



Final Report
Seqwater Irrigation Price Review
2013-17
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GLOSSARY

A	
AAP	<i>Annual Accounts Payable</i>
AAR	<i>Annual Account Renewable</i>
ABS	<i>Australian Bureau of Statistics</i>
ACCC	<i>Australian Competition and Consumer Commission</i>
ACG	<i>Allen Consulting Group</i>
ACT	<i>Australian Capital Territory</i>
ACTEW	<i>Australian Capital Territory Electricity and Water</i>
ADWG	<i>Australian Drinking Water Guidelines</i>
AER	<i>Australian Energy Regulator</i>
AMF	<i>Asset Management Framework</i>
ARMCANZ	<i>Agriculture and