indec's Recommended (Prudent and Efficient) Cost and Water Use Relationship

In addition to qualitative and quantitative analysis, Indec provided an analysis based on a framework taking into account SunWater's operating environment. This involved determining a recommended management approach to deliver services in a prudent and efficient manner while taking into account operating and other restraints. For example, the ability to vary expenditures is constrained by the need to:

(a) maintain a minimum critical mass of staff on site to respond to operational events to meet customer service standards;

(b) meet occupational health and safety requirements that preclude staff working alone in some areas; and

(c) have available personnel with the skills and safety certificates required to work in certain environments.

Indec considered its recommended approach to cost management by using its expertise in reviewing and benchmarking utility industries, its knowledge of the SunWater business operations gained during the previous irrigation price path review (2005-06) and more recently as part of the current price investigation, and conducting interviews with SunWater staff.

Indec proposed alternatives to managing costs including reducing staffing levels below the current minimum level assumed necessary by SunWater. For example, the use of 'flying' gangs, 'mothballing' of schemes or restricting maintenance activity to 'stand-by' maintenance on equipment and assets.

These measures, however, would require customers to agree to a reduction in customer service levels to provide, for example, a [longer] start-up period before water can be delivered after a rainfall event. The recommended management approach considered by Indec proposed resource reallocation while ensuring that customer service level can be maintained.

Indec identified for each expenditure activity and type a low and high range of fixed costs with respect to delivered water volumes. The difference between high and low ranges was deemed to be a variable cost. Indec established these amounts by reviewing for each broad cost category, the areas where costs could be reduced during times of low demand.

Indec's view is that in times of low water demand, operations activities can be reduced. The reduction may be the result of:

(a) selective delegation of certain operational activities to water users;

(b) re-allocation of operations personnel to other service contracts;

(c) re-allocation of operations personnel to O&M or R&E activities that would otherwise carried out by contractors (temporarily reduce the use of contractors and casual labour);

(d) reduction of direct bookings by corporate staff during period of low demand; and

(e) reduction in overtime and TOIL (Time Off In Lieu) during period of low demand.

The extent to which the above measures are practicable is likely to vary for each area and service contract. Indec acknowledged that such a measure may impact on the 'core' establishment of operations staff.

In terms of maintenance, Indec's view is that in times of low water demand, maintenance activities can be reduced as a result of:

(a) deferment of non-essential planned and unplanned maintenance activities;

(b) re-allocation of maintenance personnel to other service contracts;

(c) re-allocation of maintenance personnel to O&M or R&E activities that would otherwise carried out by contractors (temporarily reduce the use of contractors and casual labour); and

(d) reduction in overtime and TOIL (Time Off In Lieu) during period of low demand.

In regard to renewals, Indec's view is that in times of low water demand, renewals and enhancements expense can be reduced as a result of:

(a) deferment of some priority 2 refurbishment and enhancements activities;

(b) re-allocation of operations and maintenance personnel to O&M or R&E activities that would otherwise carried out by contractors (temporarily reduce the use of contractors and casual labour);

(c) review of planned scope of refurbishments and enhancements in that budget year; and

(d) phasing of renewals and enhancements works over a longer period.

On this basis, Indec also identified a range of variable costs for each cost component. Indec considered a number of factors, some which are unique to each of the 30 irrigation service contracts, due to differing operating characteristics and/or operating assets.

Bulk WSSs

On the basis of its (above) analysis, Indec indicated a range a range of fixed to variable cost ratios for each bulk system. The range provided for some discretion with respect to tolerances typically applicable to these types of assessments and any transition period which may be required to achieve optimal approach to varying water use.

Indec recommended that for SunWater's bulk WSSs, an appropriate fixed/variable ratio ranges from 96% fixed and 4% variable to 89% fixed and 11% variable.

Operations costs were estimated to range from 90% to 70% fixed and 10% to 30% variable,

Electricity costs were considered to be a fixed cost with respect to bulk services, but were generally considered to be immaterial, except in Barker Barambah and Upper Condamine where electricity is a significant variable cost.

Preventive and corrective maintenance were estimated to range between 90% and 70% fixed with 10% to 30% variable based on bulk water deliveries.

Renewals expenditure was assessed as 75% fixed based on water volumes delivered with 25% of costs subject to either review or deferral with a change in water deliveries.

Revenue offsets were not related to water use and were 100% fixed.

Based on qualitative and quantitative analysis of SunWater's historical and forecast data, as well as Indec's qualitative analysis of the proportion of forecast cost that should be able to be varied within each cost category, Indec recommended the tariff structures as detailed in Table 7.6. These tariff structures refer to the proportion of revenue recovered through the fixed and variable charges.

Indec also provided a range based an interpretation of minimum level of costs that could be considered variable, up to a maximum based on its analysis using the framework described above.

Table 7.6: SunWater's Fixed and Variable Tariffs 2010-11 and Indec's Recommended Fixed and Variable Cost Apportionment for Bulk WSSs 2012-17

Service Contract	*SunWater 2010-11 Tariff*		*Minimum*		*Recommended*		*High*	
	Fixed	*Variable*	*Fixed*	*Variable*	*Fixed*	*Variable*	*Fixed*	*Variable*
Barker Barambah[1]	70% (54%)	30% (46%)	94%	6%	90%	10%	87%	13%
Bowen Broken	81%	19%	96%	4%	93%	7%	89%	11%
Boyne River & Tarong	70%	30%	95%	5%	91%	9%	87%	13%
Burdekin-Haughton[2]	17% (61%)	83% (39%)	96%	4%	93%	7%	90%	10%
Bundaberg	52%	48%	97%	3%	93%	7%	90%	10%
Callide Valley	32%	68%	96%	4%	92%	8%	89%	11%
Chinchilla Weir	65%	35%	95%	5%	90%	10%	86%	14%
Cunnamulla	70%	30%	95%	5%	91%	9%	86%	14%
Dawson Valley	62%	38%	96%	4%	92%	8%	88%	12%
Eton Bulk Supply	n/a	n/a	96%	4%	93%	7%	90%	10%
Lower Fitzroy	100%	0%	96%	4%	92%	8%	88%	12%
Lower Mary	70%	30%	96%	4%	92%	8%	89%	11%
Macintyre Brook	80%	20%	97%	3%	94%	6%	91%	9%
Maranoa	100%	0%	96%	4%	91%	9%	87%	13%
Mareeba–Dimbulah[3]	28% (67%)	72% (33%)	95%	5%	90%	10%	86%	14%
Nogoa-Mackenzie	47%	53%	96%	4%	92%	8%	89%	11%
Pioneer River	70%	30%	97%	3%	94%	6%	90%	10%
Proserpine River	59%	41%	94%	6%	89%	11%	84%	16%
St George	70%	30%	97%	3%	95%	5%	92%	8%
Three Moon Creek	70%	30%	96%	4%	93%	7%	90%	10%
Upper Burnett [4]	70% (51%)	30% (49%)	96%	4%	93%	7%	90%	10%
Upper Condamine[5]	70% (67%, 0%)	30% (33%, 100%)	93%	7%	91%	9%	89%	11%
Bulk Supply Average			**96%**	**4%**	**93%**	**7%**	**89%**	**11%**

Source: SunWater (2006b) and Indec (2011c). Note: (1) the numbers in bracket are applicable to Redgate Re-lift section (2) the numbers in the bracket are applicable to the Giru Groundwater Area (3) the numbers in bracket are applicable to Walsh River and supplemented streams (4) the numbers in bracket are applicable to John Goleby Weir and (5) the numbers in bracket are applicable to the Sandy Creek/Condamine River and North Branch – Risk A section.

Indec's analysis showed that under its recommended approach, across SunWater's bulk systems, on average, 93% of costs are fixed and 7% are variable. However, since these proportions vary from system to system, Indec did not recommend the application of broad-brush figures for all systems, as doing so would produce cost cross-subsidisation between schemes.

At the individual bulk scheme level, the Authority's separate [historical] statistical analysis on operations [in isolation of maintenance], maintenance [in isolation of operations] and electricity at sub-activity and expenditure type level generally found no relationship between expenditure and water use except for electricity expense for the schemes where Indec also found to be variable.

Moreover, the Authority noted the semi-variability or variability of indirect and overhead costs, which seems to arise due to the use of direct labour costs (DLC) as the cost allocation base. The Authority also found renewals to be fixed costs in relation to water use.

The Authority recognises the small data sets available and the need to exercise considerable judgement to establish the proportion of costs that can be expected to be fixed and variable.

It is also persuaded by Indec's broad findings that some bulk expenditures (particularly by type) do suggest some variability of costs in bulk WSSs. The Authority proposes to accept Indec's recommendations.

The Authority accepts that Indec's estimates of fixed cost are below those submitted by SunWater, that is, SunWater has submitted that all costs in bulk (and distribution) systems, with the exception of electricity pumping costs for the purpose of delivering water, are fixed. SunWater implies that in 20 of the 22 bulk WSSs, all costs are essentially fixed while in two bulk schemes there are appreciable electricity pumping costs for the purpose of delivering water, which SunWater and Indec consider to be variable.

Distribution Systems

On the basis of its (above) analysis, Indec indicated a range a range of fixed to variable cost ratios for each distribution system. The range provided for some discretion with respect to tolerances typically applicable to these types of assessments and any transition period which may be required to achieve optimal approach to varying water use.

Indec considered that for SunWater's distribution systems:

(a) operating costs range between 85% and 65% fixed with 15% to 35% variable with respect to water deliveries for more automated schemes, such as the Burdekin-Haughton, which have a higher inherent fixed cost base and consequently lesser opportunities to reduce operating costs than in those systems with a greater degree of labour involved in their operation.

    For distribution schemes with a lesser degree of automation and a greater degree of labour involved in operating the systems such as in Theodore and Lower Mary, the fixed costs are considered to range between 75% and 55%. Those distribution systems with a mixture of automation and labour based operations are deemed to have between 80% and 60% fixed cost base with respect to water deliveries;

(b) preventive maintenance was estimated to range between 80% and 65% fixed with respect to water use based on the particular characteristics of each distribution system. In schemes that incorporate more rotating equipment such as pumping stations, there is a greater potential to reduce preventive maintenance costs during periods of low water use.

    Also, more automated systems such as the Burdekin-Haughton (75% fixed) have a higher percentage of fixed costs compared to manually operated systems such as Theodore (70% fixed);

(c) corrective maintenance was estimated to range between 90% and 70% fixed with 10% to 30% variable based on water deliveries;

(d) electricity cost was considered to be a fully variable cost in terms of water deliveries based on the assumption that fixed electricity tariffs are immaterial and the delivery of water to customers drives the pumping of water and the electricity cost;

(e) renewal annuity expenditure was estimated to be 75% fixed based on water volumes delivered with 25% of the spend subject to either review or deferral with a change in water deliveries; and

(f) revenue offsets were not related to water use and were 100% fixed.

Based on qualitative and quantitative analysis on SunWater's historical and forecast data, as well as Indec's qualitative judgment of the proportion of forecast cost that should be able to be varied within each cost category, Indec recommended the following cost structures as a basis for tariff structure (Table 7.7).

Table 7.7: SunWater's Fixed and Variable Tariffs 2010-11 and Indec's Recommended Fixed and Variable Cost Apportionment for Distribution Systems 2012-17

Service Contract	*SunWater Irrigation 2010-11 Tariff Structure*		*Ranges*					
			Minimum		*Recommended*		*High*	
	Fixed	*Variable*	*Fixed*	*Variable*	*Fixed*	*Variable*	*Fixed*	*Variable*
Burdekin	61%	39%	63%	37%	60%	40%	56%	44%
Bundaberg	70%	30%	61%	39%	59%	41%	56%	44%
Lower Mary	70%	30%	80%	20%	78%	22%	75%	25%
Emerald	63%	37%	85%	15%	80%	20%	75%	25%
Eton	80%	20%	76%	24%	72%	28%	69%	31%
Mareeba-Dimbulah [1]	70% (65%)	30% (35%)	86%	14%	83%	17%	79%	21%
St George	70%	30%	89%	11%	84%	16%	80%	20%
Dawson (Theodore)	74%	26%	81%	19%	78%	22%	75%	25%
Distribution System Average			**70%**	**30%**	**67%**	**33%**	**63%**	**37%**

Note: (1) The numbers in the bracket are applicable channel customers outside a re-lift up to 100ML. Source: SunWater (2006b) and INDEC (2011c).

Indec recommended that on average, 67% of costs are fixed and 33% are variable. However, since these proportions varied from system to system, Indec did not recommend the application of broad-brush figures for all systems, as doing so would produce cost cross-subsidisation between schemes.

For distribution systems, the Authority's separate statistical analysis on operations, maintenance and electricity at sub-activity and expenditure type level generally supported Indec's findings. Moreover, the Authority noted the semi-variability or variability of indirect and overhead costs, which it is assumed arises due to the use of DLC as the cost allocation base. The Authority, however, found that renewals expenditures represent fixed costs.

The Authority accepts that for distribution systems Indec's estimates of fixed cost are generally below those submitted by SunWater, that is, SunWater has submitted that all costs in distribution (and bulk) systems are fixed, with the exception of electricity pumping costs for the purpose of delivering water.

Conclusions

Based on the quantitative analysis undertaken by Indec (in most cases verified by the Authority's separate statistical analysis), the Authority concluded that operations, maintenance and to a lesser extent, renewals costs, would be semi-variable. Electricity costs are variable in areas where a significant amount of delivered water is pumped.

The Authority notes, however, that the statistical analysis is not forward looking and faces limitations including:

(a) lack of data on other possible cost drivers;

(b) inaccurate and unreliable data recording. Halcrow (2011) noted a number of issues identified by Parson Brinkerhoff (2011) in its report, including (but not limited to):

  (i) incorrect booking of hours, or coding of work by maintenance and field staff, creating inaccuracies in the SAP PM information and historical costs;

  (ii) operational work incorrectly coded to maintenance activities;

  (iii) examples of information within SAP being difficult to interpret and not reflecting actual activities taking place in the field;

  (iv) many planned maintenance activities currently undertaken that have no supporting work instructions; and

  (v) inconsistencies between Hummingbird (SunWater's document management system) and SAP.

  Halcrow (2011) noted that SunWater has made adjustments to remove the impact of incorrect time bookings by staff, for example where its storage operators booked time spent on condition monitoring to operations instead of preventive maintenance. However, it was unclear whether SunWater has made all the necessary corrections. Where some of the inaccuracies were embedded in the data used in this analysis, the result obtained will also be inaccurate. Halcrow (2011) also noted that for some schemes, many expenses were retrospectively re-categorised.

  In addition, Halcrow (2011) noted that SunWater's annual operating expenditure can vary significantly from year to year and that annual variations in work also result in movements in expenditure between activity types, for example, labour expenditure between operations and corrective maintenance.

  It is perhaps for this reason that SunWater uses a typical year concept as the basis for their projections, presumably to smooth out the variations that occur from year to year.

  However, SunWater has neither clearly defined what it considers to be a typical year nor adopted a four-year average in preparing its budgets. Consequently, any assessment is difficult as it is unclear what planning parameters (cost drivers) have been used to develop the budget;

(c) costs incurred in one year may not have a clear relationship with water usage during that year. For example, if last year's corrective maintenance is deferred, then the cost of last year's corrective maintenance may bear little relationship to water usage. As Parson

Brinkerhoff (2011) noted, resource constraints may lead to significant portions of preventive maintenance work being delayed, deferred or not undertaken in some schemes; and

(d) reclassification of some costs previously classified as direct operating expenditure to indirect and overhead costs following a major restructuring of SunWater.

The Authority noted that the statistical analysis that has been undertaken only establishes the dependency of one variable (cost) on other variable(s) but does not give a measure of the proportion of total cost that is fixed or variable. That is, a statistical analysis is useful as a first point of call to indicate which costs may be varied with variation in customer water use.

Accordingly, the Authority proposes to accept Indec's recommended fixed and variable proportions for each service contract as detailed in Tables 7.6 and 7.7 above. Indec's econometric analysis provides some basis for the proposed tariff structures, albeit based on limited historical data, and is confirmed broadly by the Authority's own analysis.

It is noted that Indec's analysis focused on the main tariff groups (that is, service contracts). Where there are sub-groups within schemes, Indec has not provided a recommendation. The Authority has reviewed these specific issues in the relevant Volume 2 reports. These include relift segments in Barker Barambah and Mareeba Dimbulah WSSs, and the North Branch segment in Upper Condamine.

Recommendation

The Authority recommends the application of fixed and variable tariff structures as recommended by Indec for each service contract (major tariff group).

The Authority also recommends that, for service contracts with more than one tariff group, Indec's recommended tariff structure should be adapted (where needed) and applied by the Authority as indicated in the scheme specific reports.

7.4 Fixed Charges

Indec's analysis indicated the recommended apportionment of fixed and variable costs for each WSS and distribution system, covering all sectors, including irrigation, urban and industrial. To establish the irrigation share of fixed costs, total fixed costs must be allocated between medium and high priority categories in each service contract. Variable costs are allocated according to usage of water.

Most WAE held by irrigators is medium priority WAE, although there are small volumes of high priority irrigation WAE in some schemes including Nogoa-Mackenzie WSS. Where high priority WAE is provided for stock and domestic users, the Authority has allowed for a cost allocation, but has not established a price.

The Authority has identified in earlier chapters its preferred approach to allocating costs between medium and high priority WAE. This approach is summarised in Table 7.8.

Table 7.8: Authority's Recommended Fixed Cost Allocation between High and Medium Priority WAE

Cost Component	*Fixed Cost Allocation Methodology*	
	Bulk WSSs	*Distribution Systems*
Renewals annuity	HUF	WAE
Operations	50% by HUF, and 50% by WAE	WAE
Corrective maintenance	HUF	WAE
Preventive maintenance	HUF	WAE

Note: Variable costs are allocated between medium and high priority WAE according to water use by way of the Authority's recommended volumetric tariffs.

The resulting total fixed revenue requirements for high and medium priority WAE are as shown in Tables 7.9 and 7.10 for each bulk WSS and distribution system. The irrigation share of the total fixed revenue requirement is also shown in Tables 7.9 and 7.10.

Table 7.9: Authority's Recommended Allocation of Bulk WSS Fixed Revenue Requirement between High and Medium Priority WAE 2012-13 (Real $'000)

WSS	*Total High Priority Fixed Revenue Requirement*	*Total Medium Priority Fixed Revenue Requirement*	*High Priority Irrigation Share of Fixed Revenue Requirement*	*Medium Priority Irrigation Share of Fixed Revenue Requirement*
Barker Barambah	153	689	0	673
Bowen Broken	1153	32	10	32
Boyne Tarong	278	51	0	42
Bundaberg	195	1085	0	1081
Burdekin	490	2179	0	1507
Callide	845	308	0	282
Chinchilla	43	20	0	20
Cunnamulla	0	51	0	48
Dawson	164	570	1	564
Eton	285	1261	0	1261
Lower Fitzroy	259	30	0	30
Lower Mary	85	131	0	103
Macintyre Brook	106	979	0	948
Maranoa	0	33	0	33
Mareeba-Dimbulah	218	403	0	395
Nogoa-Mackenzie	897	1201	67	1165
Pioneer	500	461	0	461
Proserpine	452	278	0	278
St George	0	1355	0	1317
Three Moon Creek	125	281	0	273
Upper Burnett	492	324	0	320
Upper Condamine	942	385	0	384

The Authority notes that there are three (3) bulk WSS schemes with irrigation high priority customers.

Table 7.10: Authority's Recommended Allocation of Distribution System Fixed Revenue Requirement between High and Medium Priority WAE 2012-13 (Real $'000)

Distribution System	*Total High Priority Fixed Revenue Requirement*	*Total Medium Priority Fixed Revenue Requirement*	*High Priority Irrigation Share of Fixed Revenue Requirement*	*Medium Priority Irrigation Share of Fixed Revenue Requirement*
Burdekin	269	8120	0	8120
Bundaberg	61	5099	0	5088
Lower Mary	0	860	0	860
Emerald	19	1423	19	1423
Eton	25	1881	0	1881
Mareeba-Dimbulah	8	3933	0	3859
St George	0	1212	0	1212
Dawson (Theodore)	1	1138	1	1138

The Authority notes that there are two (2) distribution systems with irrigation high priority customers.

7.5 Variable Charges

SunWater's Variable Costs

SunWater did not submit variable costs other than specific electricity pumping costs associated with water delivery as identified in SunWater's NSPs (Table 7.11).

Table 7.11: SunWater's Submitted (NSP) Variable Electricity Costs 2011-12 (Nominal $'000)

WSS	*Assumed 'Typical' Water Use (All Sectors)*	*$/ML*	*Total ($,000)*
Bulk WSS			
Barker Barambah – Redgate relift	1,288	12.66	16
Upper Condamine – North Branch	7,062	7.14	50
Distribution Systems			
Bundaberg	79,062	29.10	2,300
Burdekin-Haughton	226,539	14.46	3,276
Emerald	32,691	2.91	95
Eton	17,900	12.84	230
Lower Mary	4,647	30.55	142
Mareeba-Dimbulah - Relift	5,013	50.25	252
St George	43,170	0.97	42
Theodore	11,166	10.65	119

Source: SunWater NSPs.

Authority's Variable Costs

As noted above, Indec's analysis indicated that a portion of SunWater's renewals and operating costs have a semi-variable nature and could be expected to vary in response to water volumes over a period of time.

However, SunWater's NSPs did not indicate a volumetric based amount for these costs, but included them as a fixed cost.

The Authority has therefore separately identified additional fixed costs considered to be variable and added them to SunWater's variable cost estimates above.

The Authority has presented its variable costs below for each of the thirty (30) service contracts for all sectors (Table 7.12 and Table 7.13). In these tables, the Authority has also presented its water use assumed for all sectors for a typical year and demonstrated how the recommended volumetric tariff for each service contract has been derived by the Authority.

To convert its estimates of variable costs to a volumetric tariff, the Authority has firstly generated total variable costs per service contract for all sectors (including but not limited to irrigation). The Authority then aligned the all sector total variable cost estimates with an assumed level of all sectors water usage particular to each service contract.

For this purpose, the Authority drew upon the water use data provided in SunWater's NSPs, in the form of the past eight years of average water use per service contract, for all sectors. SunWater also had regard to this data in providing an all sectors forecast for the next five years (that is, 2012-17).

In general, to provide its all sectors' water use forecast for each service contract, SunWater adopted the eight-year average as its forecast for the bulk WSSs schemes. However, for distribution systems, SunWater adopted forecasts that varied from the eight-year averages (and were generally above the average of the past eight-years of all sector water use).

The Authority would prefer a longer term average of 10 years or more for determining a scheme-wide average water use as a base for determining the variable charge. However, this information was not available for all sectors.

Because SunWater's eight-year average (eight years to and including 2009-10) was found to include up to three years of abnormally low water usage (reflecting severe drought and/or flood impacts during this period), the Authority has removed the three lowest-water use years from this eight years of data for each WSS and distribution system. This creates an estimated typical or average all sectors water use year for the exclusive purpose of recommending an all sectors volumetric tariff.

The eight-year average, without the three abnormal years, most closely resembles SunWater's 'typical year' upon which its direct fixed operating costs were estimated (noting SunWater defines its typical year as a year in which climatic extremes, such as flood and drought, do not occur). In this way, and in the absence of a longer (10+ years) period of relevant data, the Authority has generated a meaningful water use denominator.

The Authority used the variable cost portion consistent with Indec's recommendations and the estimated 'typical' water use ratio to estimate a volumetric tariff for all sectors for the main segments in each WSS and distribution system (Tables 7.12 and 7.13).

Table 7.12: Authority's Recommended Water Use Assumptions and Volumetric Tariffs for Distribution Systems – All Sectors 2012-13 (Real $'000)

Distribution System	*Total Variable Costs per Service Contract (All Sectors)*	*Assumed 'Typical' Water Use (All Sectors) (% of total WAE)*	*Volumetric Tariff D Unbundled ($/ML)*	*Volumetric Tariff B+D Bundled ($/ML)*
Bundaberg	3,687	48.0	62.26	63.36
Burdekin-Haughton	6,006	76.3	25.58	26.05
Emerald	467	74.9	8.26	9.36
Eton	742	55.1	27.19	31.41
Lower Mary	267	42.6	60.24	62.18
Mareeba-Dimbulah	1133	67.1	11.49	12.23
St George	269	93.4	5.33	6.39
Theodore	227	75.8	20.13	21.76

Table 7.13: Authority's Recommended Water Use Assumptions and Volumetric Tariffs for Bulk WSSs – All Sectors 2012-13 (Real $'000)

	Total Variable Costs per Service Contract (All Sectors)	*Assumed 'Typical' Water Use (All Sectors) (% of total WAE)*	*Volumetric Tariff B ($/ML)*
Barker Barambah	108	55.1	5.12
Bowen Broken	91	43.1	5.88
Boyne Tarong	35	53.9	1.47
Bundaberg	119	46.7	1.10
Burdekin	270	65.6	0.47
Callide	101	52.0	8.00
Chinchilla	7	65.9	2.80
Cunnamulla	5	73.7	2.75
Dawson	69	72.2	1.63
Eton	137	53.5	4.22
Lower Fitzroy	26	69.9	1.31
Lower Mary	22	33.0	1.94
Macintyre Brook	70	81.1	3.46
Maranoa	3	6.3	68.12
Mareeba-Dimbulah	98	69.4	0.74
Nogoa-Mackenzie	213	83.2	1.10
Pioneer	62	44.2	1.85
Proserpine	111	62.1	3.00
St George	81	94.2	1.06
Three Moon Creek	31	50.8	4.02
Upper Burnett	62	66.0	3.30
Upper Condamine	167	54.1	4.64

In some scheme segments, (Barker Barambah - Redgate relift, Upper Condamine North Branch and Mareeba-Dimbulah Relift), the volumetric tariff is adjusted to take account of specific pumping costs.

Authority's Water Use Assumption for Volumetric Tariffs

For the purpose of comparison, the Authority's estimated typical all sectors water use is compared to SunWater's all sectors forecasts and eight-year actual averages below (Table 7.14 and Table 7.15).

Table 7.14: Average Water Use for Distribution Systems (% total WAE) - All Sectors 2012-17

WSS	SunWater Forecast for 2012-17 – All Sectors	8 Year Actual Average All Sectors	Authority Average of 5 Typical Years
Bundaberg	50	41	48.0
Burdekin	85	69	76.3
Emerald	80	76[1]	74.9
Eton	50	41	55.1
Lower Mary	50	33	42.6
Mareeba-Dimbulah	60	62	67.1
St George	85	84	93.4
Theodore (Dawson)	70	73	75.8

Source: SunWater NSP, SunWater 2006a - Working Paper No 14. Notes: 1: SunWater's NSP indicated an average of 76%. However, the Authority estimated this average to be 65%.

Table 7.15: Average Water Use for Bulk WSS (% of total WAE) - All Sectors 2012-17

WSS	SunWater Forecast for 2012-17 – All Sectors	8 Year Actual Average All Sectors	Authority Average of 5 Typical Years
Barker Barambah	37	37	55.1
Bowen Broken	41	41	43.1
Boyne Tarong	46	46	53.9
Bundaberg	40	40	46.7
Burdekin	59	59	65.6
Callide	44	44	52.0
Chinchilla	51	51	65.9
Cunnamulla	66	66	73.7
Dawson	66	66	72.2
Eton	44	44	53.5
Lower Fitzroy	67	67	69.9
Lower Mary	26	26	33.0
Macintyre Brook	74	74	81.1
Maranoa	5	5	6.3
Mareeba-Dimbulah	64	64	69.4
Nogoa-Mackenzie	71	71	83.2
Pioneer	38	38	44.2
Proserpine	52	52	62.1
St George	84	84	94.2
Three Moon Creek	41	41	50.8
Upper Burnett	59	59	66.0
Upper Condamine	37	37	54.1

Source: SunWater NSP, SunWater (2006a – Working Paper No 14).

7.6 Cost Reflective Fixed and Volumetric Tariffs

The Authority has derived cost-reflective fixed and volumetric tariffs for each tariff grouping on the basis of assessed efficient costs identified above, and the recommended tariff structures proposed by Indec (noting that the Authority adapted Indec's recommendations within the service contracts with more than one tariff group, to recommend tariff structures for those other tariff groupings).

As noted in Chapter 4 (Pricing Framework) the Authority accepts SunWater's proposal to unbundle bulk and distribution systems tariffs. Accordingly, in bulk WSSs, the Authority's recommended Part A tariffs reflect fixed bulk costs and the Part B tariffs reflect variable bulk costs only. In distribution systems, the new Part C tariffs reflect fixed distribution system costs and the Part D tariffs reflect variable distribution system costs only. Distribution customers, therefore, will be charged transparent and cost-reflective Tariffs A to D.

The fixed Part A of the tariff is based on WAE in each tariff grouping, while the variable (Part B) charge reflects the average water use for the scheme as a whole based on the average eight-year water use with the three lowest water use years removed (as detailed above).

The Authority's cost reflective tariffs are compared to existing tariffs and SunWater's proposed tariffs in Table 7.16 for bulk services and Table 7.17 for distribution systems. Also for reference purposes is the Tier 1 reference (lower bound) tariff.

Table 7.16: Summary of Cost Reflective Tariffs by Tariff Grouping, Bulk (Nominal $/ML)

Scheme	*Actual*	*Actual*	*Cost Reflective*	*Tier 1 Reference Tariffs*
	2010-11	*2011-12*	*2012-13*	*2012/13*
Barker Barambah WSS				
Fixed (Part A)	20.76	21.52	20.98	21.26
Volumetric (Part B)	11.87	12.29	5.12	12.15
	32.63	**33.81**	**26.10**	**33.42**
Redgate Re-Lift:				
Fixed (Part A)	22.56	23.36	20.98	39.38
Volumetric (Part B)	27.93	28.93	12.41	28.61
	50.49	**52.29**	**33.38**	**67.99**
Bowen Broken Rivers WSS				
Fixed (Part A)	9.28	11.60	6.82	9.50
Volumetric (Part B)	14.57	15.09	5.88	14.92
	23.85	**26.69**	**12.70**	**24.42**
Boyne River and Tarong WSS				
Fixed (Part A)	19.52	20.24	4.40	19.99
Volumetric (Part B)	13.94	14.44	1.47	14.28
	33.46	**34.68**	**5.87**	**34.27**
Bundaberg WSS				
Fixed (Part A)	7.08	7.36	5.94	7.26
Volumetric (Part B)	11.08	11.47	1.10	5.18
	18.16	**18.83**	**7.04**	**12.52**
Burdekin-Haughton WSS				
Fixed (Part A)	2.32	2.40	3.75	2.39
Volumetric (Part B)	13.67	14.16	0.47	1.21

Scheme	Actual	Actual	Cost Reflective	Tier 1 Reference Tariffs
	2010-11	2011-12	2012-13	2012/13
	15.99	**16.56**	**4.23**	**3.60**
Callide Valley WSS				
Surface Water (Callide and Kroombit Creek):				
Fixed (Part A)	5.88	8.12	15.46	29.83
Volumetric (Part B)	24.83	25.72	8.00	25.56
	30.71	**33.84**	**23.46**	**55.39**
Callide Benefited Groundwater Area:				
Fixed (Part A)	5.88	8.12	15.46	29.83
Volumetric (Part B)	24.83	25.72	8.00	25.56
	30.71	**33.84**	**23.46**	**55.39**
Chinchilla Weir WSS				
Fixed (Part A)	18.16	18.84	6.90	18.62
Volumetric (Part B)	15.95	16.52	2.80	13.29
	34.11	**35.36**	**9.70**	**31.91**
Cunnamulla Weir WSS				
River:				
Fixed (Part A)	18.56	19.24	18.64	28.49
Volumetric (Part B)	14.47	14.99	2.75	22.19
	33.03	**34.23**	**21.39**	**50.68**
Dawson Valley WSS				
Dawson River:				
Fixed (Part A)	10.48	10.88	11.36	10.75
Volumetric (Part B)	10.58	10.96	1.63	7.57
	21.06	**21.84**	**12.98**	**18.33**
Dawson River at Glebe Weir:				
Fixed (Part A)	10.48	10.88	11.36	10.75
Volumetric (Part B)	7.40	7.66	1.63	7.57
	17.88	**18.54**	**12.98**	**18.33**
Eton WSS				
Fixed (Part A)			24.74	N/a
Volumetric (Part B)			4.22	N/a
	0.00	**0.00**	**28.95**	**N/a**
Lower Fitzroy WSS				
Fixed (Part A)	10.88	11.28	9.57	11.16
Volumetric (Part B)	0.00	0.00	1.31	0
	10.88	**11.28**	**10.88**	**11.16**
Lower Mary River WSS				
Mary Barrage				
Fixed (Part A)	9.48	9.84	4.66	9.71
Volumetric (Part B)	10.12	10.48	1.94	8.78
	19.60	**20.32**	**6.59**	**18.50**
Tinana Creek/Teddington Weir				
Fixed (Part A)	13.92	14.40	13.61	14.26

Scheme	*Actual*	*Actual*	*Cost Reflective*	*Tier 1 Reference Tariffs*
	2010-11	***2011-12***	***2012-13***	***2012/13***
Volumetric (Part B)	9.94	10.30	7.37	10.18
	23.86	**24.70**	**20.99**	**24.44**
Macintyre Brook WSS				
Fixed (Part A)	25.44	28.36	40.75	26.06
Volumetric (Part B)	9.09	9.42	3.46	9.31
	34.53	**37.78**	**44.21**	**35.37**
Maranoa River WSS				
Fixed (Part A)	44.68	48.28	43.43	134.36
Volumetric (Part B)	0.00	0.00	68.12	0
	44.68	**48.28**	**111.55**	**134.36**
Mareeba-Dimbulah WSS				
Access Charge:	545.00	564.48	578.59	558.14
River Tinaroo/Barron:				
Fixed (Part A)	3.20	3.32	2.86	3.27
Volumetric (Part B)	16.11	16.69	0.74	2.81
	19.31	**20.01**	**3.60**	**6.09**
Nogoa-Mackenzie WSS				
River - Medium Priority:				
Fixed (Part A)	5.88	6.08	7.16	6.02
Volumetric (Part B)	7.71	7.99	1.10	3.06
	13.59	**14.07**	**8.26**	**9.07**
River - High Priority:[1]				
Fixed (Part A)	14.68	15.20	24.25	15.04
Volumetric (Part B)	7.71	7.99	1.10	7.90
	22.39	**23.19**	**25.35**	**22.94**
Pioneer River WSS				
Fixed (Part A)	10.24	12.60	10.03	10.47
Volumetric (Part B)	7.97	8.26	1.85	8.17
	18.21	**20.86**	**11.88**	**18.64**
Proserpine River WSS				
Fixed (Part A)	8.64	8.92	7.27	8.83
Volumetric (Part B)	8.58	8.88	3.00	5.40
	17.22	**17.80**	**10.28**	**14.23**
Kelsey Creek Water Board:				
Fixed (Part A)	8.64	8.92	7.27	8.83
Volumetric (Part B)	6.36	6.59	3.00	5.40
	15.00	**15.51**	**10.28**	**14.23**
St George WSS				
Regulated Section (Beardmore Dam or Balonne River):				
Fixed (Part A)	16.08	17.64	18.20	16.48
Volumetric (Part B)	3.34	3.46	1.06	3.42
	19.42	**21.10**	**19.26**	**19.90**
Regulated Section (Thuraggi Watercourse):				
Fixed (Part A)	16.08	17.64	18.20	16.48

Scheme	Actual	Actual	Cost Reflective	Tier 1 Reference Tariffs
	2010-11	2011-12	2012-13	2012/13
Volumetric (Part B)	3.34	3.46	1.06	3.42
	19.42	**21.10**	**19.26**	**19.90**
Three Moon Creek WSS				
River:				
Fixed (Part A)	23.04	23.88	19.43	28.49
Volumetric (Part B)	16.46	17.04	4.02	20.34
	39.50	**40.92**	**23.44**	**48.84**
Groundwater:				
Fixed (Part A)	15.00	15.56	19.43	28.49
Volumetric (Part B)	10.72	11.11	4.02	20.34
	25.72	**26.67**	**23.44**	**48.84**
Upper Burnett WSS				
(Regulated Section of the Nogo/Burnett River):				
Fixed (Part A)	21.08	21.84	11.99	24.91
Volumetric (Part B)	12.92	13.38	3.30	15.25
	34.00	**35.22**	**15.29**	**40.16**
John Goleby Weir:				
Fixed (Part A)	16.12	16.68	11.99	16.50
Volumetric (Part B)	21.99	22.78	3.30	10.10
	38.11	**39.46**	**15.29**	**26.61**
Upper Condamine WSS				
Sandy Creek or Condamine River:				
Fixed (Part A)	21.60	22.36	13.33	22.12
Volumetric (Part B)	16.51	17.11	4.64	14.58
	38.11	**39.47**	**17.98**	**36.70**
North Branch:				
Fixed (Part A)	33.00	34.20	13.33	33.80
Volumetric (Part B)	21.78	22.56	8.55	22.29
	54.78	**56.76**	**21.89**	**56.10**
North Branch - Risk A:				
Fixed (Part A)	0.00	0.00	10.95	0
Volumetric (Part B)	25.26	26.16	8.55	25.87
	25.26	**26.16**	**19.50**	**25.87**

Source: Tier 1 Final Report, 2006-07. Note: 1: The Tier 1 Reference Tariff was not available. The table provides the actual tariff for 2006-07.

In most bulk WSSs, the Authority's estimate of cost reflective tariffs is lower in real terms than the lower bound cost estimate made in 2006-07. This is due to a combination of factors including:

(a) tariff rebalancing from the 2006-11 practice of 70:30 tariff structures (generally) to Indec's recommended tariff structure, which is on average approximately 90:10 fixed to variable. This means that more revenue is recovered with absolute certainty on the basis of WAE, which allows the cost reflective tariff to fall and yet the same amount of revenue to be recovered (that is, water bills would be maintained with seemingly lower published cost reflective tariffs);

(b) the use of HUF rather than conversion factors to allocate costs between medium and high priority (where high priority WAE exists). The effect is particularly marked in schemes such as Boyne River and Bowen Broken Rivers WSSs which have high proportions of non-irrigation high priority; and

(c) savings in renewals expenditure and operating expenditure, including indirect and overhead costs identified by SunWater and the Authority.

In two schemes (Burdekin-Haughton WSS and Macintyre Brook WSS,) the Authority's cost-reflective tariffs are higher than the previous lower bound reference tariff. In the Burdekin-Haughton WSS, this mainly reflects a higher renewals annuity to cover the cost of future capital expenditure. In the Macintyre Brook WSS, it is due to higher than expected past expenditure on renewals which resulted in a lower ARR than expected at the time of the last price path, and an adjustment for the 2006-11 revenue cap under-recovery.

Cost reflective tariffs for distribution systems are detailed in Table 7.17 below.

Table 7.17: Cost Reflective Tariffs by Tariff Grouping, compared to current Tariffs – Distribution Systems (Nominal $/ML)

Scheme	*Actual*	*Actual*	*Cost Reflective*	*Tier 1 Reference Tariffs*
	2010-11	*2011-12*	*2012-13*	*$2012-13*
Bundaberg Distribution System				
Fixed (Part A)	7.08	7.36	5.94	7.26
Volumetric (Part B)	11.08	11.47	1.10	5.18
	18.16	**18.83**	**7.04**	**12.52**
Fixed (Part C)	35.80	39.04	39.26	36.64
Volumetric (Part D)	19.54	20.25	62.26	26.18
	55.34	**59.29**	**101.53**	**62.74**
Bundled				
Fixed (Part A)	42.88	46.40	45.21	43.90
Volumetric (Part B)	30.62	31.72	63.36	31.36
	73.50	**78.12**	**108.57**	**75.26**
Burdekin River:				
Fixed (Part A)	2.32	2.40	3.75	2.39
Volumetric (Part B)	13.67	14.16	0.47	1.21
	15.99	**16.56**	**4.23**	**3.60**
Channel Unbundled				
Fixed (Part C)	26.40	29.36	31.94	27.04
Volumetric (Part D)	4.74	4.91	25.58	11.26
	31.14	**34.27**	**57.52**	**38.30**
Burdekin Channel (Bundled):				
Fixed (Part A)	28.72	31.76	35.69	29.43
Volumetric (Part B)	18.41	19.07	26.05	12.47

Scheme	Actual	Actual	Cost Reflective	Tier 1 Reference Tariffs
	2010-11	2011-12	2012-13	$2012-13
	47.13	**50.83**	**61.74**	**41.90**
Giru Groundwater Area: Unbundled				
Fixed (Part A)	11.36	11.76	14.45	11.61
Volumetric (Part B)	-3.76	-3.90	12.81	5.02
	7.60	**7.86**	**27.26**	**16.63**
Giru Groundwater Area Bundled				
Fixed (Part A)	13.68	14.16	18.20	14.00
Volumetric (Part B)	9.91	10.26	13.28	6.23
	23.59	**24.42**	**31.48**	**20.24**
Glady's Lagoon Up to natural Yield				
Fixed (Part A)	**Nil**	Nil	Nil	Nil
Volumetric (Part B)	**Nil**	Nil	Nil	Nil
	Nil	**Nil**	**Nil**	**Nil**
Glady's Lagoon – Other than Natural Yield - Unbundled				
Fixed (Part A)	25.04	25.92	31.94	**25.61**
Volumetric (Part B)	5.11	5.29	25.57	**11.26**
	30.15	**31.21**	**57.51**	**36.87**
Glady's Lagoon – Other than Natural Yield Bundled				
Fixed (Part A)	27.36	28.32	35.69	28.00
Volumetric (Part B)	18.78	19.45	26.05	12.47
	46.14	**47.77**	**61.74**	**40.47**
Emerald Distribution System				
River - Medium Priority				
Fixed (Part A)	5.88	6.08	7.16	6.02
Volumetric (Part B)	7.71	7.99	1.10	3.06
	13.59	**14.07**	**8.26**	**9.07**
Channel Unbundled Medium Priority				
Fixed (Part C)	14.36	16.88	22.24	14.71
Volumetric (Part D)	7	7.25	8.26	8.04
	21.36	**24.13**	**30.50**	**22.76**
Channel Bundled (Medium Priority)				
Fixed (Part A)	20.24	22.96	29.40	20.73
Volumetric (Part B)	14.71	15.24	9.36	11.10
	34.95	**38.20**	**38.75**	**31.83**
Emerald Distribution System – High Priority				
River - High Priority [1]				
Fixed (Part A)	14.68	15.20	24.25	15.04
Volumetric (Part B)	7.71	7.99	1.10	7.90
	22.39	**23.19**	**25.35**	**22.94**
Channel Unbundled High Priority[1]				
Fixed (Part C)	35.92	39.20	22.24	36.79

Scheme	Actual	Actual	Cost Reflective	Tier 1 Reference Tariffs
	2010-11	2011-12	2012-13	$2012-13
Volumetric (Part D)	7.00	7.25	8.26	7.17
	42.92	**46.45**	**30.51**	**43.95**
Channel – Bundled High Priority[1]				
Fixed (Part A)	50.60	54.40	46.49	51.83
Volumetric (Part B)	14.71	15.24	9.36	15.07
	65.31	**69.64**	**55.85**	**66.89**
Eton WSS				
Fixed (Part A)	N/a	N/a	24.74	N/a
Volumetric (Part B)	N/a	N/a	4.22	N/a
	N/a	**N/a**	**28.96**	**N/a**
Eton Distribution System				
Fixed (Part A)	N/a	N/a	42.69	N/a
Volumetric (Part B)	N/a	N/a	27.19	N/a
	N/a	**N/a**	**69.89**	**N/a**
Eton Distribution System - Bundled				
Fixed (Part A)	48.44	52.20	67.43	49.62
Volumetric (Part B)	18.64	19.31	31.41	19.09
	67.08	**71.51**	**98.84**	**68.69**
Lower Mary Distribution System				
Fixed (Part A)	9.48	9.84	4.66	9.71
Volumetric (Part B)	10.12	10.48	1.94	8.78
	19.60	**20.32**	**6.59**	**18.50**
Channel Unbundled				
Fixed (Part C)	31.68	34.80	92.31	32.45
Volumetric (Part D)	19.29	19.98	60.24	21.34
	50.97	**54.78**	**152.55**	**53.78**
Lower Mary Channel (Bundled):				
Fixed (Part A)	41.16	44.64	96.97	42.16
Volumetric (Part B)	29.41	30.46	62.18	30.12
	70.57	**75.10**	**159.14**	**72.28**
Mareeba Dimbulah Distribution System				
River Tinaroo/Barron:				
Fixed (Part A)	3.20	3.32	2.86	3.27
Volumetric (Part B)	16.11	16.69	0.74	2.81
	19.31	**20.01**	**3.60**	**6.09**
Channel Outside a re-lift up to 100 ML (Unbundled):				
Fixed (Part C)	26.32	29.28	33.88	26.98
Volumetric (Part D)	7.11	7.36	11.49	16.40
	33.43	**36.64**	**45.37**	**43.37**
Channel Outside a re-lift up to 100 ML (Bundled):				

Scheme	***Actual***	***Actual***	***Cost Reflective***	***Tier 1 Reference Tariffs***
	2010-11	***2011-12***	***2012-13***	***$2012-13***
Fixed (Part A)	29.52	32.60	36.74	30.25
Volumetric (Part B)	23.22	24.05	12.23	19.21
	52.74	**56.65**	**48.97**	**49.46**
Channel Outside a re-lift 100-500ML (Unbundled):				
Fixed (Part C)	24.88	27.76	33.88	25.49
Volumetric (Part D)	1.73	1.78	11.49	15.46
	26.61	**29.54**	**45.37**	**40.93**
Channel Outside a re-lift 100-500ML Bundled				
Fixed (Part A)	28.08	31.08	36.74	28.76
Volumetric (Part B)	17.84	18.47	12.23	18.27
	45.92	**49.55**	**48.97**	**47.02**
Channel Outside a re-lift more than 500 ML (Unbundled):				
Fixed (Part C)	19.20	21.88	33.88	19.67
Volumetric (Part D)	-1.88	-1.95	11.49	11.76
	17.32	**19.93**	**45.37**	**31.42**
Channel Outside a re-lift more than 500 ML (Bundled):				
Fixed (Part A)	22.40	25.20	36.74	22.94
Volumetric (Part B)	14.23	14.74	12.23	14.57
	36.63	**39.94**	**48.97**	**37.51**
Walsh River and Supplemented Streams Unbundled				**-**
Fixed (Part C)	13.56	14.04	20.33	13.90
Volumetric (Part D)	-4.11	-4.26	6.89	8.09
	9.45	**9.78**	**27.22**	**21.97**
Walsh River and Supplemented Streams Bundled				
Fixed (Part A)	16.76	17.36	22.04	17.17
Volumetric (Part B)	12.00	12.43	7.34	10.90
	28.76	**29.79**	**29.38**	**28.06**
Channel re-lift (Unbundled):				
Fixed (Part C)	40.92	44.36	33.88	67.98
Volumetric (Part D)	11.89	12.32	43.37	42.43
	52.81	**56.68**	**77.25**	**110.41**
Channel re-lift (Bundled):				
Fixed (Part A)	44.12	47.68	36.74	71.25
Volumetric (Part B)	28.00	29.01	44.11	45.24
	72.12	**76.69**	**80.85**	**116.50**
St George Distribution System				
Regulated Section				
Fixed (Part A)	16.08	17.64	18.20	16.48
Volumetric (Part B)	3.34	3.46	1.06	3.42
	19.42	**21.10**	**19.26**	**19.90**

Scheme	Actual	Actual	Cost Reflective	Tier 1 Reference Tariffs
	2010-11	2011-12	2012-13	$2012-13
Channel (Unbundled):				
Fixed (Part C)	16.72	18.32	27.51	17.13
Volumetric (Part D)	8.52	8.82	5.33	8.72
	25.24	**27.14**	**32.84**	**25.85**
Channel (Bundled):				
Fixed (Part A)	32.80	35.96	45.71	33.61
Volumetric (Part B)	11.86	12.28	6.39	12.14
	44.66	**48.24**	**52.10**	**45.75**
Theodore Distribution System				
Dawson River:				
Fixed (Part A)	10.48	10.88	11.36	10.75
Volumetric (Part B)	10.58	10.96	1.63	7.57
	21.06	**21.84**	**12.98**	**18.33**
Channel Unbundled				
Fixed (Part C)	38.96	42.32	78.54	39.88
Volumetric (Part D)	14.59	15.11	20.13	18.21
	53.55	**57.43**	**98.67**	**58.08**
Channel Bundled				
Fixed (Part A)	49.44	53.20	89.90	50.63
Volumetric (Part B)	25.17	26.07	21.76	25.78
	74.61	**79.27**	**111.66**	**76.41**

Source: Tier 1 Final Report, 2006-07, Note: 1. The Tier 1 Reference Tariff was not available. The table provides the actual tariff for 2006-07.

In general, the Authority's cost reflective tariffs are higher than those determined in 2006-07 for the previous price path for most distribution systems, that is, the cost reflective revenue requirement has risen since the last review. This is generally due to a combination of factors including:

(a) increased unit costs of electricity in those distribution systems affected. For example, Burdekin-Haughton Distribution System electricity costs are 48% higher than in 2006-07 in real terms. In Bundaberg Distribution System, electricity costs are 30% higher by the same measure. In the Eton and Lower Mary Distribution Systems, electricity costs have more than doubled since 2006-07 in real terms;

(b) an increase in labour and contractors' costs. This resulted in these costs being 10-20% higher in real terms than in 2006-07 for many of the distribution systems. In the Lower Mary distribution system, labour costs are 100% higher; and

(c) the cost of the Intersafe upgrades which were not budgeted for in the previous price path but were found by the Authority to be prudent and efficient. As an example, in Bundaberg distribution system, renewals expenditures over the 2006-11 period were $785,000 higher than expected ($586,000 for Intersafe). This has had the impact of reducing ARR balances which now need to be restored through higher charges for renewals annuities. The Burdekin-Haughton distribution system has a negative opening 2012 ARR balance of $2.3 million, while Lower Mary distribution system has a negative balance of $1.3 million.

The allocation of costs between high and medium priority on a nominal WAE basis rather than by a conversion factor also affect the comparison between the Authority's cost reflective tariffs and the Tier 1 reference tariffs. Cost reflective tariffs for Emerald Distribution system high priority are lower than the Tier 1 estimates for this reason. However, this has a relatively small impact on overall scheme revenue (Table 7.18).

Table 7.18: Distribution System High Priority Costs as a Portion of Total Fixed Costs – All Sectors (2012-13 Real $'000)

Distribution System	*HP Fixed Revenue*	*MP Fixed Revenue*	*Total Fixed Revenue*	*HP Revenue over Total Revenue*
Burdekin	269	8120	8388	3.21%
Bundaberg	61	5099	5159	1.18%
Lower Mary	0	860	860	0.00%
Emerald	19	1423	1442	1.34%
Eton	25	1881	1906	1.30%
Mareeba-Dimbulah	8	3933	3941	0.2%
St George	0	1212	1212	0.00%
Dawson (Theodore)	1	1138	1139	0.08%

7.7 Queensland Government Pricing Policies and Draft Prices

Previous Review

In the previous review, three categories of schemes were identified for the purposes of setting irrigation prices:

(a) above lower bound schemes – where prices were currently above lower bound cost recovery (efficient revenue requirement), water prices were to be maintained in real terms based on an appropriate measure of inflation;

(b) lower bound cost recovery schemes – where prices were to be set to provide a revenue stream that allows SunWater to recover efficient lower bound costs within the regulatory period; and

(c) hardship schemes – where prices were to increase in real terms at a pace consistent with no more than $10/ML over the five years 2006-11 (on average $2/ML in real terms) or until such time as the scheme [or sub-scheme] reached lower bound cost recovery. Hardship schemes were not predicted to achieve cost recovery within the 2006-11 price paths. The current Ministerial Direction specifically identifies six hardship schemes and segments of schemes that were identified in the previous review.

These categories remain relevant for the purposes of determining prices, consistent with the Ministerial Direction. The definition of the lower bound is equivalent to the Authority's efficient costs (but with the latter also including a relatively minor allowance for working capital).

Ministerial Direction

Under the Ministerial Direction, where current prices are already above the level required to recover allowable costs, water prices are to be maintained in real terms using an appropriate measure of inflation (as recommended by the Authority).

For certain schemes or segments of schemes nominated in the Ministers' Referral, prices are to increase in real terms at a pace consistent with the increase in prices over 2006-11 or until such time as the scheme reaches allowable costs, whereupon prices are maintained in real terms.

In schemes or segments of schemes where the Authority calculates tariffs that would otherwise result in a price increase for irrigators that is higher than the Authority's measure of inflation:

(a) the Authority must consider phasing in the price increase in order to moderate price impacts on irrigators but at the same time have regard for SunWater's legitimate commercial interests;

(b) the price path may be longer than one price path period provided the Authority gives its reason for the longer timeframe; and

(c) the Authority must give its reasons if the recommendation is not to phase in the new prices.

Stakeholder Submissions

SunWater did not provide any proposals in regard to the treatment of schemes where revenues were above lower bound.

CANEGROWERS (Feb 2011) expressed concern that prices are not able to be decreased in real terms, particularly if Part A tariffs reflect fixed costs. This could mean that the total cost to irrigators will be increased even if the scheme is already at lower bound. CANEGROWERS also submitted that an issue arises if prices were previously increased to reach lower bound but are now found to be above lower bound.

Cotton Australia (January 2011) submitted that it was unable to compare current costs put forward by SunWater with costs set within the current price path. This needed to be addressed so that irrigators can understand the trend of their costs moving forward.

BRIG(Apr 2010) submitted that in the past price path, river irrigators were discriminated against by the State Government's direction that no water charges could be reduced down to lower bound. BRIG noted that the final delivered cost to river irrigators is higher in many instances due to the fact they have to fund their own infrastructure and incur significant energy costs associated with high lifts from the river.

Authority's Analysis

Under the Ministerial Direction, the Authority is required to at least maintain water prices in real terms.

Applied to the tariff structure, this could be interpreted to imply that, where current prices are already providing the cost reflective revenue requirement, there should be no change to either the fixed or volumetric component except to adjust for inflation.

Such an interpretation would not allow any rebalancing of tariffs between fixed and volumetric charges, which is something the Authority considers is an important likely outcome of this review if the needs of irrigators and SunWater are to be met to the maximum extent possible.

On the basis of guidance received from relevant agencies Treasury and DERM, the Authority has interpreted the Ministerial Direction to require the Authority to maintain water revenues (rather than prices) in real terms, consistent with those achieved be the end of the 2006-11 price path. These revenues are to be maintained on a tariff group basis.

For this purpose, the Authority adopted the prices applying in 2010-11 rather than 2011-12 charges as the latter include the interim price adjustment put in place by the Government, outside of the regulatory process (and which are therefore not indicative of regulatory revenues).

To enable comparisons with 2012-13 proposed revenues, the Authority escalated 2010-11 revenues to nominal 2012-13 terms (using CPI).

The revenues at 2010-11 were determined on the basis of the average irrigation water use over the previous regulatory period, that is, a five-year average for 2006-11.

Tables 7.19 and 7.20 provide details of the current revenues, compared to the revenues that would be generated by efficient cost reflective prices assuming the same five-year average irrigation water use.

Table 7.19: 2010-11 Irrigation Revenues by Bulk Tariff Group (2012-13 $' Real)

Tariff Grouping	*Current Revenue (2010-11 Indexed)*	*Revenue based on Authority's cost reflective prices*	*Revenue Difference*	*% Difference (of Cost Reflective)*
Barker Barambah - Regulated	685,592	638,788	46,804	7.3
Barker Barambah - Redgate Relift	43,771	36,494	7,277	19.9
Bowen Broken Rivers	64,402	42,191	22,211	53.0
Boyne Tarong	237,877	46,027	191,850	415.0
Bundaberg	2,154,477	1,176,756	977,722	83.0
Burdekin	4,345,631	1,701,273	2,644,358	155.0
Callide Valley	240,376	321,862	-81,486	-25.0
Chinchilla Weir	79,357	23,926	55,430	230.2
Cunnamulla	71,181	50,530	20,650	40.9
Dawson Valley	874,121	627,160	246,691	39.0
Dawson Valley – Glebe Weir	17,684	14,202	3,482	24.5
Lower Fitzroy	35,447	29,868	5,579	18.7
Lower Mary – Mary Barrage	192,094	76,114	115,980	152.4
Lower Mary – Tinana Creek	135,652	131,569	4,082	3.1
Macintyre Brook	710,538	994,398	-283,860	-28.5
Maranoa	37,554	37,662	-108	-0.2
Mareeba–Dimbulah	2,234,261	505,761	1,728,500	342.6
Nogoa–Mackenzie – Medium Priority	1,776,875	1,273,576	503,299	39.5
Nogoa-Mackenzie – High Priority	56,360	69,706	-13,346	-19.1
Pioneer	604,198	495,750	108,448	21.9
Proserpine	345,867	234,514	111,352	47.5
Proserpine – Kelsey Creek	114,806	85,531	31,274	36.5
St George	1,430,502	1,385,735	44,767	3.2
Three Moon Creek - River	39,240	27,862	11,378	40.9
Three Moon Creek - Groundwater	240,603	262,382	-21,779	-8.3
Upper Burnett - Regulated	711,532	341,173	370,359	108.6
Upper Burnett – John Goleby Weir	37,840	18,914	18,926	100.1
Upper Condamine – Sandy Creek	435,968	232,015	203,953	87.9
Upper Condamine – North Branch	292,906	112,158	180,747	162.0

Upper Condamine – North Branch Risk A	53,181	97,296	-44,115	-45.3

Note: Current revenues and cost reflective revenues are based on the 5 year average irrigation water use 2006-11. In WSSs that also serve a distribution system, bulk revenues shown are for all bulk water sales.

Table 7.20: 2010-11 Irrigation Revenues by Distribution System Tariff Group – Bundled (2012-13 $' Real)

Tariff Grouping	*Current Revenue (2010-11 Indexed Charges)*	*Revenue based on Authority's cost reflective prices*	*Revenue Difference*	*% Difference (of cost reflective)*
Bundaberg Channel	8,525,892	10,298,105	-1,772,213	-17.2
Burdekin Channel	11,456,071	14,039,829	-2,583,758	-18.4
Burdekin – Giru Groundwater	807,350	1,024,676	-217,326	-21.0
Burdekin – Glady's Lagoon	55,099	69,599	-14,500	-20.8
Emerald – Medium Priority	2,482,506	2,926,280	-443,774	-15.1
Emerald – High Priority	71,158	59,842	11,315	18.9
Eton	2,798,582	3,733,915	-935,333	-25.1
Lower Mary	552,047	1,209,868	-657,821	-54.3
Mareeba–Dimbulah - Channel	4,049,732	4,768,284	-718,553	-13.7
Mareeba-Dimbulah Relift	537,252	537,252	5.453	1.0
Mareeba-Dimbulah Walsh River and supplemented streams	710,177	744,388	-34,211	-4.6
St George	2,249,027	2,577,443	-328,416	-12.7
Theodore (Dawson)	1,110,372	1,665,438	-555,066	-33.3

Note: Current revenues and cost reflective revenues are both based on the 5 year irrigation average water use 2006-11. Because cost recovery in distribution systems is assessed on a bundled basis, revenues shown in the Table are bundled distribution system revenues.

The Authority considers that the most appropriate means of carrying forward past revenues in excess of those currently indicated by cost reflective tariffs is by allocating these revenues to fixed costs and therefore fixed tariffs (Tariff A for bulk and Tariff C for distribution systems). Under this approach, the cost reflective volumetric charge remains unaffected providing the most appropriate marginal cost pricing signal to customers while addressing SunWater's volume risks.

However, the average irrigation water use over the last five years was low due to drought impacts. If these volumes are adopted for setting prices going forward (as distinct from the determining the revenue the Government wants to be maintained), it would necessarily result in a low volumetric charge, with the balance of the revenue required to be maintained in real terms coming from the fixed charge.

If conditions returned to normal, which is expected by, inter alia, SunWater's use of a 'typical' year for costing purposes and by the Authority in its efficient cost estimates, SunWater would therefore recover a higher revenue in real terms than achieved over 2006-11 price paths due to the higher volumes of water generating higher volumetric revenues than assumed in determining tariffs. This would be inconsistent with the Government's requirement to maintain current revenues in real terms.

The Authority considers that the use of a longer-term average water use will provide the most meaningful estimate of likely future revenues. In this regard, the Authority reviewed past water usage levels over alternative periods – 5 years, 8 years (as proposed by SunWater in its NSPs), 10, 15, and 20 years.

For the irrigation sector, SunWater adopted the eight-year averages in many cases as its forecast. In some cases, however, SunWater adopted a forecast taking into account flood or drought impacts on its eight-year averages, that is, SunWater sought to estimate water use on the basis of a 'typical' year.

Tables 7.21 and 7.22 detail average percentage water usage for all WSSs and distribution systems. These averages cover the relevant periods up to and including 2010-11, and are presented as a proportion of average WAE over the equivalent periods.

Table 7.21: Average Water Use – Bulk WSS (%) Irrigation Use Only

WSS	*Past 2006-11 forecast*	*5-year average 2006-11*	*SunWater Forecast for 2012-17*	*8-year average*	*10-year average*	*15-year average*	*20-year average*
Barker Barambah	75	10.4	60	29.0	38.7	44.2	48.6
Bowen Broken	15	10.2	15	9.3	12.2	13.4	16.8
Boyne Tarong	60	31.6	40	41.5	52.0	43.8	43.7
Bundaberg	60	35.8	50	42.6	42.0	44.4	53.3
Burdekin	85	54.4	85	64.8	69.7	65.1	63.6
Callide	50	26.7	37	37.1	40.0	42.6	48.4
Chinchilla	60	51.1	55	50.1	48.5	54.6	53.3
Cunnamulla	55	59.6	70	65.2	62.3	52.6	45.2
Dawson	60	54.5	68	61.7	59.9	57.7	56.5
Lower Fitzroy	0	4.4	4	3.1	2.7	33.0	40.9
Lower Mary	47	31.1	50	32.4	34.6	41.3	47.7
Macintyre Brook	70	33.8	75	43.0	47.8	46.0	43.4
Maranoa	0	5.4	5	4.5	3.9	2.6	2.4
Mareeba-Dimbulah	50	67.9	60	62.8	63.2	60.0	62.1
Nogoa-Mackenzie	85	58.0	76	64.7	75.8	75.0	77.7
Pioneer	55	23.9	40	26.1	36.0	32.3	36.0
Proserpine	70	36.0	65	49.8	60.2	54.8	61.9
St George	85	90.0	85	87.8	88.3	94.0	94.4
Three Moon Creek	60	27.1	42	38.4	39.9	48.2	57.0
Upper Burnett	70	42.7	57	55.2	56.9	61.0	66.3
Upper Condamine	65	27.4	45	28.2	28.3	46.0	48.9

Source: SunWater NSP, SunWater (2006a – Working Paper No 14)..

Table 7.22: Average Water Use – Distribution Systems (%)

WSS	*Past 2006-11 forecast*	*5-year average 2006-11*	*SunWater Forecast for 2012-17*	*8-year average*	*10-year average*	*15-year average*	*20-year average*
Bundaberg	60	37.6	50	44.7	44.0	45.3	53.9
Burdekin	91	55	85	64.2	70.0	66.5	64.0
Dawson	70	67	70	73.4	71.0	67.5	67.9
Emerald	80	48.9	80	58.3	68.7	69.7	75.9
Eton	65	9.0	50	19.4	32.4	35.8	39.4
Lower Mary	60	39.6	50	38.8	40.2	49.2	56.5
Mareeba-Dimbulah	67.5	61.0	60	63.1	67.8	60.0	62.1
St George	95	78.7	85	88.6	89.7	93.5	91.4

Source: SunWater NSP, SunWater (2006a – Working Paper No 14)..

The Authority noted that, in many schemes, there is a trend downwards in average water use as a percentage of WAE. This could be due to changing climatic patterns affecting water supply and announced allocations or may reflect structural and cropping changes in the schemes. As such, longer term averages of 15 or more years may therefore be misleading due to structural changes in those schemes exhibiting declining or increasing trends. In addition, longer term averages of, for example, 15 or more years may also cover more than one drought.

The Authority considers that the five-year and eight-year averages will tend to under-estimate average water usage due to the predominance of drought conditions over recent years. SunWater's proposal to modify eight-year averages is a reflection of this issue.

The Authority noted that the five-year and 10-year average water use was substantially different in Barker Barambah, Boyne Tarong, Callide Valley and Three Moon Creek WSSs and the Emerald and Eton distribution systems. Usage in these schemes over the last five years was lower mainly due to drought.

On balance, the Authority proposed to adopt a 10-year irrigation only average for the purposes of determining expected revenue from variable charges with that revenue then used to determine the revenue to be raised from fixed charges. This will result in revenue from fixed charges that are lower than if the average water use over the last review period was used on a forward looking basis.

Tables 7.23 and 7.24 summarise the total current revenue consistent with the Government's requirements. The split between variable revenues, based on a 10-year average irrigation water use, and the balance to be recouped through fixed charges is also shown.

Table 7.23: Total Revenue Requirement – Bulk (Real $'000)

WSS	*Total Revenue Requirement*	*Fixed Revenue*	*Variable Revenue*
Barker Barambah - Regulated	685,592	626,789	58,803
Barker Barambah – Redgate relift	43,771	35,893	7,878
Bowen Broken	64,402	60,339	4,063
Boyne Tarong	237,877	230,645	7,232
Bundaberg	2,154,477	2,068,668	85,809
Burdekin	4,345,631	4,205,493	140,138
Callide Valley	341,441	282,825	58,616
Chinchilla weir	79,357	75,460	3,897
Cunnamulla	71,181	66,910	4,271
Dawson	891,805	840,783	51,022
Lower Fitzroy	35,447	35,338	109
Lower Mary – Mary Barrage	192,094	182,420	9,674
Lower Mary – Tinana Creek	135,652	113,214	22,438
Macintyre Brook	1,005,887	966,656	39,231
Maranoa	37,554	35,442	2,112
Mareeba-Dimbulah	2,234,261	2,161,411	72,850
Nogoa-Mackenzie MP	1,776,875	1,641,157	135,719
Nogoa-Mackenzie HP	70,253	67,926	2,327
Pioneer	604,198	572,561	31,637
Proserpine	460,672	391,792	68,880
St George	1,430,502	1,363,182	67,320
Three Moon Creek – River	39,240	37,063	2,177
Three Moon Creek Groundwater	268,961	248,456	20,506
Upper Burnett – Regulated	711,532	663.717	47,815
Upper Burnett – John Goleby Weir	37,840	35,190	2,650
Upper Condamine – Sandy Creek	435,968	415,096	20,871
Upper Condamine – North Branch	292,905	275,590	17,315
Upper Condamine – North Branch Risk A	97,870	80,153	17,717

Note: Where schemes are currently below recovery of the revenue requirement, the total revenue requirement takes into account additional revenues from usage charges based on the 10-year average. In some schemes this will mean that the required revenue from the variable charge is higher than indicated based on the 5-year average water use. In schemes already above the efficient revenue requirement, the additional revenues from usage charges are deducted from the fixed charge.

Table 7.24: Total Revenue Requirement – Distribution Bundled (Real $'000)

Distribution System	*Total Required Revenue*	*Fixed Revenue*	*Variable Revenue*
Bundaberg	10,903,627	6,745,201	4,158,426
Burdekin – Channel	15,140,761	10,022,193	5,118,568
Burdekin – Giru	1,105,028	731,455	373,573
Burdekin – Glady's lagoon	75,054	49,682	25,372
Emerald MP	3,086,441	2,532,246	554,195
Emerald HP	71,158	63,614	7,544
Eton	4.127,221	3,585,894	541,327
Lower Mary	1,213,729	965,004	248,726
Mareeba-Dimbulah – channel outside relift	4,729,457	3,833,651	895,806
Mareeba-Dimbulah – Relift	652,063	401,903	250,160
Mareeba-Dimbulah – Walsh River and supplemented streams	758,524	618,678	139,846
St George	2,612,627	2,321,718	290,909
Theodore (Dawson)	1,679,271	1,433,139	246,133

Note: Where distribution systems are currently below recovery of the revenue requirement, the total revenue requirement takes into account additional revenues from usage charges based on the 10-year average. In some schemes this will mean that the required revenue from the variable charge is higher than indicated based on the 5-year average water use. In distribution systems already above the efficient revenue requirement, the additional revenues from usage charges are deducted from the fixed charge.

Scheme Categories

The Authority's assessment of SunWater's costs, in conjunction with the Ministerial Direction, identified which schemes/tariff groups are above and below the efficient cost reflective revenue requirement (Table 7.25).

Table 7.25: Cost Recovery Status of WSSs and Distribution Systems

Below Efficient Cost Reflective Revenue Requirement	*Above Efficient Cost Reflective Revenue Requirement*
Bundaberg Distribution System – Channel/Supplemented Watercourse	Barker Barambah WSS – Regulated
Burdekin-Haughton Distribution System – Channel	Barker Barambah WSS – Redgate Relift
Burdekin-Haughton Distribution System – Giru Groundwater	Bowen Broken WSS – River
Burdekin-Haughton Distribution System – Glady's Lagoon	Boyne River WSS – River
Callide Valley WSS – Benefited Groundwater Area	Bundaberg WSS – River
Callide Valley WSS – Surface Water	Burdekin-Haughton WSS – River
Emerald Distribution System – Medium Priority	Chinchilla Weir WSS – River
Eton Distribution System	Cunnamulla WSS – River
Lower Mary Distribution System – Channel	Dawson Valley WSS – River
Macintyre Brook – River	Dawson Valley WSS – River at Glebe Weir
Mareeba-Dimbulah Distribution System – Channel outside Re-lift up to 100ML	Emerald Distribution System – High Priority
Mareeba-Dimbulah Distribution System – Channel outside Re-lift 100ML to 500ML	Lower Fitzroy WSS – River
Mareeba-Dimbulah Distribution System – Channel outside Re-lift over 500ML	Lower Mary WSS – Mary Barrage
Mareeba-Dimbulah Distribution System – Supplemented Streams and Walsh River	Lower Mary WSS – Tinana Barrage & Teddington Weir
Maranoa River WSS – River	Mareeba-Dimbulah WSS – Channel Relift
Nogoa-Mackenzie WSS – High Priority	Mareeba-Dimbulah WSS – River (Tinaroo/Barron)
St George Distribution System – Channel	Nogoa-Mackenzie WSS – Medium Priority
Theodore Distribution – Channel	Pioneer WSS – River
Three Moon Creek WSS – Groundwater	Proserpine WSS – River
Upper Condamine WSS – North Branch Risk A	Proserpine WS
	St George WSS – Regulated
	St George WSS – Thuraggi Watercourse
	Three Moon Creek WSS – River
	Upper Burnett WSS – Nogo/Burnett River
	Upper Burnett WSS – John Goleby
	Upper Condamine WSS – Sandy Creek
	Upper Condamine WSS – North Branch

Schemes Above Cost Reflective Revenues

Under the Ministers' Direction, where prices are already sufficient to meet the assessed level of efficient costs, prices are to be maintained in real terms based on an appropriate measure of inflation as recommended by the Authority. The Authority has incorporated the excess revenue required to be maintained in the fixed charge and applied its estimates of CPI (2.5% per annum) to both components of the tariff structure.

Schemes Below Cost Reflective Revenues

Where scheme current revenues are below the assessed level of efficient costs (that is charges are below lower bound), the Authority is required to recommend a price path for the 5-year period from 1 July 2012 to 30 June 2017, but may take into account the need for a longer term price path.

The price path is to provide a revenue stream that allows SunWater to eventually recover lower bound costs. However, the Authority understands that the price paths do not have be revenue neutral. In other words, any revenue shortfalls in early years from prices being below lower bound do not have to be offset in net present value terms by higher revenues from prices above lower bound in later years.

Instead, the Authority's recommended price paths are to approach and ultimately achieve the level of the cost reflective price, with any shortfall in revenue from prices being below lower bound in the intervening period not being recovered from irrigators. This may have CSO implications but that is a matter for SunWater and the Government. It is not considered by the Authority as part of this review.

The Ministers' Direction identified six (6) hardship schemes or segments of schemes. These were the service contracts or tariff groups that, under the previous review, were expected to remain below the lower bound after the maximum $10/ML increase was applied over the five year period 2006-11. These were Redgate Relift in the Barker Barambah WSS, Callide Valley WSS, Maranoa River WSS, Channel Relift in the Mareeba-Dimbulah WSS, Cunnamulla WWS, and Three Moon Creek WSS.

Under the Direction, tariffs in such schemes are to be increased in real terms at a pace consistent with the 2006-11 prices or until such time as the scheme reached the full lower bound cost.

For those schemes identified at section 1.2 of the Ministerial Direction (hardship schemes as identified above), the $10/ML cap was implemented during the 2006-11 period as a $0.25 increase in the first year, a $2.50 increase in the following three years and a $2.25 increase in the final year. SunWater applied this increase between Part A and Part B without consideration to the nature of fixed and variable costs.

Other schemes not assessed as hardship schemes, but also identified as being below lower bound, were subject to the same rate of increase until they reached the lower bound revenue requirement. Exceptions were Eton WSS and Macintyre Brook WSS where charges were increased at a slower rate to reach the lower bound reference tariff.

Where the estimated service contract revenue (for all tariff group), is below that required to recover efficient costs for that service contract, the Authority proposes a price path set at an average pace similar to that applied over 2006-11, that is, an average of $2/ML per year. This level of increase was considered in the previous scheme as being reasonable.

In this regard, the Authority notes that the original Ministerial Direction was amended to exclude consideration of capacity to pay from the Authority's brief.

It is also proposed to escalate all such charges at CPI (2.5% per annum from July 2012) in accordance with past practice.

Of the six (6) hardship schemes and segments of schemes identified under the Direction two are unlikely to remain in this category during 2012-17. In this regard,

(a) Cunnamulla WWS, Redgate Relift (in Barker Barambah WSS) and Three Moon Creek (river section) WSS are now above the efficient revenue requirement; and

(b) Callide Valley WSS, Maranoa River WSS, Channel Relift (in the Mareeba-Dimbulah WSS) and Three Moon Creek groundwater are still below the efficient revenue requirement.

Regardless of the Government's previous classification of some tariff groups as hardship scheme, the Authority proposes to apply a $2 per ML real price increase to Part A (or Part C) fixed tariffs for all tariff groups found to be below the new (lower bound) revenue requirement (as determined above), until such a time as the required revenue is achieved.

Applying this approach has meant, for some tariff groups, the efficient (lower bound) cost requirement will not be achieved the end of the 2012-17 regulatory period. This is allowable under the Direction, as long as reasons are provided.

Schemes and segments that are expected to remain below recovery of efficient revenue requirements at the end of the 2012-17 period include Macintyre Brook WSS, Bundaberg distribution system, Burdekin distribution system, Eton distribution system, Lower Mary distribution system, Mareeba Dimbulah distribution system channel >500ML, and Theodore distribution system.

In this regard, the Authority considers that, in the absence of capacity to pay assessments, the most appropriate revenue path is one consistent with that approved by Government in the last review ($2/ML per annum).

However, the Authority has not recommended price paths beyond the 2012-17 period on the grounds that such price paths should be subject to a subsequent regulatory review.

Bulk Prices Exceed but Distribution Prices are Below Cost Reflective Revenues

The Authority notes that in some distribution systems, although current distribution system prices are below the cost reflective revenue requirement, the associated bulk WSS prices (in the linked bulk WSS) are in excess of the efficient (lower bound) revenue requirement.

This raises the issue of whether distribution system customers in such schemes should (on the one hand) pay above efficient prices for bulk water, but then be placed on a price path that reflects current distribution system prices being significantly below efficient costs.

In adopting the revenue requirement approach outlined above the Authority has taken, in effect, a bundled or total-revenue approach (that is, it has combined all revenues paid by distribution system customers) to addressing this question.

That is, the proportion of revenue above efficient costs that is paid by distribution system customers for their share of bulk services is used to offset their larger distribution system revenue requirement. In effect, if a distribution system is below efficient cost recovery on a bundled basis, the bulk charge paid by distribution customers is reduced, but remains at least the cost reflective charge.

The Authority notes that river only customers in such schemes would still pay bulk charges in excess of the efficient bulk revenue requirement, consistent with the Government's policy of maintaining real revenues.

The Authority found that the distribution systems were still below cost reflective revenue requirement when this adjustment was made. This means that the additional revenues from the bulk service charges were not sufficient to cover the shortfall in distribution system cost recovery.

This approach is consistent with viewing the total scheme (bulk plus distribution system service contracts) as a single entity for revenue purposes where distribution system customers are concerned.

The Authority notes that, under this approach, the bulk charge paid by bulk customers is effectively different to that paid by distribution system customers.

Draft Water Prices

On the basis of the forgoing analysis and principles, and the Minister's Direction to at least maintain real (2006-11) revenues, the Authority recommends prices as outlined below (Table 7.26 and Table 7.27).

The Authority's recommended prices are presented in nominal terms for 2012-17. However, it is anticipated that actual prices will be established each year (March quarter) by SunWater on the basis of changes in the Brisbane All Groups CPI.

Table 7.26: Draft Recommended Water Prices for Bulk WSSs 2006-17 (Nominal $/ML)

Scheme	*Past Prices*						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Barker Barambah WSS											
Regulated:											
Fixed (Part A)	14.60	16.08	18.64	20.16	20.76	21.52	*21.09*	*21.62*	22.16	*22.71*	*23.28*
Volumetric (Part B)	8.35	9.19	10.64	11.52	11.87	12.29	5.12	5.25	5.38	5.51	5.65
	22.95	**25.27**	**29.28**	**31.68**	**32.63**	**33.81**	**26.21**	***26.86***	**27.53**	**28.22**	***28.93***
Redgate Re-Lift:											
Fixed (Part A)	9.64	12.60	15.96	19.32	22.56	23.36	21.86	*22.41*	22.97	23.54	24.13
Volumetric (Part B)	24.37	25.08	26.28	27.11	27.93	28.93	12.41	12.72	13.04	13.36	13.69
	34.01	**37.68**	**42.24**	**46.43**	**50.49**	**52.29**	**34.27**	**35.13**	**36.00**	**36.91**	**37.83**
Bowen Broken Rivers WSS											
River:											
Fixed (Part A)	8.08	8.32	8.72	9.00	9.28	11.60	10.63	10.90	11.17	11.45	11.73
Volumetric (Part B)	12.71	13.08	13.71	14.14	14.57	15.09	5.88	6.03	6.18	6.34	6.50
	20.79	**21.40**	**22.43**	**23.14**	**23.85**	**26.69**	**16.52**	**16.93**	**17.35**	**17.79**	**18.23**
Boyne River and Tarong WSS											
River:											
Fixed (Part A)	16.80	17.52	18.36	18.96	19.52	20.24	24.38	24.99	25.61	26.25	26.91
Volumetric (Part B)	12.00	12.52	13.12	13.53	13.94	14.44	1.47	1.51	1.54	1.58	1.62
	28.80	**30.04**	**31.48**	**32.49**	**33.46**	**34.68**	**25.85**	**26.49**	**27.16**	**27.84**	**28.53**
Bundaberg WSS											
River:											
Fixed (Part A)	6.20	6.36	6.68	6.88	7.08	7.36	11.14	11.42	11.70	12.00	12.30
Volumetric (Part B)	9.66	9.94	10.42	10.75	11.08	11.47	1.10	1.13	1.16	1.18	1.21
	15.86	**16.30**	**17.10**	**17.63**	**18.16**	**18.83**	**12.24**	**12.55**	**12.86**	**13.18**	**13.51**
Burdekin-Haughton WSS											
Burdekin River:											
Fixed (Part A)	2.04	2.08	2.20	2.28	2.32	2.40	9.92	10.17	10.42	10.68	10.95
Volumetric (Part B)	11.93	12.27	12.86	13.27	13.67	14.16	0.47	0.48	0.50	0.51	0.52
	13.97	**14.35**	**15.06**	**15.55**	**15.99**	**16.56**	**10.39**	**10.65**	**10.92**	**11.19**	**11.47**
Callide Valley WSS											
Surface Water (Callide and Kroombit Creek):											
Fixed (Part A)	1.12	2.24	3.44	4.68	5.88	8.12	11.93	14.28	16.24	16.65	17.06
Volumetric (Part B)	15.64	17.68	20.20	22.55	24.83	25.72	8.00	8.20	8.40	8.61	8.83
	16.76	**19.92**	**23.64**	**27.23**	**30.71**	**33.84**	**19.93**	**22.48**	**24.64**	**25.26**	**25.89**
Callide Benefited Groundwater Area:											
Fixed (Part A)	1.12	2.24	3.44	4.68	5.88	8.12	11.93	14.28	16.24	16.65	17.06

Scheme	Past Prices						Recommended Prices				
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Volumetric (Part B)	15.64	17.68	20.20	22.55	24.83	25.72	8.00	8.20	8.40	8.61	8.83
	16.76	**19.92**	**23.64**	**27.23**	**30.71**	**33.84**	**19.93**	**22.48**	**24.64**	**25.26**	**25.89**
Chinchilla Weir WSS											
River:											
Fixed (Part A)	15.84	16.32	17.12	17.64	18.16	18.84	26.28	26.94	27.61	28.30	29.01
Volumetric (Part B)	13.91	14.32	15.01	15.48	15.95	16.52	2.80	2.87	2.94	3.02	3.09
	29.75	**30.64**	**32.13**	**33.12**	**34.11**	**35.36**	**29.08**	**29.81**	**30.56**	**31.32**	**32.10**
Cunnamulla Weir WSS											
River:											
Fixed (Part A)	10.56	12.36	14.52	16.56	18.56	19.24	26.85	27.52	28.21	28.91	29.64
Volumetric (Part B)	8.23	9.63	11.31	12.91	14.47	14.99	2.75	2.82	2.89	2.97	3.04
	18.79	**21.99**	**25.83**	**29.47**	**33.03**	**34.23**	**29.60**	**30.34**	**31.10**	**31.88**	**32.68**
Dawson Valley WSS											
Dawson River:											
Fixed (Part A)	9.16	9.44	9.88	10.20	10.48	10.88	16.09	16.49	16.90	17.33	17.76
Volumetric (Part B)	9.23	9.50	9.96	10.27	10.58	10.96	1.63	1.67	1.71	1.75	1.80
	18.39	**18.94**	**19.84**	**20.47**	**21.06**	**21.84**	**17.72**	**18.16**	**18.61**	**19.08**	**19.56**
Dawson River at Glebe Weir:											
Fixed (Part A)	0.00	2.60	5.44	8.40	10.48	10.88	14.36	14.72	15.08	15.46	15.85
Volumetric (Part B)	6.24	6.47	6.84	7.11	7.40	7.66	1.63	1.67	1.71	1.75	1.80
	6.24	**9.07**	**12.28**	**15.51**	**17.88**	**18.54**	**15.99**	**16.39**	**16.80**	**17.22**	**17.65**
Eton WSS											
River:											
Fixed (Part A)							24.74	25.36	25.99	26.64	27.30
Volumetric (Part B)							4.22	4.32	4.43	4.54	4.66
	0.00	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**28.95**	**29.68**	**30.42**	**31.18**	**31.96**
Lower Fitzroy WSS											
Lower Fitzroy River:											
Fixed (Part A)	0.26	2.92	5.84	8.88	10.88	11.28	11.40	11.68	11.97	12.27	12.58
Volumetric (Part B)	0.00	0.00	0.00	0.00	0.00	0.00	1.31	1.34	1.38	1.41	1.45
	0.26	**2.92**	**5.84**	**8.88**	**10.88**	**11.28**	**12.71**	**13.02**	**13.35**	**13.68**	**14.03**
Lower Mary River WSS											
Lower Mary River (Mary Barrage):											
Fixed (Part A)	8.28	8.52	8.92	9.20	9.48	9.84	12.61	12.92	13.25	13.58	13.92
Volumetric (Part B)	8.83	9.09	9.52	9.82	10.12	10.48	1.94	1.98	2.03	2.09	2.14
	17.11	**17.61**	**18.44**	**19.02**	**19.60**	**20.32**	**14.54**	**14.91**	**15.28**	**15.66**	**16.05**
Lower Mary River (Tinana Barrage & Teddington Weir											

Scheme	Past Prices						Recommended Prices				
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Fixed (Part C)	11.88	12.48	13.08	13.52	13.92	14.40	14.92	15.30	15.68	16.07	16.47
Volumetric (Part D)	8.48	8.93	9.36	9.65	9.94	10.30	8.57	8.78	9.00	9.23	9.46
	20.36	**21.41**	**22.44**	**23.17**	**23.86**	**24.70**	**23.49**	**24.08**	**24.68**	**25.30**	**25.93**
Macintyre Brook WSS											
Macintyre Brook:											
Fixed (Part A)	20.28	21.24	22.88	24.44	25.44	28.36	30.30	33.11	36.04	39.09	42.28
Volumetric (Part B)	7.23	7.58	8.17	8.72	9.09	9.42	3.46	3.55	3.63	3.73	3.82
	27.51	**28.82**	**31.05**	**33.16**	**34.53**	**37.78**	**33.76**	**36.66**	**39.67**	**42.82**	**46.10**
Maranoa River WSS											
River:											
Fixed (Part A)	28.96	32.44	36.76	40.76	44.68	48.28	43.43	44.51	45.62	46.76	47.93
Volumetric (Part B)	0.00	0.00	0.00	0.00	0.00	0.00	68.12	69.82	71.57	73.36	75.19
	28.96	**32.44**	**36.76**	**40.76**	**44.68**	**48.28**	**111.55**	**114.33**	**117.19**	**120.12**	**123.12**
Mareeba-Dimbulah WSS											
Access Charge:	475.40	489.20	512.76	528.88	545.00	564.48	578.59	593.06	607.88	623.08	638.66
***River Tinaroo/Barron*:**											
Fixed (Part A)	2.80	2.88	3.00	3.12	3.20	3.32	14.36	14.72	15.09	15.47	15.86
Volumetric (Part B)	14.06	14.47	15.16	15.64	16.11	16.69	0.74	0.76	0.78	0.80	0.82
	16.86	**17.35**	**18.16**	**18.76**	**19.31**	**20.01**	**15.11**	**15.49**	**15.87**	**16.27**	**16.68**
Nogoa-Mackenzie WSS											
River - Medium Priority:											
Fixed (Part A)	5.12	5.28	5.52	5.72	5.88	6.08	10.05	10.30	10.55	10.82	11.09
Volumetric (Part B)	6.73	6.93	7.26	7.49	7.71	7.99	1.10	1.12	1.15	1.18	1.21
	11.85	**12.21**	**12.78**	**13.21**	**13.59**	**14.07**	**11.14**	**11.42**	**11.71**	**12.00**	**12.30**
River - High Priority:											
Fixed (Part A)	12.80	13.20	13.80	14.24	14.68	15.20	21.29	23.87	25.48	26.12	26.77
Volumetric (Part B)	6.73	6.93	7.26	7.49	7.71	7.99	1.10	1.12	1.15	1.18	1.21
	19.53	**20.13**	**21.06**	**21.73**	**22.39**	**23.19**	**22.39**	**25.00**	**26.63**	**27.30**	**27.98**
Pioneer River WSS											
Pioneer Valley Water Board:											
Fixed (Part A)	6.24	7.88	9.64	9.92	10.24	12.60	12.09	12.39	12.70	13.02	13.35
Volumetric (Part B)	4.86	6.15	7.50	7.74	7.97	8.26	1.85	1.90	1.95	2.00	2.05
	11.10	**14.03**	**17.14**	**17.66**	**18.21**	**20.86**	**13.94**	**14.29**	**14.65**	**15.02**	**15.39**
Proserpine River WSS											
River:											
Fixed (Part A)	7.52	7.76	8.12	8.36	8.64	8.92	10.51	10.77	11.04	11.32	11.60
Volumetric (Part B)	7.48	7.7	8.07	8.32	8.58	8.88	3.00	3.08	3.16	3.23	3.32

Scheme	Past Prices						Recommended Prices				
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
	15.00	**15.46**	**16.19**	**16.68**	**17.22**	**17.80**	**13.51**	**13.85**	**14.20**	**14.55**	**14.92**
Kelsey Creek Water Board:											
Fixed (Part A)	7.52	7.76	8.12	8.36	8.64	8.92	9.67	9.91	10.16	10.42	10.68
Volumetric (Part B)	5.55	5.71	5.98	6.17	6.36	6.59	3.00	3.08	3.15	3.23	3.31
	13.07	**13.47**	**14.10**	**14.53**	**15.00**	**15.51**	**12.67**	**12.99**	**13.31**	**13.65**	**13.99**
St George WSS											
Regulated Section (Beardmore Dam or Balonne River):											
Fixed (Part A)	13.56	14.44	15.12	15.60	16.08	17.64	18.73	19.19	19.67	20.17	20.67
Volumetric (Part B)	2.81	3.00	3.14	3.24	3.34	3.46	1.06	1.09	1.12	1.14	1.17
	16.37	**17.44**	**18.26**	**18.84**	**19.42**	**21.10**	**19.79**	**20.28**	**20.79**	**21.31**	**21.84**
Regulated Section (Thuraggi Watercourse):											
Fixed (Part A)	13.56	14.44	15.12	15.60	16.08	17.64	18.73	19.19	19.67	20.17	20.67
Volumetric (Part B)	2.81	3.00	3.14	3.24	3.34	3.46	1.06	1.09	1.12	1.14	1.17
	16.37	**17.44**	**18.26**	**18.84**	**19.42**	**21.10**	**19.79**	**20.28**	**20.79**	**21.31**	**21.84**
Three Moon Creek WSS											
River:											
Fixed (Part A)	14.24	16.20	18.60	20.84	23.04	23.88	27.29	27.97	28.67	29.39	30.13
Volumetric (Part B)	10.18	11.57	13.29	14.89	16.46	17.04	4.02	4.12	4.22	4.32	4.43
	24.42	**27.77**	**31.89**	**35.73**	**39.50**	**40.92**	**31.31**	**32.09**	**32.89**	**33.72**	**34.56**
Groundwater:											
Fixed (Part A)	7.24	9.00	11.04	13.08	15.00	15.56	19.21	19.91	20.41	20.92	21.44
Volumetric (Part B)	5.18	6.43	7.89	9.33	10.72	11.11	4.02	4.12	4.22	4.32	4.43
	12.42	**15.43**	**18.93**	**22.41**	**25.72**	**26.67**	**23.23**	**24.03**	**24.63**	**25.25**	**25.88**
Upper Burnett WSS											
Upper Burnett (Regulated Section of the Nogo/Burnett River):											
Fixed (Part A)	12.16	14.16	16.60	18.88	21.08	21.84	26.07	26.72	27.39	28.08	28.78
Volumetric (Part B)	7.46	8.67	10.14	11.55	12.92	13.38	3.30	3.38	3.47	3.55	3.64
	19.62	**22.83**	**26.74**	**30.43**	**34.00**	**35.22**	**29.37**	**30.10**	**30.86**	**31.63**	**32.42**
John Goleby Weir:											
Fixed (Part A)	14.08	14.48	15.16	15.64	16.12	16.68	24.93	25.56	26.19	26.85	27.52
Volumetric (Part B)	19.18	19.74	20.69	21.34	21.99	22.78	3.30	3.38	3.47	3.55	3.64
	33.26	**34.22**	**35.85**	**36.98**	**38.11**	**39.46**	**28.23**	**28.94**	**29.66**	**30.40**	**31.16**
Upper Condamine WSS											
Sandy Creek or Condamine River:											
Fixed (Part A)	18.84	19.40	20.32	20.96	21.60	22.36	26.13	26.78	27.45	28.14	28.84
Volumetric (Part B)	14.41	14.83	15.54	16.03	16.51	17.11	4.64	4.76	4.88	5.00	5.13
	33.25	**34.23**	**35.86**	**36.99**	**38.11**	**39.47**	**30.77**	**31.54**	**32.33**	**33.14**	**33.97**

Scheme	Past Prices						Recommended Prices				
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
North Branch:											
Fixed (Part A)	25.24	27.56	30.56	32.04	33.00	34.20	38.51	39.48	40.46	41.48	42.51
Volumetric (Part B)	16.64	18.18	20.16	21.13	21.78	22.56	8.55	8.77	8.99	9.21	9.44
	41.88	**45.74**	**50.72**	**53.17**	**54.78**	**56.76**	**47.07**	**48.25**	**49.45**	**50.69**	**51.96**
North Branch - Risk A:											
Fixed (Part A)	0.00	0.00	0.00	0.00	0.00	0.00	6.90	9.12	11.45	11.79	12.09
Volumetric (Part B)	19.16	22.36	23.76	24.51	25.26	26.16	8.55	8.77	8.99	9.21	9.44
	19.16	**22.36**	**23.76**	**24.51**	**25.26**	**26.16**	**15.45**	**17.89**	**20.44**	**21.00**	**21.53**

Table 7.27: Draft Recommended Water Prices for SunWater Distribution Systems - Irrigation Only 2006-17 ($/ML))

Scheme	*Past Prices*						*Recommended Prices*				
	2006-07	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Bundaberg Distribution System											
River:											
Fixed (Part A)	6.20	6.36	6.68	6.88	7.08	7.36	11.14	11.42	11.70	12.00	12.30
Volumetric (Part B)	9.66	9.94	10.42	10.75	11.08	11.47	1.10	1.13	1.16	1.18	1.21
	15.86	**16.30**	**17.10**	**17.63**	**18.16**	**18.83**	**12.24**	**12.55**	**12.86**	**13.18**	**13.51**
Channel or watercourse supplemented by a channel (Unbundled):											
Fixed (Part C)	28.20	30.60	33.64	34.72	35.80	39.04	20.13	22.68	25.35	28.14	31.05
Volumetric (Part D)	14.91	16.46	18.39	18.97	19.54	20.25	62.26	63.82	65.42	67.05	68.73
	43.11	**47.06**	**52.03**	**53.69**	**55.34**	**59.29**	82.39	86.50	90.77	95.19	99.78
Channel or watercourse supplemented by a channel (Bundled):											
Fixed (Part A)	34.40	36.96	40.32	41.60	42.88	46.40	31.27	34.10	37.06	40.14	43.35
Volumetric (Part B)	24.57	26.40	28.81	29.72	30.62	31.72	63.36	64.95	66.57	68.23	69.94
	58.97	**63.36**	**69.13**	**71.32**	**73.50**	**78.12**	**94.63**	**99.05**	**103.63**	**108.37**	**113.29**
Burdekin Distribution System											
Burdekin River:											
Fixed (Part A)	2.04	2.08	2.20	2.28	2.32	2.40	9.92	10.17	10.42	10.68	10.95
Volumetric (Part B)	11.93	12.27	12.86	13.27	13.67	14.16	0.47	0.48	0.50	0.51	0.52
	13.97	**14.35**	**15.06**	**15.55**	**15.99**	**16.56**	**10.39**	**10.65**	**10.92**	**11.19**	**11.47**
Burdekin Channel (Unbundled):											
Fixed (Part C)	23.04	23.72	24.84	25.60	26.40	29.36	14.65	17.07	19.59	22.24	25.00
Volumetric (Part D)	4.13	4.26	4.47	4.60	4.74	4.91	25.57	26.21	26.87	27.54	28.23
	27.17	**27.98**	**29.31**	**30.20**	**31.14**	**34.27**	**40.22**	**43.28**	**46.46**	**49.78**	**53.23**
Burdekin Channel (Bundled):											
Fixed (Part A)	25.08	25.80	27.04	27.88	28.72	31.76	24.57	27.23	30.02	32.92	35.95
Volumetric (Part B)	16.06	16.53	17.33	17.87	18.41	19.07	26.05	26.70	27.37	28.05	28.75
	41.14	**42.33**	**44.37**	**45.75**	**47.13**	**50.83**	**50.62**	**53.93**	**57.38**	**60.97**	**64.70**

Giru Groundwater Area (Unbundled)											
Fixed (Part A)	9.88	10.20	10.68	11.00	11.36	11.76	2.87	5.00	7.22	8.92	9.14
Volumetric (Part B)	-3.29	-3.37	-3.54	-3.65	-3.76	-3.90	12.81	13.13	13.46	13.80	14.14
	6.59	**6.83**	**7.14**	**7.35**	**7.60**	**7.86**	**15.69**	**18.13**	**20.68**	**22.72**	**23.28**
Giru Groundwater Area (Bundled)											
Fixed (Part A)	11.92	12.28	12.88	13.28	13.68	14.16	**12.79**	**15.16**	**17.64**	**19.60**	**20.09**
Volumetric (Part B)	8.64	8.90	9.32	9.62	9.91	10.26	**13.28**	**13.62**	**13.96**	**14.31**	**14.66**
	20.56	**21.18**	**22.20**	**22.90**	**23.59**	**24.42**	**26.08**	**28.78**	**31.60**	**33.91**	**34.76**
Glady's Lagoon - Up to natural yield											
Fixed (Part A)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Volumetric (Part B)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Glady's Lagoon - Other than from natural yield (Unbundled)											
Fixed (Part A)	11.92	12.28	12.84	13.24	13.68	14.16	13.44	15.82	18.32	20.93	23.66
Volumetric (Part B)	7.74	7.96	8.35	8.60	8.87	9.19	25.57	26.21	26.87	27.54	28.23
	19.66	**20.24**	**21.19**	**21.84**	**22.55**	**23.35**	**39.01**	**42.04**	**45.19**	**48.47**	**51.89**
Glady's Lagoon - Other than from natural yield (Bundled)											
Fixed (Part A)	23.84	24.56	25.72	26.52	27.36	28.32	23.36	25.99	28.74	31.61	34.61
Volumetric (Part B)	16.38	16.86	17.67	18.22	18.78	19.45	26.05	26.70	27.37	28.05	28.75
	40.22	41.42	43.39	44.74	46.14	47.77	**49.40**	**55.69**	**56.11**	**59.66**	**63.36**
Emerald Distribution System											
River - Medium Priority											
Fixed (Part A)	5.12	5.28	5.52	5.72	5.88	6.08	10.05	10.30	10.55	10.82	11.09
Volumetric (Part B)	6.73	6.93	7.26	7.49	7.71	7.99	1.10	1.12	1.15	1.18	1.21
	11.85	**12.21**	**12.78**	**13.21**	**13.59**	**14.07**	**11.14**	**11.42**	**11.71**	**12.00**	**12.30**
Channel (Unbundled) - Medium Priority											
Fixed (Part C)	12.56	12.88	13.52	13.92	14.36	16.88	14.34	16.75	19.27	20.84	21.36
Volumetric (Part D)	6.1	6.28	6.58	6.78	7	7.25	8.26	8.47	8.68	8.90	9.12
	18.66	**19.16**	**20.10**	**20.70**	**21.36**	**24.13**	**22.60**	**25.22**	**27.95**	**29.74**	**30.48**
Channel (Bundled) - Medium Priority											
Fixed (Part A)	17.68	18.16	19.04	19.64	20.24	22.96	24.38	27.04	29.82	31.66	32.45
Volumetric (Part B)	12.83	13.21	13.84	14.27	14.71	15.24	9.36	9.59	9.83	10.08	10.33
	30.51	**31.37**	**32.88**	**33.91**	**34.95**	**38.20**	**33.74**	**36.64**	**39.65**	**41.73**	**42.78**

River - High Priority											
Fixed (Part A)	12.80	13.20	13.80	14.24	14.68	15.20	21.29	23.87	25.48	26.12	26.77
Volumetric (Part B)	6.73	6.93	7.26	7.49	7.71	7.99	1.10	1.12	1.15	1.18	1.21
	19.53	**20.13**	**21.06**	**21.73**	**22.39**	**23.19**	**22.39**	**25.00**	**26.63**	**27.30**	**27.98**
Channel (Unbundled) - High Priority											
Fixed (Part C)	31.40	32.32	33.80	34.88	35.92	39.20	32.99	31.76	31.55	32.34	33.15
Volumetric (Part D)	6.10	6.28	6.58	6.78	7.00	7.25	8.26	8.47	8.68	8.90	9.12
	37.50	**38.60**	**40.38**	**41.66**	**42.92**	**46.45**	**41.25**	**40.23**	**40.23**	**41.24**	**42.27**
Channel (Bundled) - High Priority											
Fixed (Part A)	44.20	45.52	47.60	49.12	50.60	54.40	54.28	55.64	57.03	58.45	59.91
Volumetric (Part B)	12.83	13.21	13.84	14.27	14.71	15.24	9.36	9.59	9.83	10.08	10.33
	57.03	**58.73**	**61.44**	**63.39**	**65.31**	**69.64**	**63.64**	**65.23**	**66.86**	**68.53**	**70.24**
Eton Distribution System											
Eton WSS											
Fixed (Part A)							24.74	25.36	25.99	26.64	27.30
Volumetric (Part B)							4.22	4.32	4.43	4.54	4.66
							28.95	**29.68**	**30.42**	**31.18**	**31.96**
Eton Distribution System (Unbundled)											
Fixed (Part A)							19.71	22.25	24.91	27.69	30.59
Volumetric (Part B)							27.19	27.87	28.57	29.28	30.02
							46.91	**50.13**	**53.48**	**56.97**	**60.60**
Eton Distribution System (Bundled)											
Fixed (Part A)	38.64	39.76	41.68	43.80	48.44	52.20	44.45	47.61	50.90	54.33	57.89
Volumetric (Part B)	14.86	15.29	16.03	16.85	18.64	19.31	31.41	32.20	33.00	33.83	34.67
	53.50	**55.05**	**57.71**	**60.65**	**67.08**	**71.51**	**75.86**	**79.81**	**83.90**	**88.15**	**92.57**
Lower Mary Distribution System											
Lower Mary River (Mary Barrage):											
Fixed (Part A)	8.28	8.52	8.92	9.20	9.48	9.84	12.61	12.92	13.25	13.58	13.92
Volumetric (Part B)	8.83	9.09	9.52	9.82	10.12	10.48	1.94	1.98	2.03	2.09	2.14
	17.11	**17.61**	**18.44**	**19.02**	**19.60**	**20.32**	**14.54**	**14.91**	**15.28**	**15.66**	**16.05**
Lower Mary Channel (Unbundled)											
Fixed (Part C)	26.04	28.36	29.80	30.76	31.68	34.80	19.87	22.42	25.08	27.86	30.76
Volumetric (Part D)	15.69	17.25	18.15	18.72	19.29	19.98	60.24	61.75	63.29	64.87	66.49
	41.73	**45.61**	**47.95**	**49.48**	**50.97**	**54.78**	**80.11**	**84.16**	**88.37**	**92.73**	**97.26**
Lower Mary Channel (Bundled)											
Fixed (Part A)	34.32	36.88	38.72	39.96	41.16	44.64	32.48	35.34	38.33	41.44	44.68
Volumetric (Part B)	24.52	26.34	27.67	28.54	29.41	30.46	62.18	63.73	65.32	66.96	68.63
	58.84	**63.22**	**66.39**	**68.50**	**70.57**	**75.10**	**94.66**	**99.07**	**103.65**	**108.39**	**113.31**
Mareeba-Dimbulah Distribution System											
River Tinaroo/Barron:											
Fixed (Part A)	2.80	2.88	3.00	3.12	3.20	3.32	14.36	14.72	15.09	15.47	15.86

Volumetric (Part B)	14.06	14.47	15.16	15.64	16.11	16.69	0.74	0.76	0.78	0.80	0.82
	16.86	**17.35**	**18.16**	**18.76**	**19.31**	**20.01**	**15.11**	**15.49**	**15.87**	**16.27**	**16.68**
Channel Outside a re-lift up to 100 ML (Unbundled)											
Fixed (Part C)	22.96	23.64	24.80	25.56	26.32	29.28	21.82	22.93	23.50	24.09	24.69
Volumetric (Part D)	6.19	6.37	6.68	6.89	7.11	7.36	11.49	11.78	12.07	12.37	12.68
	29.15	**30.01**	**31.48**	**32.45**	**33.43**	**36.64**	**33.31**	**34.71**	**35.57**	**36.46**	**37.38**
Channel Outside a re-lift up to 100 ML (Bundled)											
Fixed (Part A)	25.76	26.52	27.80	28.68	29.52	32.60	36.18	37.65	38.60	39.56	40.55
Volumetric (Part B)	20.25	20.84	21.84	22.53	23.22	24.05	12.23	12.54	12.85	13.17	13.50
	46.01	**47.36**	**49.64**	**51.21**	**52.74**	**56.65**	**48.42**	**50.19**	**51.45**	**52.73**	**54.05**
Channel Outside a re-lift 100 to 500 ML (Unbundled)											
Fixed (Part C)	19.28	21.48	23.44	24.12	24.88	27.76	21.82	22.93	23.50	24.09	24.69
Volumetric (Part D)	-0.03	0.99	1.62	1.67	1.73	1.78	11.49	11.78	12.07	12.37	12.68
	19.25	**22.47**	**25.06**	**25.79**	**26.61**	**29.54**	**33.31**	**34.71**	**35.57**	**36.46**	**37.38**
Channel Outside a re-lift 100 to 500 ML (Bundled)											
Fixed (Part A)	22.08	24.36	26.44	27.24	28.08	31.08	36.18	37.65	38.60	39.56	40.55
Volumetric (Part B)	14.03	15.46	16.78	17.31	17.84	18.47	12.23	12.54	12.85	13.17	13.50
	36.11	**39.82**	**43.22**	**44.55**	**45.92**	**49.55**	**48.42**	**50.19**	**51.45**	**52.73**	**54.05**
Channel Outside a re-lift more than 500 ML (Unbundled)											
Fixed (Part C)	15.88	17.24	18.08	18.60	19.20	21.88	11.99	14.34	16.80	19.37	22.06
Volumetric (Part D)	-2.21	-1.70	-1.77	-1.83	-1.88	-1.95	11.49	11.78	12.07	12.37	12.68
	13.67	**15.54**	**16.31**	**16.77**	**17.32**	**19.93**	**23.48**	**26.11**	**28.87**	**31.74**	**34.75**
Channel Outside a re-lift more than 500 ML (Bundled)											
Fixed (Part A)	18.68	20.12	21.08	21.72	22.40	25.20	26.35	29.06	31.89	34.84	37.92
Volumetric (Part B)	11.85	12.77	13.39	13.81	14.23	14.74	12.23	12.54	12.85	13.17	13.50
	30.53	**32.89**	**34.47**	**35.53**	**36.63**	**39.94**	**38.59**	**41.60**	**44.74**	**48.01**	**51.42**
River Supplemented Streams & Walsh River (Unbundled)											
Fixed (Part C)	11.84	12.16	12.76	13.16	13.56	14.04	7.68	7.87	8.07	8.27	8.47
Volumetric (Part D)	-3.60	-3.70	-3.87	-4.00	-4.11	-4.26	6.60	6.76	6.93	7.10	7.28
	8.24	**8.46**	**8.89**	**9.16**	**9.45**	**9.78**	**14.27**	**14.63**	**15.00**	**15.37**	**15.75**
River Supplemented Streams & Walsh River (Bundled)											
Fixed (Part A)	14.64	15.04	15.76	16.28	16.76	17.36	22.04	22.59	23.16	23.74	24.33
Volumetric (Part B)	10.46	10.77	11.29	11.64	12.00	12.43	7.34	7.52	7.71	7.90	8.10
	25.10	**25.81**	**27.05**	**27.92**	**28.76**	**29.79**	**29.38**	**30.12**	**30.87**	**31.64**	**32.43**
Channel re-lift (Unbundled)											
Fixed (Part C)	29.56	32.04	35.28	38.12	40.92	44.36	33.74	34.58	35.45	36.33	37.24
Volumetric (Part D)	6.48	7.69	9.15	10.54	11.89	12.32	43.37	44.45	45.56	46.70	47.87
	36.04	**39.73**	**44.43**	**48.66**	**52.81**	**56.68**	**77.11**	**79.03**	**81.01**	**83.03**	**85.11**
Channel re-lift (Bundled)											
Fixed (Part A)	32.36	34.92	38.28	41.24	44.12	47.68	48.10	49.31	50.54	51.80	53.10
Volumetric (Part B)	20.54	22.16	24.31	26.18	28.00	29.01	44.11	45.21	46.34	47.50	48.69

	52.90	**57.08**	**62.59**	**67.42**	**72.12**	**76.69**	**92.21**	**94.52**	**96.88**	**99.30**	**101.79**
St George Distribution System											
Regulated Section (Beardmore Dam or Balonne River):											
Fixed (Part A)	13.56	14.44	15.12	15.60	16.08	17.64	18.73	19.19	19.67	20.17	20.67
Volumetric (Part B)	2.81	3.00	3.14	3.24	3.34	3.46	1.06	1.09	1.12	1.14	1.17
	16.37	**17.44**	**18.26**	**18.84**	**19.42**	**21.10**	**19.79**	**20.28**	**20.79**	**21.31**	**21.84**
Channel (Unbundled)											
Fixed (Part C)	13.16	15.00	15.76	16.24	16.72	18.32	21.83	24.42	27.14	29.06	29.79
Volumetric (Part D)	6.84	7.63	8.01	8.26	8.52	8.82	5.33	5.46	5.59	5.73	5.88
	20.00	**22.63**	**23.77**	**24.50**	**25.24**	**27.14**	**27.15**	**29.88**	**32.73**	**34.80**	**35.67**
Channel (Bundled)											
Fixed (Part A)	26.72	29.44	30.88	31.84	32.80	35.96	40.55	43.62	46.81	49.23	50.46
Volumetric (Part B)	9.65	10.63	11.15	11.50	11.86	12.28	6.39	6.55	6.71	6.88	7.05
	36.37	**40.07**	**42.03**	**43.34**	**44.66**	**48.24**	**46.94**	**50.17**	**53.52**	**56.11**	**57.51**
Theodore Distribution System											
Dawson River											
Fixed (Part A)	9.16	9.44	9.88	10.20	10.48	10.88	16.09	16.49	16.90	17.33	17.76
Volumetric (Part B)	9.23	9.50	9.96	10.27	10.58	10.96	1.63	1.67	1.71	1.75	1.80
	18.39	**18.94**	**19.84**	**20.47**	**21.06**	**21.84**	**17.72**	**18.16**	**18.61**	**19.08**	**19.56**
Dawson Channel (Theodore & Gibber Gunyah) (Unbundled)											
Fixed (Part C)	30.56	33.24	36.64	37.76	38.96	42.32	40.13	43.18	46.36	49.67	53.12
Volumetric (Part D)	11.08	12.26	13.72	14.16	14.59	15.11	20.13	20.63	21.15	21.68	22.22
	41.64	**45.50**	**50.36**	**51.92**	**53.55**	**57.43**	**60.25**	**63.81**	**67.51**	**71.35**	**75.34**
Dawson Channel (Theodore & Gibber Gunyah) (Bundled)											
Fixed (Part A)	39.72	42.68	46.52	47.96	49.44	53.20	56.21	59.67	63.26	67.00	70.88
Volumetric (Part B)	20.31	21.76	23.68	24.43	25.17	26.07	21.76	22.30	22.86	23.43	24.02
	60.03	**64.44**	**70.20**	**72.39**	**74.61**	**79.27**	**77.97**	**81.97**	**86.12**	**90.43**	**94.90**

Note: The unbundled charges presented in this Table represent the difference between the distribution system bundled charges and the recommended bulk WSS charges in the respective schemes.

Other Charges

Termination Fees

As noted in Chapter 4 – Pricing Framework, termination fees should reflect the relevant fixed (distribution system) costs. During 2006-11, SunWater calculated termination fees essentially as a multiple of the published Distribution System Part A tariff minus the published Bulk Part A tariff (that is, the notional fixed distribution system tariff times 9.4, including GST), representing 10 years of notional fixed costs. In contrast, the Authority has recommended the recovery through termination fees of 20 years of fixed charges (discounted at the Authority's recommended WACC for SunWater).

In keeping with its fixed cost methodology, the Authority has based its recommended termination fees for 2012-17, on the *cost-reflective* fixed tariff and not the recommended price. In most cases, this is the cost reflective distribution system fixed (Part C) tariff. The recommended price is not used because, for example, where many distribution systems are on a price path, the published recommended price may not be cost reflective for a number of years.

However, it is the Authority's view that termination fees need to be fixed cost reflective from 1 July 2012, to avoid any perverse incentive for customers to exit tariff groups early in the 2012-17 regulatory period.

It is, therefore, not possible for stakeholders to apply the Authority's recommended 13.8 multiple (including GST) to the fixed recommended tariff, in order to recalculate the termination fee. Instead, the Authority's recommended multiple would need to be applied to the cost-reflective tariffs.

Based on the fixed costs (that is, the relevant cost reflective fixed tariff) discussed in this chapter, and the Authority's recommended WACC, the termination fees for the 2012-17 regulatory period are shown in Table 7.28.

Table 7.28: Draft Recommended Termination Fees (Including GST) 2001-17 (Nominal $)

Scheme/ Distribution System	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Barker Barambah						
Channel to River	18.98	0.00	0.00	0.00	0.00	0.00
Bundaberg Distribution System						
Channel to River	402.68	539.85	553.35	567.18	581.36	595.90
Burdekin Distribution System						
Channel to:						
River	302.84	439.13	450.11	461.36	472.89	484.71
Giru Benefitted Area	181.54	188.84	193.56	198.40	203.36	208.45
Glady's Lagoon	35.48	0.00	0.00	0.00	0.00	0.00
Giru Benefitted Area to:						
River	121.30	198.66	203.62	208.71	213.93	219.28
Glady's Lagoon to:						
River	267.35	439.13	450.11	461.36	472.89	484.71
Giru Benefitted Area	146.05	240.47	246.48	252.64	258.96	265.44
Emerald Distribution System - Medium Priority						
Channel Medium Priority to:						
Emerald Regulated Section	174.11	305.74	313.38	321.22	329.25	337.48
Channel High Priority to:						
Emerald Regulated Section	404.33	305.74	313.38	321.22	329.25	337.48
Lower Mary Distribution System						
Lower Mary River (Tinana Barrage & Teddington Weir) to:						
Lower Mary River (Mary Barrage)	47.03	187.20	191.88	196.68	201.60	206.64
Lower Mary Channel to:						
Lower Mary River (Tinana Barrage & Teddington Weir)	311.91	1,082.05	1,109.10	1,136.83	1,165.25	1,194.38
Lower Mary River (Mary Barrage)	358.95	1,269.25	1,300.98	1,333.51	1,366.85	1,401.02

Scheme/ Distribution System	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Mareeba-Dimbulah Distribution System						
Outside Relift - Up to 100 ML to:						
Outside Relift - Between 100 ML to 500 ML	15.68	0.00	0.00	0.00	0.00	0.00
Outside Relift - Over 500 ML	76.33	0.00	0.00	0.00	0.00	0.00
Supplemented Streams & Walsh River	157.19	186.33	190.99	195.77	200.66	205.68
Tinaroo Falls Dam/Barron River	302.01	465.84	477.48	489.42	501.66	514.20
Outside Relift - 100 ML to 500 ML to						
Outside Relift - Over 500 ML	60.65	0.00	0.00	0.00	0.00	0.00
Supplemented Streams & Walsh River	141.52	186.33	190.99	195.77	200.66	205.68
Tinaroo Falls Dam/Barron River	286.33	465.84	477.48	489.42	501.66	514.20
Outside Relift - Over 500 ML to:						
Supplemented Streams & Walsh River	80.87	186.33	190.99	195.77	200.66	205.68
Tinaroo Falls Dam/Barron River	225.68	465.84	477.48	489.42	501.66	514.20
Relift to:						
Outside Relift - Up to 100 ML	155.54	0.00	0.00	0.00	0.00	0.00
Outside Relift - 100 ML & 500 ML	171.22	0.00	0.00	0.00	0.00	0.00
Outside Relift - Over 500 ML	231.87	0.00	0.00	0.00	0.00	0.00
Supplemented Streams & Walsh River	312.74	186.33	190.99	195.77	200.66	205.68
Tinaroo Falls Dam/Barron River	457.56	465.84	477.48	489.42	501.66	514.20
Supplemented Streams & Walsh River to:						
Tinaroo Falls Dam/Barron River	144.82	279.50	286.49	293.65	300.99	308.52
St George Distribution System						
Channel to:						
Regulated (Beardmore Dam/Balonne River)	201.52	378.29	387.75	397.44	407.38	417.56
Regulated (Thuraggi Watercourse)	201.52	378.29	387.75	397.44	407.38	417.56
Theodore Distribution System						
Dawson Channel to:						
Dawson Regulated Section	436.51	1,080.02	1,107.02	1,134.69	1,163.06	1,192.14
Dawson Regulated Section (Glebe Weir Reservoir)	436.51	1,080.02	1,107.02	1,134.69	1,163.06	1,192.14

The Authority has included estimated termination fees for the five-year regulatory period based on the Authority's recommended WACC for SunWater determined for 2012-13.

The Authority recommends that the termination fees be revised each year to reflect changes in the parameters of the WACC (as per current practice). This will ensure that the most recent data is used to determine termination fees applicable to any particular transaction.

SunWater should confirm the revised WACC with the Authority each year through the 2012-17 regulatory period.

Distribution System Water Harvesting Charges

The distribution system water harvesting charges can comprise up to three components, depending on the scheme:

(a) DERM's water harvesting charge of $3.80 per ML extracted (which SunWater collects from customers);

(b) a distribution system volumetric charge (Tariff D); and

(c) SunWater's lease fee (which SunWater advises is a return SunWater makes on the value of the water harvesting WAE it holds).

As noted in Chapter 4 – Pricing Framework, distribution system water harvesting charges should reflect the applicable distribution system volumetric charge plus the DERM water harvesting charge per ML of water delivered. The SunWater lease fee, if any, should be determined in the market and the revenue be retained by SunWater.

The Authority calculated the distribution system water harvesting charge as the Part D distribution system volumetric tariff plus the DERM $3.80 per ML extraction fee.

The water harvesting charges for the 2012-17 regulatory period are shown in Table 7.29.

Table 7.29: Distribution System Water Harvesting Charges

Scheme	*SunWater's Lease Fee#*	*Water Harvesting Volumetric Tariff D*	*Water Harvesting DERM*	*Total Tariff*
Burdekin Channel	NA	$28.84	NA	$28.84
Giru Groundwater Area	NA	$14.95	NA	$14.95
Glady's Lagoon	NA	$29.31	NA	$29.31
St George Distribution	$3.56	$5.18	$3.80	$12.54

Note: SunWater sets a market-based lease fee and charges for the opportunity cost of it holding channel water harvesting WAE in St George Distribution System. 2011-12 lease fee presented.

At this stage, the lease fee is applied only in St George and due to the process of transformation (transferring ownership of distribution system water harvesting WAE from SunWater to customers / end users in the Murray Darling Basin). As a result of this process the charging of such lease fees is likely to be discontinued by SunWater upon the completion of that process.

The Authority recommends that Government direct the Authority to review these charges (if any, for example, in the Burdekin-Haughton Distribution System) prior to the next review, to ensure that the SunWater market-based lease fee does not represent monopoly pricing.

Drainage Charges

As noted in Chapter 4 – Pricing Framework, drainage charges should recover actual drainage costs. However, in the absence of this data, current drainage charges in distribution systems should be maintained in real terms and the revenue be treated as an offset.

The Authority has adopted current drainage charges and applied the CPI in order to recommend drainage charges for 2012-17 (Table 7.30).

Table 7.30: Drainage Charges ($/ha) (Nominal)

Distribution System	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Burdekin	22.15	22.70	23.27	23.85	24.45	25.06
Emerald						
Irrigable land	22.20	22.76	23.32	23.91	24.50	25.12
Non-irrigable land	5.50	5.64	5.78	5.92	6.07	6.22
St George	22.20	22.76	23.32	23.91	24.50	25.12
Theodore	22.20	22.76	23.32	23.91	24.50	25.12

The Authority recommends that a review of drainage charges should be initiated immediately upon completion of the current price investigation to allow cost reflective costs in the next regulatory period.

Drainage Diversion Charges

As noted in Chapter 4 – Pricing Framework, current drainage diversion charges should be maintained in real terms and be treated as a revenue offset.

The Authority has adopted current drainage diversion charges and applied the CPI in order to recommend drainage diversion charges for 2012-17 (Table 7.31).

Table 7.31: Drainage Diversion Charges (Nominal)

Distribution System	*2011-12*	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Burdekin						
($/installation)	141	144.53	148.14	151.84	155.64	159.53
Emerald						
Up to 2 ML ($/ML)	191	195.78	200.67	205.69	210.83	216.10
2-100ML ($/ML)	6.55	6.71	6.88	7.05	7.23	7.41
St George						
Metered ($/ML)	12.06	12.36	12.67	12.99	13.31	13.64
Pump ($ML)	9.77	10.01	10.26	10.52	10.78	11.05
Theodore ($/ML)	9.23	9.46	9.70	9.94	10.19	10.44

The Authority recommends that drainage diversion charges be reviewed as part of a review of drainage charges (above) that should be initiated immediately upon completion of the current price investigation to allow cost reflective costs in the next regulatory period.

Free Water

As noted in Chapter 4 – Pricing Framework, pre-existing rights to free water should be maintained where they continue as part of current legislation, agreement or Government policy. Neither SunWater nor customers with pre-existing right to free water should bear these costs.

Storage Rental Fees

As noted in Chapter 4 – Pricing Framework, storage rental fees for carry-over water should not be levied by SunWater, contingent upon the adoption of cost reflective tariff structure, which will provide the appropriate signals for marginal water use. Aligning the tariff structure with the cost structure will not distort the incentive for carry-over arrangements as a customer will use water when it is most profitable to do so while SunWater will maintain its ability to recoup costs.

7.8 Broader Implications of Recommended Prices

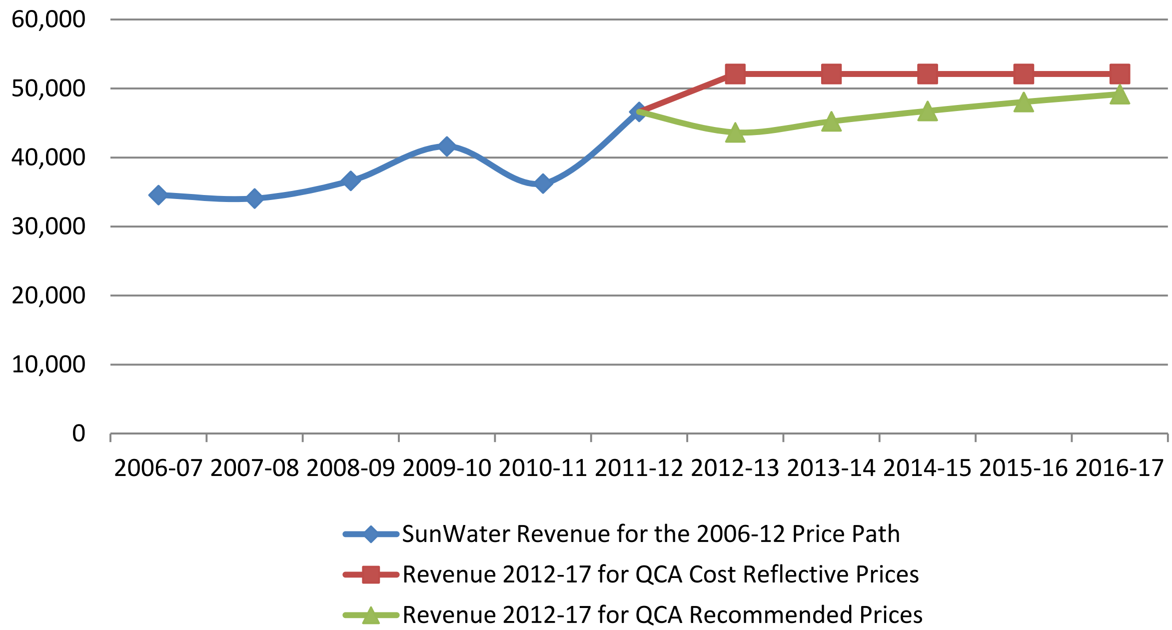
As a result of the rebalancing of the tariff structures from those prevailing in 2006-11, the implications of the draft prices are best assessed in terms of their impact on the total revenues implied for SunWater or, in the case of an individual, on the basis of the individual's total water bill. The impact of the cost-reflective and recommended prices on SunWater's forecast total revenues (from irrigation charges only) compared with those of 2006-12, are outlined in Table 7.32 and Figure 7.20.

Table 7.32: Irrigation Revenues for SunWater 2006-17 (Real $'000)

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Revenue for the 2006-12 Price Path	34,575	34,072	36,631	41,622	36,235	46,628					
Revenue for 2012-17 with QCA Cost Reflective Prices							52,112	52,112	52,112	52,112	52,112
Revenue for 2012-17 with QCA Recommended Prices							43,713	45,256	46,756	48,069	49,189

Source: QCA (2011) Note: SunWater's 2011-12 revenue assumes average irrigation only water usage for 2006-11.

Figure 7.20: Irrigation Revenues for SunWater 2006-17 (Real $'000)



The Authority would ideally assess the impact of its recommended prices/tariff structures and other charges on land/property values, water trading and bank credit. However, as the proposed annual water charges increase in real terms by no more than $2/ML per annum (for fixed water charges) and as the cost-reflective volumetric charges send an efficient pricing signal, the Authority has concluded that in most schemes (at least) there should not, in general, be significant adverse impacts arising from the Authority's recommendations for SunWater's irrigation customers.

By contrast, the Authority's recommended termination fees may have significant direct implications for some irrigators considering the option of permanently exiting WAE from distribution systems. As noted earlier, the Authority's recommended termination fees are based on a multiple of about 13.8 times the cost-reflective tariffs (and not the recommended fixed tariffs, which may be below cost reflective levels due to price paths). Accordingly, termination fees in some service contracts are significantly higher than previously.

More broadly, however, it is recognised that these fees may impact the market value (and therefore bank credit) of all distribution systems customers, by potentially depressing the market value. However, the Authority also notes that the reverse may be the case for the reasons outlined below.

That is, the Authority's approach to termination fees protects remaining distribution system customers from the impact of rising fixed costs in distribution systems where customers exit. By contrast, under SunWater's current termination fee approach the majority of the fixed costs (arising from customers exiting) were passed on to remaining customers after 10 years, thereby increasing fixed charges and potentially depressing WAE market values over time.

Customers seeking to exit, under the Authority's termination fees, will face a fee based on the discounted value of 20 years of cost-reflective fixed distribution system tariffs (as discussed above). This will ensure that all costs associated with an exit are contemplated and increases the likelihood that water will move to its true higher use (rather than currently where the cost of exiting is imposed by SunWater and the exiting customer on others).

Under the Authority's approach, only the exiting customer and SunWater bear the costs and risks associated with exiting. This is better aligned with the Authority's view that, primarily, the exiting customer should meet an assessed 60% of the fixed costs associated with the infrastructure, while SunWater should bear 40% of the fixed costs. This should provide SunWater with an incentive to rationalise and reduce distribution system costs where infrastructure is not needed in the long run. In this regard, all costs are potentially variable in the long run.

The Authority also notes that, for an impact assessment to be robust, particularly with respect to termination fees, the impacts would need to be estimated on an individual enterprise or farm basis. However, this is difficult at best and, as consideration of capacity to pay was not part of the current review, the Authority is limited in what it can achieve in this regard.

For most service contracts, the impact of the Authority's recommended water prices/tariff structures and other charges (excluding termination fees) is expected to be minimal. However, the Authority would welcome submissions from stakeholders on the broader impacts of termination fees (and other charges) as it intends to further address this matter prior to the Final Report.

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APPENDIX A: MINISTERIAL DIRECTION

QLD COMPETITION AUTHORITY

14 JUN 2011

DATE RECEIVED

Queensland Government

Hon Stephen Robertson MP
Member for Stretton

Ref CTS 06610/11

Minister for Energy and Water Utilities

Mr Brian Parmenter
Chairperson
Queensland Competition Authority
GPO Box 2257
BRISBANE QLD 4001

09 JUN 2011

Dear Mr Parmenter

I refer to the Amended Ministers' Referral Notice (the Amended Direction) which directs the Queensland Competition Authority to recommend irrigation prices to apply to SunWater water supply schemes from 1 July 2012 to 30 June 2017.

It has been brought to my attention that the Network Service Plans which SunWater was required to submit to the Authority by 10 January 2011 make reference to a National Water Initiative requirement that all non-urban offtakes are metered in accordance with the national metering standard by July 2020. In particular, I understand that SunWater has proposed to the Authority that the cost of it complying with the National Framework for Non-urban Water Metering be treated as a potential price review trigger, pursuant to Section 1.3 of the Amended Direction.

SunWater will indeed be expected to comply with this national metering framework as part of commitments the Queensland Government has made within the Council of Australian Governments (COAG) process. However, I wish to advise that, in reporting to the Queensland Government its recommendations for the 2012–17 irrigation price path, the Authority should not treat the cost of SunWater's compliance with the national metering framework as a potential price review trigger. Further, the Authority is requested to consider only those metering costs which are part of SunWater's forecast efficient costs as presented in its Network Service Plans, including, for example, corrective and preventative maintenance costs related to metering. Therefore, the Authority should not address metering costs set out in Section 5 of each of SunWater's Network Service Plans, *Risks to the Plan and Possible Price Reset Triggers.*

The Queensland Government is yet to make a decision on the extent to which costs associated with the implementation of the national standard for non-urban metering will be recovered in irrigation prices. It would therefore be premature and potentially misleading for the Authority's reports to signal that irrigation prices will most likely be recovering these costs for SunWater at some stage.

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Should you have any further enquiries, please do not hesitate to contact Mr Greg Claydon of the Department of Environment and Resource Management on telephone 3330 6109.

Yours sincerely

[redacted]

STEPHEN ROBERTSON MP

Queensland Competition Authority Act 1997
Section 23

AMENDED MINISTERS' REFERRAL NOTICE

Referral

As the Minister for Finance and the Arts and Treasurer of Queensland, pursuant to Section 23 of the *Queensland Competition Authority Act 1997* (the Act), we hereby amend our Direction of 17 December 2010 and direct the Queensland Competition Authority (the Authority) to recommend irrigation prices to apply to the following SunWater water supply schemes (WSS) from 1 July 2012 to 30 June 2017 (the price path period):

Barker Barambah	Lower Fitzroy
Bowen Broken Rivers	Macintyre Brook
Boyne River and Tarong	Maranoa River
Bundaberg	Mareeba-Dimbulah
Burdekin-Haughton	Nogoa-Mackenzie
Callide Valley	Pioneer River
Chinchilla Weir	Proserpine River
Cunnamulla	St George
Dawson Valley	Three Moon Creek
Eton	Upper Burnett
Lower Mary	Upper Condamine

1. Matters the Authority must take into consideration

In referring this investigation, the Ministers direct the Authority under section 24 of the Act as follows:

1.1 For water supply schemes, or segments of schemes (except those listed in 1.2 below), bulk water supply and channel prices/tariff structures are to be set as follows:

a) to provide a revenue stream that allows SunWater to recover:

i) efficient operational, maintenance and administrative costs to ensure the continuing delivery of water services;

For the removal of doubt, costs include, but are not limited to:

- electricity costs;
- recreation management costs;
- compliance with workplace, health and safety; and
- compliance with Australian and Queensland Government initiatives on water management, planning, trading, accounting, metering and measurement.

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

iii) to put beyond doubt, costs exclude any rate of return on existing rural irrigation assets (as at 30 June 2012); unless current prices are already above the level required to recover i) and ii), in which case water prices are to be maintained in real terms based on an appropriate measure of inflation as recommended by the Authority; and

iv) a commercial return of, and on, prudent capital expenditure for augmentation commissioned after 30 June 2012;

b) the Authority is not to consider the regulated asset base (RAB) for existing irrigation assets (that is assets commissioned prior to 1 July 2012);

c) in considering the tariff structures, the Authority should have regard to the fixed and variable nature of the underlying costs; and

d) the Authority is to adopt tariff groups as proposed in SunWater's network service plans. The Authority is not to investigate additional nodal pricing arrangements.

1.2 For the following schemes or segments of schemes, irrigation prices are to be set to:

i) For the price path period, increase in real terms at a pace consistent with the 2006-2011 prices or until such time as the scheme reaches costs sufficient to recover 1.1 a) i) and ii); and

ii) include a commercial return of, and on, prudent capital expenditure for augmentation commissioned after 30 June 2012.

These schemes are:

- Redgate Relift in the Barker Barambah WSS
- Callide Valley WSS
- Maranoa River WSS
- Channel Relift in the Mareeba Dimbulah WSS
- Cunnamulla WSS
- Three Moon Creek WSS

1.3 The Authority must recommend appropriate regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with the allowable costs identified in 1.1 (above) outside the control of SunWater.

1.4 For the purposes of this Direction, the Authority is not to consider the recovery in prices of capital expenditure for dam safety upgrades.

1.5 The Authority is to have regard to the level of service provided by SunWater to its customers of the water supply scheme, including for capital expenditure on existing assets or for the construction of new assets.

1.6 In recommending irrigation prices the Authority must have regard for the legitimate commercial interests of SunWater, and the requirement for SunWater to operate as a commercial entity, subject to 1.1 (above).

1.7 For relevant schemes, the Authority is to review drainage charges and channel water harvesting charges.

1.8 If the Authority calculates tariffs for a water supply scheme, or segment of a water supply scheme that may have the effect of a price increase for irrigators that is higher than the Authority's measure of inflation,

a) the Authority must consider the need to implement a price path for the introduction of the price increase to moderate price impacts on irrigators, and that has regard for SunWater's legitimate commercial interests;

b) a price path may be longer than one price path period, however the Authority must provide its reason for the longer timeframe; and

c) if the Authority recommends not to implement a price path, the Authority must give its reasons.

2. Consultation

The Authority must undertake an open consultation process with all relevant parties and consider submissions within the timetable for the delivery of the Final Report to Government. All reports and submissions must be made publicly available, including on the Authority's website.

3. Timing

SunWater must provide its Network Services Plans and supporting documentation to the QCA by no later than 10 January 2011.

The Authority must provide to the responsible Ministers and the Minister for Energy and Water Utilities the:

a) Draft Report and draft irrigation prices by no later than 31 October 2011; and

b) Final Report and recommended price paths by no later than 30 April 2012.

The Final Report will inform the Government's deliberations for price paths to apply to SunWater's irrigation water prices for the period commencing 1 July 2012 and ending 30 June 2017.

4. Other matters

To put beyond doubt, nothing in this Referral prevents SunWater from setting full commercial prices for urban and industrial customers.

The Authority may exercise all the powers under Part 6 of the *Queensland Competition Authority Act 1997*.

ANDREW FRASER **RACHEL NOLAN**

The Hon. Andrew Fraser MP, Treasurer

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APPENDIX B: NATIONAL AND STATE LEGISLATION AND AGREEMENTS

B.1 National Agreements

1994 Council of Australian Governments

In 1994, the Queensland Government was a signatory to a COAG agreement that, in relation to rural water pricing, agreed:

(a) where charges do not currently fully cover the costs of supplying water to users, charges and costs be progressively reviewed so that no later than 2001 they comply with the principle of full-cost recovery with any subsidies made transparent;

(b) to achieve positive real rates of return on the written-down replacement costs of assets in rural water supply by 2001, wherever practicable; and

(c) future investment in new schemes or extensions to existing schemes be undertaken only after appraisal indicates it is economically viable and ecologically sustainable.

1995 National Competition Policy

On 11 April 1995, under the National Competition Policy (NCP) and related reforms, it was agreed that payments under the second tranche be made after States had implemented specified reforms. These included implementation of the strategic framework for the efficient and sustainable reform of the Australian water industry and the future processes as endorsed at the February 1994 COAG meeting and embodied in the Report of the Expert Group on Asset Valuation Methods and Cost-Recovery Definitions, February 1995.

The NCP Agreement required States to consider independent prices oversight of the regulated service provider. The primary objective was efficient resource allocation, but with the (economic) regulator to have regard for any explicitly identified and defined CSO imposed upon the service provider (and funded) by Government.

1998 Standing Committee on Agriculture and Resource Management Taskforce

The 1998 SCARM Task Force on COAG water reform was established to manage and report on the implementation of the COAG water reform agenda and the subsequent NCP.

A set of guidelines (SCARM Guidelines) was recommended for asset valuation, the return on assets and asset renewals in the context of cost recovery.

2004 Intergovernmental Agreement of a NWI

The 2004 Intergovernmental Agreement of a NWI was designed to continue the reforms that commenced under the 1994 COAG reform agenda. Under the Best Practice Water Pricing and Institutional Arrangements, the Queensland Government, along with other states and territories, committed to best practice water pricing to:

(a) promote economically efficient and sustainable use of water resources, water infrastructure assets and government resources devoted to the management of water;

(b) ensure sufficient revenue streams to allow efficient delivery of the required services;

(c) apply full cost recovery to all rural surface and groundwater based systems, recognising that there will be some small community services that will never be economically viable but need to be maintained to meet social and public health obligations;

(d) achieve lower bound pricing for all rural systems in line with existing NCP commitments;

(e) continue movement towards upper bound for all rural systems, where practicable; and

(f) implement pricing that includes externalities, where feasible.

Consistent with the 1998 SCARM Guidelines, lower bound pricing is the level at which, to be viable, a water business recovers operational, maintenance and administrative costs, externalities, taxes or tax equivalent regimes (TERs) (not including income tax), the interest cost on debt, dividends (if any) and makes provision for future asset refurbishment/replacement. Dividends should be set at a level that reflects commercial realities and stimulates a competitive market outcome.

Upper bound pricing is the level at which, to avoid monopoly rents, a water business recovers operational, maintenance and administrative costs, externalities, taxes or TERs, the cost of capital, the latter being calculated using a WACC and provides for the cost of asset consumption.

Commonwealth Water Act 2007

The *Water Act* (C'th) required the Commonwealth Minister for Climate Change and Water to make water charge rules. The Minister has adopted water charge rules – on the basis of the ACCC's advice – that apply only in the MDB. Jurisdictions can voluntarily opt to extend the scope of the Water Act beyond the MDB.

The WCIR require SunWater, in respect of its schemes that are part of the MDB (Chinchilla Weir, Cunnamulla Weir, Macintyre Brook WSS, Maranoa WSS, St George WSS and Upper Condamine WSS), to:

(a) provide a schedule of charges to existing and new customers;

(b) prepare a network consultation paper that outlines the options and alternatives for works, and the anticipated regulated charges that would apply; and

(c) prepare NSPs that detail the anticipated level of service, estimates of capital expenditure and anticipated regulated charges.

The Water Charge (Termination Fee) Rules 2009 are explained in the Pricing Framework Chapter.

NWI Pricing Principles

The 2010 NWI pricing principles have been developed jointly by the Australian Government and state and territory governments to provide a set of guidelines for rural and urban pricing practices, and to assist jurisdictions implementing the NWI pricing commitments in a consistent way. Principles relevant to the irrigation sector include:

(a) principles for the recovery of capital expenditure which provide guidance to water service providers on asset valuation and cost recovery for urban and rural capital expenditure; and

(b) principles for water planning and management which provide guidance for urban and rural water service providers in identifying and allocating the costs of water planning and management activities between government and water users.

The principles for the recovery of capital expenditure specify how past and new capital expenditure is to be recovered through prices. A ‘line in the sand’ may be used to establish the opening RAB, which is determined through consideration of whether past capital expenditure is excessive for current needs or whether capital was contributed by others and it was intended that they retain the benefit of having done so. The resulting opening RAB is then rolled forward each year to reflect prudent capital additions, disposals and depreciation.

Contributed assets should be excluded from the asset base or offset using other mechanisms so that a return on and of the contributed capital is not recovered from customers. If a renewals annuity is used, it should include provision for replacement of contributed assets.

For jurisdictions that have yet to establish a line in the sand, the legacy date is to be set no later than 1 January 2007. Once set, the legacy date should not change. Costs funded by governments after the legacy date should be reported through a transparent subsidy.

The principles are not binding on governments and jurisdictions can remain compliant with the principles by tabling the reasons for any inconsistencies in State Parliament.

B.2 Water Planning in Queensland

The Queensland *Water Act 2000* is the legislative instrument that mandates how water is to be managed. The prescribed planning process includes WRPs, ROPs and ROLs.

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. WAEs are established from this consumptive pool, and are assigned performance characteristics in terms of historic reliability.

Water Resource Plans

The Queensland *Water Act 2000* describes that a WRP may be prepared to:

(a) define the availability of water for any purpose;

(b) provide a framework for sustainably managing water and the taking of water;

(c) identify priorities and mechanisms for dealing with future water requirements;

(d) provide a framework for establishing water allocations [WAE]; and

(e) provide a framework for reversing, where practicable, degradation of natural ecosystems, including, for example, stressed rivers.

A WRP is subordinate legislation which prescribes the environmental requirements and consumptive pool for each catchment, and sets performance objectives for WAEs.

Each implemented WRP seeks to:

(a) ensure that water is shared in a transparent way to protect consumptive and non-consumptive water uses;

(b) secure water entitlements for the life of the WRP; and

(c) provide for existing entitlements to convert to tradeable water allocations that can be traded to new locations or uses.

Resource Operations Plans

ROPs are developed to implement the WRPs by setting out the day-to-day arrangements that will be used to put the strategies into effect. The ROP requires the ROL holder to determine an announced allocation for each priority based on the water sharing rules describes in the ROP.

Key aspects of the ROL and related conditions set out in the associated ROP include:

(a) operational conditions for storages, such as minimum storage levels, environmental release rules and constraints on changes in the rates of release;

(b) water sharing rules (such as announced allocation or continuous sharing rules);

(c) environmental monitoring and reporting requirements; and

(d) recording and reporting water use by entitlement holders.

Resource Operations Licence

A ROL allows the storage owner to interfere with the flow of water to the extent necessary to comply with the supply requirements and other regulations outlined in the applicable ROP.

Where a ROP is not finalised, an Interim Resource Operations Licence (IROL) sets out the interim water management arrangements for the scheme.

Water Allocation Security Objectives

The WASOs are used to set the minimum standard for the performance of WAEs based on the historic record. The WASO is determined using statistics generated from hydrologic models, using historic flow sequences. For example, the WASOs for medium priority are typically around 80% to 90% median monthly reliability of supply which means that owners of the WAE would receive access to their WAE in 80% to 90% of months based on the historical record. The volume of medium priority WAE on issue was determined on a similar basis.

Water Access Entitlements

The water planning 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.

Each WAE specifies the location for taking water, which is usually defined by river section. Customers can alter these rights, subject to approval by the DERM. For example, the location can be changed to a different river section. The ROP usually sets the constraints for such changes.

Types of WAEs

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. In general, irrigators hold medium priority WAE. The water sharing rules under each ROP determine the relative access to water for each priority.

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 WAEs before any water is available to lower priority entitlements. Importantly, these rules do not differentiate on the basis of the use of water, but rather the priority of the entitlement. This might result in medium priority WAE receiving a lower percentage of their nominal entitlement, which is called the announced allocation. The method for determining the announced allocation is described in the relevant ROP.

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 to essential services such as urban supplies or power generation.

Bulk water services also incorporate facilitation of water trading. For example, SunWater has obligations under various ROLs to administer temporary trades between customers.

Supply Contracts

SunWater must act in accordance with the supply contract it has with its customers. Under Section 1116 of the *Water Act 2000*, the standard contract is 'deemed' to apply, even if a customer has not signed it. Otherwise, a contract may be agreed by SunWater and customers.

River Supply Contracts

Under a standard river contract, SunWater is obliged to:

(a) release water to meet likely customer demand, subject to SunWater legal obligations;

(b) promptly repair any damage to, or malfunction in, the meter of which details are notified to SunWater;

(c) release water within the Regulated Area;

(d) where consultation is required under the contract, SunWater shall:

  (i) consult fairly and reasonably with the customer or any entity representing customers of SunWater within the Regulated Area; and

  (ii) allow the customer a reasonable opportunity to participate in any such consultation;

(e) at approximately annual intervals during the contract, publish a report comparing the performance of SunWater with the Service Targets; and

(f) revise Service Targets for the Regulated Area from time to time after considering changes in customer needs determined through customer consultation, and changes in industry practice and procedures.

SunWater may make and amend the SunWater Rules concerning the Regulated Area, including:

(a) implementing SunWater's rights and obligations as the holder of the ROL; and

(b) setting out, clarifying or amending the rights and obligations of SunWater and the Customer under the contract.

The water supply arrangements (referred to as SunWater Rules in the standard river contract) and service targets are specified separately for each scheme.

The water supply arrangements, while specified separately for each scheme, generally include matters such as:

(a) the process for ordering water;

(b) time taken for water to arrive after ordering;

(c) emergency shutdowns;

(d) location for taking water; and

(e) cessation or restriction of supply.

Service targets, among other performance indicators, specify the targeted length and frequency of planned and unplanned shutdowns. The standard contract requires SunWater to report against these targets and to revise them in consultation with customers.

Distribution System Supply Contract

Under the standard channel contract, SunWater has very similar obligations to those specified in the standard river contract.

The channel contract also specifies the means to vary a customer's maximum diversion rate. The contract allows for the maximum diversion rate to be varied if agreement is reached between the customer and SunWater, and the variation does not adversely impact on another person. In off-peak conditions, a customer may extract water up to the maximum diversion rate.

The access conditions, as specified in the distribution system Water Supply Arrangements and Service Targets, apply when the demand for water exceeds the distribution system capacity. In these circumstances, all customers are required to adhere to the Working Supply Flow Rates that have been determined for each irrigated property.

Water Supply (Safety and Reliability) Act 2008

Section 70 of the *Water Supply (Safety and Reliability) Act 2008* requires SunWater to have a SAMP, approved by DERM, to ensure continuity of supply. The SAMP requires operators to specify:

(a) appropriate service standards, including customer service standards, and performance indicators for the service; and

(b) an operations, maintenance and renewals strategy that demonstrates how each standard will be achieved.

In relation to these matters, SunWater's SAMP indicates that it seeks to meet each of the above, as follows:

(a) service standards are managed through contracts and associated Water Supply Arrangements and Service Targets; and

(b) to assist in the refurbishment and enhancement planning process, SunWater has developed Five Year Asset Management Plans for each WSS.

Trading

Before the commencement of the water planning process under the *Water Act 2000*, water licences were attached to the land title and could not be traded separate to the land. Under the

Water Act 2000, once a ROP is established in a system, existing water entitlements expire and are replaced by WAEs which are recorded on the Water Allocations Register.

Most schemes have completed the initial water planning process, with ROPs and ROLs already established. This means that WAEs have been formalised in those schemes, and permanent trading of those entitlements can occur.

In Queensland, three types of water trading are available, namely:

(a) permanent trading of WAE;

(b) leases of WAE; and

(c) seasonal assignment of water available under a WAE (temporary transfers).

Permanent trading of WAEs occurs in a similar fashion to the transfer of property ownership. The applicable price for the trade of a WAE is determined by the market. Water brokers and exchanges commonly facilitate the matching of a willing buyer and a willing seller. The new owner is thereafter obliged to pay the applicable charges relating to the WAE. The relevant ROP details the restrictions relating to the change in ownership of a WAE, particularly relating to change in location.

A WAE may be leased in a similar manner as land is leased with the benefits and responsibilities of holding the WAE transferred to the lessee for the period of the lease.

A seasonal water assignment is the sale of some or all of the water that may be taken under a WAE in a water year. The rules that apply to seasonal water assignments are described in the relevant WRP and ROP.

APPENDIX C: WACC

C.1 Introduction

Ministerial Direction

Under the Ministerial Direction (the Direction), the Authority must, among other things, set irrigation prices to provide a revenue stream that allows SunWater to recover:

(a) its efficient operational, maintenance and administrative costs;

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

(c) a commercial return of, and on, prudent capital expenditure for augmentation commissioned after 30 June 2012 (except for dam safety upgrades).

DERM has subsequently clarified that SunWater's revenue stream should also recover an appropriate allowance for working capital.

The Direction explicitly provides that the Authority is to exclude any rate of return on existing rural irrigation assets (as at 30 June 2012). Moreover, for the 2012-17 regulatory period, SunWater's NSPs do not provide for capital expenditures of the type outlined in (c) above.

Previous Review

In the 2006-11 price path, SunWater used the same discount rate to calculate both the renewals annuity and the present value of maximum recoverable revenues (SunWater, 2006b).

Consistent with generally accepted practice, SunWater used the WACC to estimate the discount rate, the capital asset pricing model (CAPM) to estimate the cost of equity capital, and a debt premium above the risk-free rate to estimate the cost of debt capital (SunWater, 2006b).

Authority's Approach

Under the Direction, SunWater's allowable revenue must recover the costs outlined in (a) and (b) above and a working capital allowance. In order to calculate the allowable revenue stream, the Authority has employed a discounted cash flow (DCF) methodology involving an appropriate discount rate in accordance with accepted regulatory practice and NWI Pricing Principles (2010).

In this Draft Report, the Authority has recommended its approach to estimating an appropriate discount rate and associated constituent parameters.

The Authority proposes to recalculate the discount rate for the Final Report to produce the final proposed prices for 2012-17, taking into account stakeholder submissions on its current approach and using the best available information.

C.2 Method of Calculating the Appropriate Discount Rate

Form of the Discount Rate

The general form of the discount rate most commonly used and accepted in regulatory practice is the WACC.

The WACC is the weighted sum of the costs of debt and equity finance where: the weights are the values of debt and equity expressed as shares of the entity's funding mix; the cost of debt is based on an assessment of the credit rating of the entity; and the cost of equity is based on the CAPM.

However, within this general definition of the WACC, there are several specific formulations depending on the nature of the cash flows being valued. In theory, it makes no difference to DCF valuations which of the alternative definitions of WACC is chosen for financial analysis provided there is consistency between cash flow and discount rate definitions.

For example, cash flows can be expressed as before or after tax, or in real or nominal terms. Provided the definition of the WACC used is consistent with the nature of the cash flows being discounted, the same valuation will result.

Stakeholder Submissions

BRIG (2011) submitted that the WACC rate should follow closely the QTC lending rate. BRIG considered that, if there was local management of the scheme, the board would borrow from QTC to fund any asset renewals or invest any positive balances with the same body. BRIG further submitted that they may add a small premium for risk but would certainly not be seeking commercial rates of return.

Anthony Thomas (2011) submitted that the cost of capital is the cost of interest on the loan and the amortisation of the principal over the term of the loan. Mr Thomas considered that this may be illustrated by applying the concept of a 'credit foncier' loan, commonly used in modern banking. Such a loan is for a fixed period, with regular equal repayments of both interest and principal, so that at the end of the term, the loan is completely repaid. Further, that these periodic repayments can be recovered from water users, through annual charges based upon entitlements.

Authority's Analysis

In relation to the issues raised by stakeholders, which propose solely debt funding, generally-accepted regulatory practice recognises that the appropriate discount rate for a government-owned enterprise is the opportunity cost of capital for the providers of both debt and equity funds, given the underlying risk of the enterprise. This is consistent with the Direction which requires a commercial return of, and on, prudent capital expenditure for augmentation commissioned after 30 June 2012 (except for dam safety upgrades).

While the government has excluded the existing asset base from any return on capital, it has not directed that a less than commercial return (discount rate) be adopted for other purposes (including the renewals annuity and discounting of future costs for establishing price paths). Therefore, the Authority proposes to use the Authority's estimate of the appropriate WACC for SunWater as the appropriate discount rate.

The Authority employs the Officer WACC3 or 'vanilla' form of the discount rate. This approach defines cash flows in nominal, post-tax terms and modifies the cash flows, as opposed to the discount rate, for the tax deductibility of interest payments and the value of dividend imputation credits[39]. This form of the discount rate, and its corresponding cash flows, are defined as follows:

[39] Officer (1994) analysed four versions of the WACC model that vary according to the definition of assumed cash flows.

$$WACC3 = r_e^L \frac{E}{V} + r_d \frac{D}{V}$$

$$X_0 - t_\varepsilon \left(X_0 - X_d \right)$$

where: $WACC3$ is the 'vanilla' form for the WACC; r_e^L is the cost of equity capital; r_d is the cost of debt capital; E/V and D/V are the proportions of equity and debt respectively in the entity's funding mix; X_0 represents the expected net operational cash flows (earnings before interest and tax, or EBIT); X_d is the expected cash flow to debt holders, $t_\varepsilon = (1-\gamma)t_c$, γ (gamma) is the proportion of dividends distributed from Australian-taxed earnings able to be used as dividend imputation credits; and is the corporate tax rate.

To calculate Officer's $WACC3$ for SunWater, estimates are required for the cost of equity, the cost of debt and the relative proportions of debt and equity capital (the capital structure).

The Authority estimates the cost of equity capital using the Sharpe-Lintner CAPM as follows:

$$r_e^L = r_f + \beta_e^L \left(r_m - r_f \right) = r_f + \beta_e^L.mrp$$

where r_f is an estimate of the risk-free rate; β_e^L is an estimate of the equity beta which is a measure of the non-diversified risk faced by equity holders; and mrp is an estimate of the market risk premium (MRP), that is, the return above the risk-free return required by investors for bearing average market risk.

The Authority also uses the following relationship to calculate the equity beta from the asset beta:

$$\beta_e^L = \beta_a + \left(\beta_a - \beta_d \right)\left(1 - t_\varepsilon \right)\frac{D}{E}$$

The Authority engaged NERA Economic Consulting (NERA) to estimate an appropriate discount rate, and associated parameters, for SunWater's activities. The following sections outline NERA's findings, submissions from stakeholders, practices followed in other relevant Australian jurisdictions, and the Authority's analyses and recommendations.

C.3 Single or Multiple Discount Rates

The risk-free rate and the MRP are market parameters in the sense that they are components of the WACC that are the same for all entities. On the other hand, the equity beta and the debt risk premium above the risk-free rate are entity-specific parameters which are combined with the other components of the WACC to ensure investors and debt holders are compensated for the risks of investing in the particular entity.

As SunWater provides bulk, distribution and drainage water services to irrigators, miners, local governments, industrial users and power stations, the question arises as to whether the risks (and thus the entity-specific parameters) are sufficiently different across different parts of SunWater's business to justify the use of different discount rates, or whether a single discount rate should be applied to SunWater's activities generally. NERA were invited to examine this issue as part of its specialist advice to the Authority.

Consultant's Analysis

NERA (2010) advised that whether multiple discount rates should be applied across different parts of SunWater's business primarily depended on whether:

(a) the non-diversifiable risk (as measured by asset beta) of different segments of SunWater's business are likely to be materially different; and

(b) the extent of any differences in the asset betas of separate segments of SunWater's business can be reliably quantified.

NERA undertook a first principles assessment of the factors likely to affect the asset betas of different parts of SunWater's business. These factors included the nature of the product or service, the nature of the customer, the regulatory framework, potential for growth options, duration of contracts and degree of monopoly power.

NERA concluded that, conceptually, those segments of SunWater's business servicing irrigation and urban customers may have lower exposure to changes in economic activity (lower asset betas and discount rates) than those segments servicing industrial customers. However, NERA argued that, in practice, it would be difficult to reliably quantify the extent of any differences due to the paucity or inadequacy of relevant data sources. Therefore, for practical reasons, NERA concluded that a single WACC should be applied across all of SunWater's operations.

Stakeholder Submissions

SunWater

SunWater (2011) submitted that WACCs should be differentiated where possible but, in considering NERA's analysis, agreed with NERA's conclusion that a single WACC should be adopted in the current circumstances where it is difficult to establish scheme specific WACCs.

Other Stakeholders

MIS (2010) submitted that, if a rate of return is to be applied by the Authority, it should be negotiated with users in each scheme, that is, there should be multiple rates of return for different schemes.

BRIG (2010) submitted that the schemes across the state are very different and they would like to see more compelling argument/s that different rates of return should not apply.

ISP (2010) submitted that NERA's analysis is rather casual in asserting that the non-diversifiable risk associated with rural, electricity and urban uses are not likely to be materially different.

BRIAIC (2010) submitted that SunWater is a diverse enterprise with different customers. BRIAIC submitted that NERA's analysis has not adequately examined the volatility of the actual income of SunWater.

MDIAC (2011) submitted that they support the adoption of a single WACC to calculate renewals annuity and prices.

MSF (2010) submitted that they understand NERA's conclusion that a single WACC should be established for all SunWater assets.

Other Jurisdictions

In other jurisdictions, recent decisions by IPART (2010) and ESC (2008) applied the same equity beta and WACC to all regulated water businesses within their jurisdiction. Neither regulator distinguished between the non-diversified risks associated with the provision of rural or urban water services. Similarly, a single WACC was applied by both the ICRC (2008) for the Water and Wastewater Price Review and the Government Prices Oversight Commission (GPOC, 2007) for its Investigation into the Pricing Policies of Hobart Regional Water Authority, Esk Water Authority, and Cradle Coast Water.

Authority's Analysis

The Authority accepts NERA's findings that, in principle, different segments of SunWater's business may give rise to different systematic risk profiles. This is more likely to be the case when comparing irrigation, urban, and industrial activities. However, it is less likely to be valid for irrigation activities across different schemes, and this is the more relevant consideration for the pricing of irrigation services.

In any case, as concluded by NERA, measuring any differences in systematic risk is fraught with difficulties. SunWater recognise this in its submission where it refers to the difficulties in undertaking comparable company analysis.

The Authority recommends that a single discount rate (WACC) be applied across all of SunWanter's irrigation activities.

C.4 Risk-free Rate

The risk-free rate is the rate of return required by investors for holding an asset with guaranteed payments. There is no risk of default and the timing of all payment is certain.

Consultant's Analysis

NERA (2011) examined the Authority's recent decisions on estimating the risk-free rate for GAWB (QCA, 2010) and QR Network (QCA, 2010). In these decisions, the Authority used the 20-day average of the five-year yield on Commonwealth Government bond yield at a preset date as the proxy for the risk-free rate. NERA noted that, although the use of the Commonwealth Government bond yield is not particularly controversial, the use of a five-year term differs from other regulators that generally use a 10-year risk-free rate. NERA also notes that the Authority included an interest rate swap allowance in the cost of debt to compensate for the cost of converting the risk-free rate element of the cost of debt into five-year debt.

NERA provided an indicative estimate of the risk-free rate based on the annualised five-year Commonwealth bond averaged over the 20 days up to and including 21 September 2011 as 3.89% per annum.

Stakeholder Submissions

SunWater

SunWater (2011) submitted that it does not agree with basing the risk-free rate on a term that matches the horizon of the regulatory period (five-year term to maturity).

SunWater argued that it should be able to manage its debt portfolio based on prudent commercial practice which, for an owner of infrastructure assets, means that it should fund for a long-term investment horizon. SunWater's preferred approach, in order to minimise interest-rate risk, would be to estimate the risk-free rate based on a 10-year term to maturity and a 20-day averaging period.

Other stakeholders

No submissions were received from other stakeholders on this matter.

Other Jurisdictions

In other jurisdictions, there is general agreement on the use of the yield on Commonwealth Government bonds as the proxy for the nominal risk-free asset (ACCC (2011); Australian Energy Regulator (AER, 2011); ICRC (2008); ESC (2009); IPART (2011); ERA (2011)). Similarly, an averaging period of between 10 and 40 days is adopted.

Until recently, most jurisdictions also used a 10-year term for the risk free rate (ACCC (2011); AER (2011); ICRC (2008); ESC (2009)).

However, IPART (2011) has recently decided to apply a five-year term for the risk-free rate and other market-based WACC parameters, following a general review into the appropriate approach it will adopt to estimating the debt margin. ERA (2011) has also recently adopted a five-year term for the market-based parameters of the WACC in a draft gas access decision.

Authority's Analysis

The Authority undertook a comprehensive review of this issue as part of the 2010 QR Network pricing decision and concluded that the term of the risk-free rate should be set to the term of the regulatory period, as this satisfies the fundamental principle of regulation that the net present value of expected future cash flows should equal the initial investment.

At the same time, the Authority acknowledges that firms subject to a fixed regulatory cycle may issue longer-term debt, due to concerns about refinancing risk. However, refinancing risk is not a matter to be resolved through in-principle argument but with reference to empirical evidence of market comparators.

In considering the relevant benchmark term of debt, the Authority notes that NERA has advised that a benchmark 10-year term is appropriate, based on analysis by AER (2009). The Authority notes that analysis by PwC (2010) also confirmed a 10-year benchmark term.

To address the issue of refinancing risk, the Authority accepts that it is efficient debt policy for a firm to undertake swaps to convert the firm's schedule of debt to one that aligns with the regulatory cycle. Estimates of allowances for these costs are discussed further below.

Consequently, the Authority retains its position that, even in the presence of refinancing risk, the term of the risk-free rate in both the cost of equity and the cost of debt should be set equal to the regulatory cycle, with other adjustments to be made to accommodate refinancing risk.

The new SunWater irrigation price path is for the five-year period 2012-17. Therefore, the Authority proposes to adopt a five-year term to estimate the risk-free rate.

In terms of the duration of the averaging period and the proxy for the risk-free rate, the risk-free rate is based on a 20-day average yield of nominal Commonwealth Government bonds, consistent with the approach consistently adopted by the Authority and SunWater's proposed approach.

The Authority recommends that the risk-free rate be based on the five-year Commonwealth Government bond averaged over 20 trading days. An indicative estimate using the 20 days trading up to and including 21 September 2011 is 3.89% per annum.

C.5 Market Risk Premium

In the CAPM model, the MRP represents the premium over the risk-free rate that investors expect to earn on a portfolio of all assets in the market.

Consultant's Analysis

NERA (2011) examined the Authority's recent decisions on estimating the MRP for GAWB (QCA, 2010) and QR Network (QCA, 2010). NERA noted that the Authority's MRP estimate is based on the following considerations:

(a) a pooling of estimates using long term historical averaging and forward-looking techniques suggest that an estimate for the MRP of 6% per annum is reasonable;

(b) the MRP should not be adjusted for short term market fluctuations which are subjective in both scale of required adjustment and period of application; and

(c) the use of a five-year risk-free rate instead of a ten-year rate does not materially change the MRP estimate.

In NERA's view, the Authority's approach of using a long-term historical estimate of the MRP of 6% per annum in its recent decisions is not unreasonable under current market circumstances, notwithstanding that it is likely that a short-term increase in the MRP was caused by the recent global financial crisis.

Stakeholder Submissions

SunWater

SunWater (2011) observed that the Authority has maintained a value of 6% in its recent determinations for QR Network and GAWB. SunWater commented that, in part, this appears to be in the interest of regulatory stability. SunWater therefore proposed that a MRP of 6% be adopted.

Other Stakeholders

No submissions were received from other stakeholders on this matter.

Other Jurisdictions

The ACCC (2011) recommended that 6.0% be adopted for the MRP. The MRP was determined with reference to historical estimates of the MRP, current studies of Australian market practitioners and regulatory precedent. The AER (2009) adopted a MRP of 6.5% on the grounds that global financial conditions had introduced a degree of volatility in returns associated with the Australian All Ordinaries Index. However, in a recent draft report, the AER (2011) determined that the latest evidence now indicates that a MRP of 6.5% is no longer warranted and proposed a MRP of 6%.

ESC (2009) did not consider that there was sufficient justification for increasing the MRP and consequently adopted a MRP value of 6.0%. The ICRC (2008) also adopted a value of 6.0% for the MRP.

IPART's standard valuation adopted for the MRP is a range between 5.5 and 6.5%. In its review of bulk water charges for State Water Corporation, IPART (2010) adopted the midpoint of this range, 6.0%.

Authority's Analysis

The Authority proposes to continue to use its current estimate of 6% for the MRP on the grounds that it is consistent with regulatory precedent in Australia, there have been no submissions from stakeholders recommending a different value for the MRP, and NERA's analysis endorses the Authority's current approach.

The Authority recommends a market risk premium of 6.0% per annum.

C.6 Capital Structure

Capital structure refers to the relative weights of debt and equity that together finance the regulated entity's asset base and operations. The capital structure of an efficient benchmark business is used to weight the cost of debt and equity in the WACC formula and, for a given asset beta and cost of debt, has implications for the equity betas used in the CAPM model to determine the cost of equity. It is also an important factor in determining the credit rating of the regulated entity.

Consultant's Analysis

NERA (2011) advised that, ideally, SunWater's benchmark capital structure would be set by reference to a portfolio of comparable listed Australian water companies. However, as Australian water infrastructure businesses are government owned and therefore not listed, NERA has relied on the following sources to estimate a reasonable benchmark capital structure for SunWater:

(a) 10 domestic water businesses using the book values of debt and equity;

(b) 12 UK and US water businesses using market values of debt and equity;

(c) six listed Australian regulated energy businesses using market values of debt and equity; and

(d) the capital structures allowed by domestic and international regulators for both water (eight Australian, and four UK), and non-water (eight Australian), entities.

From these samples, NERA found that:

(a) the book leverage (debt to value) of Australian water infrastructure businesses generally fell within the range of 33 to 60%;

(b) the average market leverage of UK and US water utilities was 69.3% and 44.2%, respectively;

(c) the average market leverage of Australian regulated energy companies over 2002-2007 was around 60%; and

(d) the benchmark leverage used by regulators of domestic and international infrastructure businesses generally fell within the range of 50-60%.

NERA concluded that:

(a) although none of the above sources provided definitive evidence as to what the optimal capital structure of an Australian regulated water business should be, they nevertheless suggest that a capital structure of between 50 and 60% debt to value is not unreasonable; and

(b) as the capital structure adopted by publicly-listed Australian regulated energy companies provides the most reliable guide as to what the leverage of a benchmark Australian water business should be, a debt to value ratio of 60% (equity to value ratio of 40%) should be adopted for SunWater.

Stakeholder Submissions

SunWater

SunWater submitted that the appropriate capital structure is a function of both industry-wide and business-specific factors.

SunWater noted that in other jurisdictions, some regulators have applied values of up to 60%, which is more consistent with energy decisions. However, SunWater did not consider that assets primarily servicing irrigation customers would have the same debt capacity as a gas or electricity business.

SunWater noted that the Authority determined a debt to value ratio of 50% for the Burdekin-Haughton decision (QCA, 2003), and applied the same assumption to GAWB (QCA, 2010). SunWater considered that 50% is an appropriate capital structure.

Other Stakeholders

No submissions were received from other stakeholders on this matter.

Other Jurisdictions

The ACCC (2011) and AER (2009) have consistently adopted a benchmark capital structure of 60:40 debt to equity in regulating most types of infrastructure businesses. The ACCC stated that it is standard practice amongst Australian regulators to adopt a benchmark assumption on the leverage of an efficiently financed comparable business rather than the actual leverage levels of regulated firms.

ESC (2009), IPART (2010) and ICRC (2008) have all applied a 60% leverage ratio in recent regulatory decisions. It is the leverage typically used by IPART for water businesses.

Authority's Analysis

The Authority proposes to adopt a benchmark capital structure of 60% debt and 40% equity for SunWater on the grounds that:

(a) NERA's analysis suggested that a capital structure of between 50 and 60% debt-to-equity is not unreasonable for SunWater;

(b) recent Australian regulatory precedent supports the adoption of a benchmark leverage of 60%; and

(c) although the Authority recently adopted a debt to value ratio of 50% for GAWB (2010), SunWater has a lower risk profile due to its lower demand and cost risk. SunWater can therefore support a higher gearing ratio.

The Authority recommends a capital structure of 60% debt and 40% equity.

C.7 Asset and Equity Betas

The asset beta of an entity is a measure of 'business risk' of an entity while the equity beta reflects both the business risk associated with holding an investment in the entity and the financial risk borne by equity holders from the use of debt to partially fund the business.

For listed entities, the equity beta is estimated from market data concerning returns to shareholders through share price increases and dividends of both the entity and the market in general. However, when market prices are unavailable, a sample of equity betas of comparable entities is sought to obtain an estimate of the entity's beta, after suitable adjustment for differences between them and the entity of concern.

The asset beta usually cannot be directly estimated and needs to be inferred from equity beta estimates using appropriate de-levering and re-levering formulae.

Consultant's Analysis

NERA (2011) advised that, because no Australian water entity is publicly traded, it has estimated the equity beta of an Australian water business using market data for Australian and foreign utilities that it considers have characteristics that are similar to those of an Australian water business. In particular, NERA has used market data from the Bloomberg information service to estimate the equity betas of the following portfolios of Australian, UK and US utilities:

(a) the nine Australian energy utilities that Henry (2009) employs to estimate the equity beta of an electricity utility in his report for the AER;

(b) the three UK energy utilities and five UK water utilities that PwC (2009) employs in its report on the cost of capital for the Office of Gas and Electricity Markets; and

(c) the 21 US energy utilities that ACG (2008) identify in their submission to the AER and nine of the ten US water utilities that the California Public Utilities Commission (2009) employs in a recent rate of return decision.

Using data from 2000 to 2011, and the Conine leverage approach, NERA concluded that:

(a) estimates of the equity beta of a regulated Australian energy utility fall within the range of 0.43 and 0.68, depending on the method of estimation used;

(b) estimates of the equity beta of a UK water utility range between 0.37 and 0.62, and are significantly lower than the range of estimates of the equity beta of a UK energy utility which range between 0.51 and 0.88; and

(c) estimates of the equity betas of US water and energy utilities range between 0.69 and 0.91.

NERA identified the following potential problems with using these comparators:

(a) energy and water companies operate different businesses and, even within each industry, different companies service different sets of customers;

(b) utilities face a variety of different regulatory frameworks (e.g. price cap, revenue cap, rate-of-return regulation), and theory suggests that the regulatory framework that a firm faces can affect its beta;

(c) differences in the leverages of market indices can lead to differences between domestic and foreign equity betas; and

(d) differences in the significance of industries to the domestic and foreign economies can lead to differences between domestic and foreign betas.

After examining these issues, NERA concluded that:

(a) the equity betas of energy businesses are useful proxies for the equity betas of water businesses because the income elasticities of both energy and water are low and the operating leverages of both energy and water are high;

(b) the question of whether the equity betas of Australian energy and water businesses differ cannot be addressed using Australian data as there are no listed Australian water businesses. However, the UK and US evidence is inconclusive. After adjusting for differences in leverage, the equity beta of a UK water utility is generally lower than that for a UK energy utility, whereas the equity beta of a US water utility is generally higher than that for a US energy utility;

(c) there is little evidence to suggest that differences in the regulatory environments that firms face produce material differences in their betas; and

(d) the effect of differences in the leverage of market indices and industry weightings largely offset each other.

NERA also examined previous Australian, UK and US regulatory decisions in the energy and water industries to provide further guidance on the appropriate equity beta for a benchmark water entity for SunWater. It found that regulators in Australia, the UK and the US set the costs of equity for energy and water utilities at similar levels, after adjusting for differences in financial leverage. NERA recommended a range of 0.8 to 1.2 for the equity beta of an Australian water business at 60% on the following basis:

(a) recent Australian regulatory energy decisions set the equity beta at 0.8 for a debt to value ratio of 60%;

(b) although this value is above the estimates NERA produced for Australian energy utilities, it concluded that this was an appropriate lower bound on the basis that there is considerable evidence that the CAPM underestimates the returns for entities with low-betas; and

(c) an upper bound value of 1.2 was appropriate on the basis of recent UK and US regulatory decisions.

After setting these bounds for the equity beta, NERA concluded that a point estimate of 0.8 was appropriate for SunWater on the basis that:

(a) the equity beta of an Australian water business should be set at a value equivalent to that of an Australian energy utility; and

(b) although the value of 0.8 lies above the equity beta estimates obtained by NERA for an Australian energy utility, there is considerable evidence that the CAPM underestimates the returns required by the market on low-beta equities.

Stakeholder Submissions

SunWater

SunWater (2011) examined the issue of the appropriate beta in the context of previous Australian regulatory precedent in the water industry, including the Authority's earlier decision for the Burdekin-Haughton water supply scheme (QCA, 2003) and its recent decision for GAWB (QCA, 2010).

SunWater (2011) submitted that regulatory determinations on beta tend to be heavily influenced by precedent. SunWater does not necessarily agree that the focus should be limited in this way, submitting that, apart from the presumption that betas will remain stable through time, it also assumes that the previous determinations were appropriate.

SunWater considered that many of the determinations made in the water industry in Australia have been for urban or metropolitan customers. Drawing from NERA's analysis, SunWater submitted that demand for water for irrigation purposes will be less sensitive to economic activity particularly where that demand depends on the availability of water.

SunWater noted that NERA considered that water demand by the residential sector will be less sensitive to domestic economic activity given that water is a necessity. It submitted that the Authority drew a similar conclusion in relation to the risk profile for GAWB, although in that case it was because its industrial demand base was seen to have a relatively low correlation with domestic economic activity.

Therefore, SunWater submitted that it is not clear that its risk profile is different from a water business that predominantly services residential customers, or different from that of GAWB, even if the drivers of the assumed lower correlation with domestic economic activity are different. That is, it is not clear that there is a material difference in systematic risk between its activities and those of other water businesses such as GAWB.

On this basis, SunWater proposed an equity beta of 0.65 at a leverage ratio of 50%, which it stated was consistent with the Authority's GAWB decision. SunWater noted that, after adjusting for leverage, this remains lower than the determinations made for water businesses in New South Wales and South Australia.

Other Stakeholders

A number of submissions from customers commented on SunWater being a low-risk enterprise. A low-risk enterprise implies that the non-diversifiable risk of the entity is low, which should be reflected in the assigned equity beta.

QFF (2010) submitted that the assessment of rate of return should take into account that SunWater is a significantly low risk enterprise because:

(a) SunWater is a monopoly supplier;

(b) SunWater operates under a low risk 'decentralised regime' to provide bulk water, channel delivery and drainage services;

(c) the renewals annuity approach significantly reduces risk;

(d) Part A charges cover fixed costs; and

(e) there are low risks regarding the non payment of water charges.

BRIG (2010) submitted that SunWater is risk free in terms of bad debt associated with irrigation in the Bundaberg Scheme and that any rate of return above the bond rate is not justifiable. BRIG submitted that SunWater gets paid whether there is water for sale or not, and whether crop prices are high or not.

MIS (2010) submitted that the WACC should reflect the fact that SunWater is a low risk enterprise.

BRIAIC (2010) submitted that any rate of return must reflect SunWater's low risk status. Further, any rate of return on new assets should be based on the risk-free rate and that the assessment should take into account that future income is determined over time by the regulatory pricing regime itself.

ISP (2010) submitted that SunWater is a significantly low risk enterprise because it is a monopoly supplier and that this is the key point when discussing the policy issue around government enterprises and regulation.

MDIAC (2010) submitted that SunWater is a monopoly supplier which operates under significantly low risk. With the continuation of a renewal annuity program and Part A charges to recover fixed costs, if a rate of return is to be applied, it should be no more than the risk-free rate.

CHCGIA (2010) submitted that most of SunWater's customers are operating under unsigned deemed contracts that clearly state that SunWater is under no obligation to guarantee supply to the water users. Further, that under the contracts issued to water users, SunWater effectively minimises all of its risk in regard to the timing, volume, quality and reliability of water supply.

Other Jurisdictions

The ACCC (2011) considered 0.7 to be an appropriate value for the equity beta at a leverage of 60% for price determinations under its water charge (infrastructure) rules. The ACCC considered that rural water businesses are likely to face similar levels of systematic risk to energy distribution and transmission businesses and that the most recent empirical data indicated an equity beta of between 0.4 and 0.7. The ACCC chose a value in the higher end of this range, taking a conservative view of the likely equity beta estimate of operators regulated under its water charges (infrastructure) rules. In doing so, the ACCC noted that its pricing principles are not likely to be applied until 2013, and the ACCC will consider any new evidence in due course.

ESC (2009) applied an equity beta of 0.65 at a leverage of 60% in its review of bulk water charges for State Water Corporation. IPART (2009) applied a range of 0.8 to 1.0 at 60% leverage for the State Water Corporation bulk water charges review.

GPOC (2007) provided a range for the equity beta of 0.495 to 0.9575 at a leverage of 50%. GPOC adopted the midpoint of 0.7725 for its investigation into pricing policies. The ICRC (2008) adopted an equity beta value of 0.9 at a leverage of 60% for its Water and Wastewater Price Review.

Authority's Analysis

The Authority notes that NERA (2010) concluded that irrigation and urban customers are likely to have lower exposure to changes in economic activity than commercial or industrial customers. This is primarily due to the following factors:

(a) the demand for SunWater' services by irrigation customers is largely dependent on the availability of water rather than on the level of business activity;

(b) the demand by urban customers is likely to have a lower than average sensitivity to changes in economic activity as this demand is strongly related to the 'essential good' characteristic of water; and

(c) the characteristics of the demand for the final outputs of commercial and industrial customers in combination with their holdings of high priority entitlements implies that their demand for water is likely to have a higher sensitivity to economic activity than either irrigation or urban customers.

In the Authority's view, these factors combine to suggest that the systematic risk of SunWater's irrigation activities is less than the systematic risk of SunWater's activities as a whole. It follows that, to the extent that SunWater's overall risk profile is similar to that of other water businesses (such as GAWB), as suggested by SunWater, the systematic risk of its irrigation activities would be lower.

Moreover, the regulatory setting for SunWater's irrigation activities would also contribute to low exposure to systematic risks and therefore a low asset beta. To a large extent, SunWater's irrigation activities are shielded from both demand and cost risk. In particular, the adoption of a two-part tariff with a fixed component that is designed to ensure the recovery of expected fixed costs, and where there is a reasonable assurance that actual variable costs can also be recovered, in large part eliminates revenue adequacy risks for SunWater – though some risks do remain.

In these circumstances a reasonable case can be made that the equity beta is likely to be very low.

Notwithstanding NERA's (2011) interpretation that there is little evidence to suggest that differences in the regulatory environments that firms face produce material differences in their betas, the Authority's view is that this issue is far from resolved.

Alternative views to NERAs are held by Dr Lally (2011), who has previously advised the Authority that certain companies with regulatory settings similar to that proposed for SunWater have very low systematic risk. These entities have low exposure to both demand and cost shocks as they are subject to revenue cap regulation or similar, with regulatory reset triggers for unforeseen circumstances. They include certain UK water entities (average asset beta of 0.22) and Australian energy network companies (average asset beta of 0.3).

An asset beta of 0.3 lies below that applied in other recent water industry regulatory decisions by the Authority, including 0.4 for GAWB (QCA, 2010), and 0.35 for South East Queensland (SEQ) retail water providers (QCA, 2011). As GAWB supplies mostly industrial customers, and the SEQ entities supply urban customers, both are considered to have higher systematic risk profiles than SunWater's irrigation activities.

Furthermore, the Authority notes that:

(a) greater weight should be given to Australian beta estimates based on empirical evidence. Foreign estimates are estimated with reference to a foreign market index, which may differ in its leverage and market composition from that of Australia, and this can affect beta values;

(b) the data period adopted by NERA includes a recent high beta period from 2009 to 2011, but does not (fully) include the low beta period for 1998 to 2002 (see Lally (2011) for similar comments in the context of SEQ price monitoring). Thus, the estimates provided by NERA may generally be on the high side;

(c) in a recent report for the AER, Professor Davis (2011) found that the Sharpe CAPM does not lead to a downward bias in the rate of return, and the empirical evidence does not clearly demonstrate such a bias. The Authority does not currently support any adjustment to empirical estimates on this basis; and

(d) the AER decision to adopt an equity beta of 0.8 was an important factor in NERA's recommended estimate. As noted by Dr Lally in a previous report to the Authority (2011), the AER estimate was above that suggested by available empirical evidence, and the AER noted that its decision was taken in the interest of 'regulatory stability'. The empirical evidence suggested an asset beta of 0.30.

After taking into account all of the above, the Authority considers that an asset beta of 0.3 is appropriate for SunWater's irrigation business. This translates as an equity beta of 0.55 using the Authority's leverage formula, an assumed debt beta of 0.11, and a debt to value ratio of 0.6. In turn, with a risk-free rate of 3.89% per annum and a MRP of 6% per annum, this yields a return on equity of 7.19% per annum.

The Authority recommends an asset base of 0.3 corresponding to an equity beta of 0.55 at 60% debt-to-value ratio.

C.8 Cost of Debt

The discount rate for valuing debt (the cost of debt) in the CAPM model is the return expected by the providers of debt capital to compensate them for the systematic risk of investing in the entity, i.e.:

$$r_d = r_f + \beta_d \left(r_m - r_f\right) = r_f + \beta_d .mrp$$

However, it is common regulatory practice to express the cost of debt as the sum of the risk-free rate and a suitable estimate of the risk premium (or debt margin) based on the promised yield of the debt because of the difficulties associated with estimating the component of the promised yield that rewards systematic risk.

Consultant's Analysis

A major factor affecting the spread above the risk-free rate required by debt holders is the credit rating of the benchmark debt.

NERA (2011) advised that, in view of the findings in the capital structure section A.6 above, ideally the benchmark credit rating for an Australian water infrastructure business would be set by reference to the credit rating of a stand-alone Australian listed water business with a leverage of 60% debt. As all water infrastructure businesses in Australia are government owned, their credit ratings reflect the potential financial support provided by government ownership. Consequently, NERA has relied on the following sources in its assessment of the appropriate benchmark credit rating for SunWater:

(a) the credit ratings used in 15 recent Australian regulatory determinations for water entities (seven determinations) and energy and infrastructure businesses (eight determinations); and

(b) SunWater's financial profile.

From these sources, NERA found that:

(a) the credit ratings assigned in previous Australian regulatory determinations range from BBB to BBB+ for assumed debt-to-value ratios ranging from 50-60%; and

(b) a financial ratio analysis of SunWater's recent performance supports a credit rating of BBB+.

NERA proposed that, on the basis of its analysis of SunWater's financial profile, the benchmark credit rating should be set at the top of the range established by Australian regulatory precedent, i.e. BBB+.

In addition to the corporate spread, there are substantial transactions costs associated with debt financing. For five-year debt terms, these costs include:

(a) an allowance for credit default swaps, to compensate businesses for the cost of converting the debt premium element of the cost of debt into five-year debt;

(b) an allowance for interest-rate swaps, to cover the costs of converting the risk-free rate element of the cost of debt into five-year debt; and

(c) an allowance for annual debt refinancing costs.

NERA advised that, consistent with the Authority's current approach, these transactions costs should be included in the cost of debt (and therefore the WACC) rather than added to the cash flows as part of the outlays for financing.

NERA estimated the components of the debt premium as follows:

(a) the five-year corporate spread, estimated to be 3.46% per annum using Bloomberg fair value yields for five-year Australian corporate debt averaged over the 20 days up to and including 21 September 2011;

(b) a credit default swap allowance of 0.25% per annum, based on methods currently used by the AER (NERA, 2011)[40], to compensate SunWater for the cost of converting the debt premium element of 10-year debt into five-year debt;

(c) an interest rate swap allowance of 0.45% per annum, based on the difference between 10-year and five-year risk-free rates, to compensate SunWater for the cost of converting the risk-free element of 10-year corporate debt into five-year debt; and

(d) an allowance of 0.125% per annum for annual debt issuance costs.

Therefore, as at 21 September 2011, NERA estimated the indicative total debt premium for SunWater as 4.28% per annum and the cost of debt as 8.17% per annum.

[40] The AER gives equal weight to Bloomberg's 10-year fair value estimate and the APA Group Bond in estimating the 10-year debt margin. The Bloomberg 10-year fair value yield is estimated by adding the spread on Bloomberg's AAA-rated estimates from seven to 10 years to the most recent estimates of Bloomberg's seven year, BBB-rated fair value curve.

NERA noted that the cost of debt is not based on the expected return on debt, but rather the promised yield which has increased markedly since the recent global financial crisis, and this has led to debt costs which are high by historical standards. Although this rise in promised yields may be explained, in part, by an increase in the likelihood of default, extracting the portion of the promised yield which is due to non-systematic risk factors is not straightforward, and has not been taken into account in its analysis.

Stakeholder Submissions

SunWater

SunWater (2011) submitted that the key issue associated with the estimation of the cost of debt is the term to maturity. SunWater does not agree with the use of a five-year term to maturity and considers that a 10-year term should be applied. Under these circumstances, an allowance for refinancing costs would not be required.

However, should a five-year term be used to estimate the cost of debt, it would be necessary to compensate SunWater for the cost of converting the debt premium element of 10-year corporate debt into five-year debt through an appropriate credit default swap allowance.

In addition to any provision for refinancing costs, SunWater submitted that an allowance of 0.125% per annum for debt raising costs should continue to be included in the cost of debt.

Other Stakeholders

BRIG (2010) submitted that in assessing the credit rating some examination of SunWater’s bad debt situation should also be considered.

Other Jurisdictions

After a recent review on its approach to estimating the debt margin, IPART (2011) decided it would use data from the Bloomberg BBB five-year fair value curve and the Australian and US bond markets, where these bonds are issued by Australian firms, have a remaining term to maturity of at least two years, a credit rating of BBB or BBB+, are fixed and unwrapped, and the issuing company is not affected by factors such as mergers and acquisitions activity. IPART decided to adopt the median of the sample of observations to estimate the debt margin at some 3%.

IPART (2009) previously applied a debt margin range of 2.0% to 3.8% for the State Water Corporation bulk water charges review.

ESC (2009), in its review of bulk water charges for State Water Corporation, obtained a benchmark debt margin range of between 1.7 and 2.4% for the debt margin. This range was based on advice from the Treasury Corporation of Victoria (TCV) on its lending rates. Although ESC previously adopted a BBB+ credit rating, a 10-year term to maturity for corporate bonds and a margin to account for establishment fees to estimate the cost of debt, ESC states that Australian regulators have recently reconsidered the consistent usage of this approach to establish a benchmark debt margin. ESC considered that, because the water businesses only borrow through TCV, a range of borrowing rates for representative government entities was likely to generate a more appropriate benchmark than corporate bond rates.

The ICRC’s (2008) Water and Wastewater Price Review assessed that a debt margin of 3.024% (based on the Bloomberg BBB eight-year index) was appropriate, including a small margin to reflect the difference between eight-year and 10-year rates on A-rated bonds. ICRC noted that there has been a substantial increase in corporate bond rates since the onset of the financial crisis. Despite these increases, the Commission considered there was no reason to depart from its established methodology for estimating the debt margin.

Authority's Analysis

For the reasons established by NERA above, the Authority agrees that SunWater's financial profile supports a BBB+ credit rating for SunWater.

The Authority notes that, in the absence of better data, NERA has estimated the allowance for credit default swaps using the AER approach to estimating the 10-year debt margin. The Authority also notes that other regulators (including IPART) have adopted different approaches, which would affect the value of this allowance.

At this stage, the Authority is inclined to use NERA's estimate of the credit default swap allowance, pending the Authority's own investigation of this issue.

Further, the Authority notes that NERA's approach to estimating the allowance for interest rate swaps is not consistent with the Authority's previous approach to estimating these costs, or alternative information on the costs of these swaps. Evans and Peck recently estimated that the cost of interest rate swaps of this kind would be 19bp, based on market data. This estimate is lower than NERA's estimate and is preferred as it is based on market data.

The Authority's approach is to estimate the cost of debt as the sum of the following components[41] (Authority's estimates in parenthesis):

(a) the promised yield on five-year corporate debt expressed as the sum of the risk-free rate (3.89% per annum) and an appropriate corporate spread (3.46% per annum for five-year BBB+-rated debt);

(b) an allowance for converting the debt premium element of 10-year corporate debt into five-year debt (0.25% per annum for credit default swaps);

(c) an allowance for converting the risk-free element of 10-year corporate debt into five-year debt (0.19% per annum for interest rate swaps); and

(d) an allowance for annual debt issuance costs (0.125% per annum).

These estimates result in an indicative estimate of the cost of debt as at 21 September 2011of 7.91% per annum.

As indicated earlier, the Authority notes that its indicative estimate of the cost of debt exceeds that of the cost of equity. This arises as the debt premium is based on the promised yield, consistent with generally accepted practice. The promised yield will generally exceed the expected rate of return because of expected default losses – this general point has been noted by NERA (2010), as well as Dr Lally (2011) and Professor Davis (2011) in other regulatory contexts. Another factor is the Authority's practice of including transaction costs in the cost of debt.

The Authority also raises for consideration in this Draft Report the issue of whether the cost of debt should instead be based on QTC borrowings and its margins for on-lending to SunWater. In this regard, the margin over the risk-free rate that QTC charges SunWater is of the order of 2.0% as distinct from the 3.46% assumed by NERA. The difference represents a subsidy passed on to SunWater, as QTC could charge SunWater a commercially based margin.

[41] For example, see GAWB (2010), QR (2010), SEQ Interim Price Monitoring (2011).

Given QTC's central financing role, it is QTC rather than SunWater that bears the refinancing risk. Furthermore, the cost of an appropriate financing strategy to ensure that QTC can meet its lending (and refinancing) obligations is implicitly built into the funding cost it passes on to SunWater. Therefore, this raises the issue of whether SunWater has any refinancing risk to be compensated for.

As QTC operates in a policy framework approved by the Government, it is arguable that the debt margin subsidy and assumption of refinancing risk are elements of government policy and SunWater should not pass costs in excess of these on to customers. The alternative view is that the Government intends for SunWater to recover the difference in additional returns to SunWater. This is an issue on which the Authority particularly seeks Government comment.

If an approach along these lines was adopted, the cost of debt would be of the order of 5.9% per annum. This would include an allowance for the QTC's competitive neutrality fee but would exclude the debt margin subsidy and any allowances for refinancing risk.

The Authority recommends that the cost of debt be based on the BBB+ margin above the risk-free rate for five-year corporate bonds. As at 21 September 2011, the indicative cost of debt is 7.91% per annum. This is comprised of a corporate spread of 3.46% on the five-year risk-free rate of 3.89% and transactions costs relating to credit default swaps of 0.25%, interest rate swaps of 0.19%, and debt issuing costs of 0.125%.

The Authority also seeks comment on the alternative approach outlined using QTC based costs.

C.9 Gamma

Gamma is a measure of the effective value of dividend imputation franking credits, calculated as the product of the utilisation rate of those credits by investors and the distribution rate (i.e. imputation credits distributed as a proportion of company tax paid).

Consultant's Analysis

In NERA's (2011) view, the gamma estimate of 0.5 used by the Authority in its recent decisions is reasonable under current market circumstances and is consistent with that adopted by most Australian regulators.

Stakeholder Submissions

SunWater

SunWater submitted that the treatment of gamma does not have as material an impact when calculating a WACC for the purposes of valuing a pre-tax real annuity. For simplification purposes, SunWater proposed that the value of gamma be set at zero.

Other stakeholders

No submissions were received from other stakeholders on this matter.

Other Jurisdictions

Australian regulators have generally adopted a gamma value of 0.5 in regulatory decisions. ESC (2009) and ICRC (2008) applied a gamma value of 0.5, while IPART (2010) decided to adopt a range of 0.3 to 0.5 for the State Water Corporation bulk water charges review. The

ACCC (2011) considers that a gamma value of 0.5 is the best possible estimate of the value of imputation credits.

However, the Authority also notes that, on 12 May 2011, in a review of a distribution determination made by the Australian Energy Regulator in relation to ETSA Utilities, the Australian Competition Tribunal determined that gamma be set at 0.25[42].

Authority's Analysis

The Authority does not agree with SunWater's statement that the gamma value is not material in the determination of a pre-tax WACC as this calculation needs to take into account the effects of dividend imputation on the effective tax rate.

Notwithstanding the recent determination by the Australian Competition Tribunal, the Authority proposes to continue to use its current estimate of 0.5 for gamma on the grounds that it is consistent with regulatory precedent in Australia, there have been no submissions from stakeholders other than SunWater recommending a different value for gamma, and NERA's analysis endorses the Authority's current approach.

The Authority recommends a gamma value of 0.5.

C.10 Indicative WACC for SunWater

The Authority has considered each of the key parameters which determine WACC and recommended its proposed approach. The Authority has applied this approach to calculate an indicative nominal post-tax WACC of 7.62% per annum as at 21 September 2011, as outlined in Table 1. As stated previously, the Authority proposes to update this estimate for its Final Report. If the alternate approach to debt using QTC based costs were adopted, the WACC would be of the order of 6.42% per annum.

As indicated earlier, the Authority notes that its indicative estimate of the cost of debt exceeds that of the cost of equity. This arises as the debt premium is based on the promised yield, consistent with generally accepted practice. The promised yield will generally exceed the expected rate of return because of expected default losses – this general point has been noted by NERA (2010), as well as Dr Lally (2011) and Professor Davis (2011) in other regulatory contexts. Another factor is the Authority's practice of including transaction costs in the cost of debt.

[42] Application by Energex Limited (Gamma) (No5) [2001] ACompT 9 (12 May 2011).

Table 1: WACC Parameters

Parameter	*SunWater*	*NERA*	*QCA Draft*
Risk-free rate	5.41%	3.89%	3.89%
Market risk premium	6.0%	6.0%	6.0%
Capital structure (debt to value ratio)	50%	60%	60%
Debt beta	-	0.11	0.11
Asset beta	-	0.41	0.30
Equity beta	0.65	0.80	0.55
Gamma	0	0.5	0.5
Cost of equity	**9.29%**	**8.69%**	**7.19%**
Corporate spread (BBB-rated)	5.42%	3.46%	3.46%
Credit default swap allowance	-	0.25%	0.25%
Interest rate swap allowance	-	0.45%	0.19%
Debt financing allowance	0.125%	0.125%	0.125%
Total debt premium	5.55%	4.28%	4.02%
Cost of debt	**10.96%**	**8.17%**	**7.91%**
Officer WACC3	**10.12%**	**8.38%**	**7.62%**

Source: SunWater (2010), NERA Appendix C, Authority estimates.

APPENDIX D: REVIEWED PAST AND FUTURE RENEWALS EXPENDITURE ITEMS

Table 1: Past Renewals

Scheme	*Sampled Item*	*Year*	*SunWater ($'000)*	*Authority Findings*	*Recommended ($'000)*
Bowen Broken Rivers	Rectification of Gattonvale Off Stream Storage Embankment Cracks	2010, 2011	82	Prudent and efficient	82
Boyne River and Tarong WSS	Nil				
Bundaberg Distribution	Woongarra Point Pump Station – Replacement of Electrical Control System	2011	61	Prudent and efficient	61
	Monduran Pump Station – Roof and Gutter Replacement	2009	280	Prudent and efficient	280
Bundaberg WSS	Ben Andersen Barrage – refurbish shutters	2008	62	Prudent and efficient	62
	Ben Andersen Barrage – refurbish shutters	2010	57	Prudent and efficient	57
Burdekin Haughton WSS	Clare Fishlock	2012	274	Prudent and efficient	274
Burdekin-Haughton Distribution	Intersafe	2010, 2011	501	Prudent and efficient	501
	Fencing	2007	49	Prudent but not efficient	25
Callide Valley WSS	Callide Gauging Stations – Install Air Compressors	2008	12	Prudent and efficient	12
	Callide Dam Inlet Tower – Install Fall Arrest System to Ladder	2008	22	Prudent and efficient	22
	Replace Hoist Ropes – Callide Inlet Tower	2010	29	Prudent and efficient	29
	Undertake Comprehensive Risk Assessment – Kroombit Dam	2010	52	Prudent and efficient	52
	Replace Switchboard – Main Switch House and Callide Dam	2011	92	Prudent and efficient	92
	Intersafe	2011	51	Prudent and efficient	51
	Public Safety Strategy (Fencing Policy)	2009	59	Prudent but not efficient	30
Emerald Distribution	Intersafe Gated	2010	1,100	Prudent and efficient	1,100

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
	Selma Drains De-silt	2008 2009 2010	164	Prudent and efficient	164
Eton Distribution	Intersafe	2010	330	Prudent and efficient	330
	Fencing Policy	2010	138	Prudent but not efficient	69
Eton WSS	Intersafe Program	2010	147	Prudent and efficient	147
	Fencing Policy	2008	54	Prudent but not efficient	27
Lower Mary Distribution	Investigate Seepage at Walker Point Balancing Storage	2010	41	Prudent and efficient	41
	Electrical Component Upgrade of the Owanyilla Pump Station	2011	404	Prudent and efficient	404
Lower Mary River WSS	Repair protection works and concrete crest, Mary Barrage	2010	66	Insufficient Information	61
	Marker Buoys, Mary Barrage	2009	17	Prudent and efficient	17
Macintyre Brook WSS	Whetstone Weir (SKM)	2007	1,441	Prudent but not efficient	1,222
Mareeba-Dimbulah WSS	Tinaroo Falls Dam	2011	110	Insufficient Information	102
Mareeba-Dimbulah Distribution	Intersafe	2010, 2011	3,102	Prudent and efficient	3,102
Nogoa-Mackenzie WSS	Intersafe Project	2011	144	Prudent and efficient	144
	Fabridam Post Deflation Incident 23 November 2008 (Bedford Weir)	2011	99	Excluded, pending legal action and insurance payout	0
	Fairbairn Dam Right Bank Outlet Works Upgrade (SKM)	2007-2011	1,482	Prudent and Efficient	1,482
Pioneer River WSS	Palm tree Creek outlet valve (SKM)	2008-2010	1,303	Prudent but not efficient	912
	Marian Weir (SKM)	2008 - 2012	4,844 total (2,084 to date)	Not prudent	0
	Mirani Weir and Dumbleton Weir – Fabri Dam	2009, 2011	216*	Removed pending outcome of legal investigation	0
St George Distribution	Intersafe Program	2011	1,654	Prudent and efficient.	1,654

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
	Fencing	2010	57	Prudent but not efficient.	29
	Channel meter replacements (GHD)	2007	27	Prudent and efficient	24
	Install 3 diesel motors (GHD)	2009	23	Prudent and efficient	21
	Repair access cross (St George Main Channel) (GHD)	2010	6	Prudent and efficient	6
	Repair crossing channel B2 (GHD)	2010	25	Prudent and efficient	23
	Repair access crossing CHB-2 (GHD)	2010	23	Prudent and efficient	21
	emergency repairs access crossing AC06 (GHD)	2010	38	Prudent and efficient	34
	emergency repairs access crossing (GHD)	2010	217	Prudent and efficient	196
	repair access cross (St George Main Channel) (GHD)	2011	29	Prudent and efficient	26
St George WSS	Refurbish Beardmore Dam Gate 12	2007	59	Insufficient Information	53
	Refurbish Beardmore Dam gates No 8, 9 and 10	2010	88	Insufficient Information	80
	Install Buoy-lines at Jack Taylor Weir and Beardmore Dam	2010	140	Insufficient Information	130
	Removal of contaminated material, Jack Taylor Weir	2010	52	Insufficient Information	47
	Thuraggi Outlet modifications	2007	59	Insufficient Information	53
Theodore Distribution	Intersafe program	2007	146	Prudent and efficient	146
	Public Safety Strategy (Fencing Policy)	2009	67	Prudent but not efficient	34
Upper Burnett WSS	Wuruma Dam – butterfly valve	2008 to 2010	133	Insufficient Information	121
	Claude Wharton Weir – Fabri Dam options development	2011 to 2012	147	Not included pending resolution of legal matters	0
Upper Condamine WSS	Leslie Dam Painting of the conduits (GHD)	2007	74	Prudent and efficient	67
	Leslie Dam - replacement of the right hand guard valve (GHD)	2007	129	Prudent and efficient	117

Scheme	*Sampled Item*	*Year*	*SunWater ($'000)*	*Authority Findings*	*Recommended ($'000)*
	Yarramalong Pump Station - overhaul Control System (GHD)	2007	67	Prudent and efficient	61
	Leslie Dam - Replacement of hand guard valve (GHD)	2008	138	Prudent and efficient	125
	Yarramalong Pump Station – Refurbish a pump and motor (GHD)	2010	62	Prudent and efficient	56

Note: Where insufficient information was provided, the Authority applied a broad efficiency gain adjustment, based on 10% of direct costs.

The 10% adjustment is also applied to items that were considered by GHD to be prudent and efficient, on the basis that GHD did not review items in detail.

Table 2: Forecast Renewals

Scheme	*Sampled Item*	*Year*	*SunWater ($'000)*	*Authority Findings*	*Recommended ($'000)*
Barker Barambah WSS	Silverleaf Weir – 09BBAo5 Manufacture/Install Inlet Structure (SKM)	2012	337	Prudent and efficient	337
	Bjelke-Petersen Dam – Replace Cables, Cableways	2022	327	Prudent and efficient	327
Bowen Broken Rivers	Stabilise embankment and replace embankment protection	2012-2015	417	Prudent and efficient	417
	Toilet Block	2023	450	Prudent but not efficient	225
	Gattonvale pump station	2035	1,650	Insufficient information	1,485
Boyne River and Tarong WSS	Boondooma Dam – Replacement of Sealer in Upstream Slope (SKM)	2017	171	Not prudent	0
	Boondooma Dam – Replace Water Level Recorder	2017	165	Prudent, but insufficient information to establish efficiency	149
	Boondooma Dam – Replace Cables and Cableways	2032	561	Prudent and efficient	561
Bundaberg Distribution	Woongarra Point Pump Station – Replacement of Electrical Control System (2012)	2012	262	Prudent and efficient	262
	Woongarra Balancing Storage - Refurbish Control Gate and Replace Weed Screen	2012	45	Prudent and efficient	45

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
	Dinner Hill Pump Station - Replace Electrical Control System	2012, 2013	224	Prudent and efficient	224
	Bingera Distribution - Replace Screens	2034	217	Prudent but insufficient information to establish efficiency	195
	Bingera Distribution – Replace Concrete Lining	2033, 2035	5,066	Prudent but insufficient information to establish efficiency	4,560
	Bullyard Distribution – Replace Meter Outlet Structures	2033	797	Prudent and efficient	797
	Don Beattie Pump Station – Replace Common Controls (SKM)	2019	1,220	Prudent but not efficient	910
	Bucca Weir – Refurbishment of Trash Racks and Guides	2013	72	Transferred to the Bundaberg WSS	65
Bundaberg WSS	Fred Haigh Dam - Replacement of Cables and Cableways	2014 to 2015	619	Prudent and efficient, but deferred to 2020	619
	Ben Andersen Barrage – Refurbish shutters	2012 to 2016	861	Prudent and efficient	861
	Ben Andersen Barrage – Replace Hydraulic Control System	2024	238	Prudent but insufficient information to establish efficiency	214
	Ben Andersen Barrage – Anode Replacement	2012	217	Prudent and efficient	217
	Bucca Weir – Refurbishment of Trash Racks and Guides	2013	0	Transferred from the Bundaberg Distribution WSS	72
Burdekin Haughton WSS	Clare Weir – Replace Valve Control Equipment	2016	103	Prudent and efficient	103
	Val Bird Weir Outlet Works	2013	279	Insufficient information to assess prudency and efficiency	251
	Burdekin Falls Dam – Replace High Voltage System (SKM)	2023	2,687	Prudent but not efficient	1,229
	Burdekin Falls Dam – Replace Cable (SKM)	2024	2,547	Prudent and efficient	2,547
	Clare Weir – Refurbishment of Hydraulic Rams	2013-2036	1,778	Insufficient information to assess prudency and	1,472

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
				efficiency	
	Replacement of cylinders at Clare Weir	2017-2021	3,745	Prudent but not efficient	2,996
	Refurbish Hydraulics	2026	1,200	Insufficient information to assess prudency and efficiency	1,080
Burdekin-Haughton Distribution	Barratta Channel – replace weed screen	2012,	191	Prudent but not efficient	43
	Millaroo B pump station discharge valves	2012	222	Prudent but not efficient	222
	Elliott Pump Station, switchboard replacement (SKM)	2012	406	Prudent and efficient, but deferred to 2022	406
Callide Valley WSS	LBC/1 Replace Switchboard - Bldg Serv Elec Bldg	2013	39	Prudent and efficient	39
	LBC/2 14CVA-Refurbish Spillway Gate 1	2014 and 2032	9	Prudent and efficient	9
	LBC/3 10CVA01-Undertake 5yr Dam Safety Callide	5yrly from 2015	36	Prudent and efficient	36
	LBC/4 12CVA-Replace Inlet Screens	2015	107	Prudent and efficient	107
	LBC/5 Replace Ladders, Platforms, Handrails & Safety	2015	56	Not prudent	0
	LBC/6 Replace Standby Diesel Alternator	2016	178	Prudent but not efficient and deferred to 2028	150
	LBC/7 14CVA-Refurbish Electrical Installation	2017	882	Prudent but insufficient information to determine efficiency	794
	LBC8/ Refurbish 1200Dia Outlet Pipe Lhs	2026	485	Prudent and efficient	485
	LBC9/ Major Refurbishment	2029	368	Prudent and efficient	368
	LBC/10 12CVA-Refurbish Channel Earthworks	2012	37	Prudent and efficient	37
	LBC11/ 12CVAXX Address Height Safety Risks CVA	2012	53	Prudent and efficient	53
	Callide Dam – Replace Cables and Cableways (SKM)	2017	871	Prudent and efficient	871

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
Chinchilla Weir WSS	Various projects from 2012 to 2016 (GHD)		87	Prudent, but insufficient information to determine efficiency	79
	Butterfly valve for Chinchilla Weir (SKM)	2016	123	Prudent and efficient but deferred to 2024	123
	Various projects from 2016 (GHD)		60	Prudent and efficient	54
Cunnamulla WSS	Allan Tannock Weir refurbishment (SKM)	2014	18.65	Prudent and efficient	18.65
	Repair or Replace Aluminium Rack	2016	12.29	Prudent and efficient	12.29
	Refurbish Sluice Gate	2016	12.29	Prudent and efficient	12.29
	Refurbish Sluice Gate	2026	12	Prudent and efficient	12
	Repair or Replace Aluminium Rack	2028	12	Prudent and efficient	12
	Replace Sluice Gate	2032	13	Prudent and efficient	13
	Protection works	2033	36	Prudent and efficient	36
Dawson Valley WSS	Gyranda Weir - refurbish Gate 1 seals, guides, corrosion and actuator	2012 and every 10 years thereafter	8	Prudent and efficient	8
	Gyranda Weir - replace electric actuator	2014 and every 15 years thereafter	35	Prudent and efficient	35
	Moura Off-stream Storage Pump Station – refurbish PUN 2	2016 and every 6 years thereafter	38	Prudent but not efficient	30
	Moura Off-stream Storage – repairs to spillway return slopes and batters	2014	47	Prudent but insufficient information to determine efficiency	42
	Neville Hewitt Weir – replace hydraulic system	2021	248	Prudent but insufficient information to determine efficiency	223
	Theodore Weir – replace concrete/steel piled weir (SKM)	2034	430	Prudent and efficient	430
Emerald Distribution	Selma Drainage - desilting	2012 2-yearly	60 (each desilting)	Prudent and efficient	60

Scheme	*Sampled Item*	*Year*	*SunWater ($'000)*	*Authority Findings*	*Recommended ($'000)*
	Selma pump station – logic and control	2013, 2028	137,137	Prudent and efficient, but defer 5 years	137,137
	Selma Distribution – replace control equipment	2019-20, 2034-35	256,256	Prudent and efficient	256,256
	Selma pump station – refurbish pump 2	2015 5-yearly	37 (each refurb)	Prudent and efficient	37
	Selma Distribution replace Hdpe liner (2 sites)	2025	483,322	Prudent and efficient	483,322
	Selma Distribution – concrete lining (SKM)	2032	4,279	Not prudent	0
Eton Distribution	Replacement of Starter Pump Units - Victoria Plains Pump Station	2013	135	Prudent but insufficient information to determine efficiency	122
	Replacement of switchboard at Brightly Pump Station No 2	2012	100	Prudent but insufficient information to determine efficiency	90
	Repair fencing at Oakenden distribution	2012	6	Prudent but insufficient information to determine efficiency	5
	Brightly Pump Station Low Voltage Cable Replacement	2012	21	Prudent and efficient but deferred to 2025	21
	Mt Alice Pump Station Pump Unit 3 Overhaul (SKM)	2013	25	Prudent and efficient.	25
Eton WSS	Replacement of switchboard – Mirani Pump Station 1	2012	226	Insufficient information to assess prudency and efficiency	204
	Refurbishment pump unit 1 – Mirani Pump Station 3	2013	75	Insufficient information to assess prudency and efficiency	68
	Kinchant Dam – 5-yearly Dam Inspection (SKM)	2013, 2018, 2023, 2028, 2033	100, 100, 100, 100, 100	Prudent and efficient	100, 100, 100, 100, 100
Lower Fitzroy WSS	Replace hydraulic system	2023	190	Prudent but insufficient information to determine efficiency	171
	Refurbish fish lock fill and Drn valves	2013 and 2028	17	Prudent but insufficient information to determine efficiency	15

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
	Undertake facility review	2014	20	Insufficient information to assess prudency and efficiency	18
Lower Mary Distribution	Refurbishment of Walker Point Balancing Storage	2012	109	Not prudent	0
	Electrical Component Upgrade at Walker Point Pump Station	2013 to 2014	226	Excluded pending feasibility study	0
	Electrical Component Upgrade at Copenhagen Bend Pump Station	2013 to 2014	283	Excluded pending feasibility study	0
Lower Mary River WSS	Tinana Barrage – Concrete Skin over Rock Protection Works (SKM)	2012	59	Prudent and efficient	59
	Refurbishment and Regular Maintenance of concrete skin over Mary Barrage protection works	2014, 2019, 2024, 2029, 2034	15, 15, 15, 15, 15	Not prudent or efficient	0
	5-yearly inspection of Mary Barrage and Tinana Barrage	2015, 2020, 2025, 2030, 2035	8, 8, 8, 8, 8	Prudent and efficient	8, 8, 8, 8, 8
Macintyre Brook WSS	Coolmunda Dam (GHD)	2012-16	587	Prudent and efficient	531
	Coolmunda Dam Gates 3, 4, 5 & 6 painting (SKM)	2012-14	204	Prudent and efficient	204
	Whetstone Weir (GHD)	2012	48	Prudent and efficient	44
	Macintyre Brook Gauging Stations (GHD)	2014 & 2016	135	Prudent and efficient	122
	Various items (GHD)	2031, 2032, 2035	922	Prudent and efficient	834
Maranoa River WSS	Study: five year comprehensive dam inspection (GHD)	2015	9	Prudent and efficient	8
	Refurbish: Inspect and repair damage and corrosion (GHD)	2016	15	Prudent and efficient	14
	Refurbish: Inspect and repair damage and corrosion (GHD)	2022	20	Prudent and efficient	18
	Enhance: Spillway safety rails and sign boards (GHD)	2035	44	Prudent and efficient	40
Mareeba-Dimbulah WSS	Tinaroo Falls Dam – river outlet works dispersion valve	2012	297	Prudent and efficient	297
	Tinaroo Falls Dam – post-tensioning of wall rock bolts	2016	87	Prudent and efficient	87

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
Mareeba-Dimbulah Distribution	West Barron Distribution – refurbishment of bracing beams	2013	213	Insufficient information to assess prudency or efficiency	193
	SCADA upgrade	2012	65	Insufficient information to assess prudency or efficiency	59
	Southedge Irrigation – pipeline replacement	2019	192	Insufficient information to assess prudency or efficiency	173
	South Walsh Main Channel – concrete bench flume replacement (SKM)	2026	1,957	Prudent and efficient	1,957
Nogoa-Mackenzie WSS	Repair spillway damage	2012	231	Prudent and efficient	231
	Refurbish right bank outlet works (SKM)	2012	486	Prudent and efficient	486
	Refurbish baulks	2012, 2032	24,26	Prudent and efficient	24,26
	5-year dam inspection	2013 5-yearly	63	Prudent and efficient	63
	Refurbish lower downstream slope of embankment	2014	40	Prudent and efficient, provided confirmed by condition assessment	40
	Refurbish hoists (2 items)	2014, 2015 8-yearly	36,32	Prudent and efficient, but with refurbishment every 10 years rather than every 8 years	36,32
	Replace level transmitter and RTU	2014, 2027	52,53	Prudent but not efficient, deferred to 2029	35,35
	Replace Inlet Lift Gates (3 items)	2015	81	Prudent but not efficient	25,81
	Refurbish outlet gates (2 items)	2015, 10-yearly	160	Prudent and efficient	160
	Refurbish metalwork	2015, 2028, 2030	52	Prudent and efficient, but with consistent life of 15 years rather than 13 years for some items (replacement in 2030)	52

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
	Replace cables and cableways	2016	75	Prudent but insufficient information to determine efficiency	68
	Replace switchboards – gatehouse and inlet tower (2 items)	2016	68	Prudent and efficient	68
	20-year dam safety review	2018	81	Prudent and efficient	81
	Replace Selma gatehouse Control equipment	2020, 2033	75,75	Prudent and efficient, but with asset lives of 15 years rather than 13 years	75,75
	Replace control equipment	2012, 2027	35	Prudent and efficient	35
	Sandblast and recoat clarifiers	2012, 10-yearly	21	Prudent and efficient	21
	Replace control equipment	2017, 13-yearly	145	Prudent and efficient but with asset life of 15 years rather than 13 years	145
	Bedford Weir outlet works gate refurbishment	2012, 2027	28, 28	Prudent but not efficient	20
	Bedford Weir - Replace hydraulic system	2012, 10-yearly	180	Prudent but not efficient	130
Pioneer River WSS	Dumbleton Weir - replacement of control equipment (SKM)	2019	382	Prudent and efficient	382
	Palmtree Creek Pipeline – guard valve	2013	25	Prudent, but deferred to 2020	25
Proserpine River WSS	Guard valve refurbishment	2011	20	Prudent and efficient	20
	Kelsey Creek Pipeline – Replacement of control equipment	2014	79^	Prudent and efficient	79
	Peter Faust Dam – Replacement of cables and cableways (SKM)	2026	1,021	Prudent and efficient	1,021
St George Distribution	Buckinbah Pump Station (GHD)	2012 & 2016	183	Prudent and efficient	166
	Selected channels & drains 2012-16 (GHD)	various	409	Prudent and efficient	370
	St George Pump Station (SKM)	2012-13	357	Prudent and efficient, pending verification of full replacement cost	357

Scheme	***Sampled Item***	***Year***	***SunWater ($'000)***	***Authority Findings***	***Recommended ($'000)***
	Various items beyond 2016	various	3,200	Prudent but not efficient	2,880
St George WSS	EJ Beardmore Dam Renewals Projects 2012-16 (GHD)	Various	882	Prudent and efficient	794
	1. EJ Beardmore Dam WTP Renewals Projects 2012-16 (GHD)	Various	101	Insufficient information to assess prudency and efficiency	91
	Jack Taylor Renewals Projects 2012-16 (GHD)	Various	721	Prudent and efficient	650
	Reinstatement of Outlet Works for Jack Taylor Weir (SKM)	2012	282	Prudent and efficient	282
	Moolabah Weir Renewals Projects 2012-16. (GHD)	2012	250	Prudent and efficient	226
	St George WSS Renewals Projects from 2016 (GHD)	Various	13,997	Prudent and efficient	12,600
Theodore Distribution	Gibber Gunyah Pump Station - Replace Suction Pipe Pump Number 2	2014	106	Prudent but insufficient information to determine efficiency	96
	Gibber Gunyah Pump Station - Replace Suction Pipe Pump Number 3	2015	96	Prudent but insufficient information to determine efficiency	87
	Gibber Gunyah Pump Station - Replace Submersible Pump, Flygt	2019	258	Prudent but insufficient information to determine efficiency	233
	Theodore Drainage – Replace Structure	2033	201	Insufficient information to assess prudency and efficiency	181
	Theodore Irrigation Distribution – 11DVAXX DVAXX Replace Siphon CHD TH	2012	140	Insufficient information to assess prudency and efficiency	127
	Theodore Pump Station – Refurbish control: replace PLC, components etc; obsolescence, reliability	2014	59	Prudent and efficient but deferred to 2019	59
	Theodore Pump Station – Replace Control Equipment	2027	142	Prudent and efficient but brought forward to 2026	142

Scheme	Sampled Item	Year	SunWater ($'000)	Authority Findings	Recommended ($'000)
	Theodore Pump Station – Replace Concrete Structure	2026	146	Prudent but insufficient information to determine efficiency	132
Three Moon Creek WSS	LBT/1 12TMC03-Refurb Ladders & Platforms-Inlt	2012	11	Prudent and efficient	11
	LBT/2 12TMCXX Refurbish Pipework - Interior/Exterior Paint	2012 and 25 yearly thereafter	33	Prudent and efficient	33
	LBT/3 09 TMC-STUDY: 5 Year Dam Safety	2014 and 5 yearly thereafter	15	Prudent and efficient	15
	LBT/4 Replace Cables & Cableways (SKM)	2018	206	Prudent and efficient but deferred to 2028	206
Upper Burnett WSS	Claude Wharton Weir - replace Weir Control equipment	2033	196	Insufficient information to assess prudency and efficiency	177
	Claude Wharton Weir - replace hydraulic actuator	2028	301	Not prudent	0
	Claude Wharton Weir - replace Fishlock Control Equipment	2028	207	Prudent and efficient	207
Upper Condamine WSS	Leslie Dam (GHD)	various	7,133	Prudent and efficient	6,420
	Leslie Dam Cableway (SKM)s	2019	2,076	Not prudent	0
	Yarramalong Pump Station (GHD)	various	4,337	Prudent and efficient	3,905
	Yarramalong Weir (GHD)	various	862	Prudent and efficient	777
	Nangwee Weir (GHD)	2029	85	Prudent and efficient	77
	Wando Weir (GHD)	2031	131	Prudent and efficient	118
	Leslie Dam Water Treatment Plant (GHD)	various	622	Prudent and efficient	560

Note: Where insufficient information was provided, the Authority applied a broad efficiency gain adjustment, based on 10% of direct costs.

The 10% adjustment is also applied to items that were considered by GHD to be prudent and efficient, on the basis that GHD did not review items in detail.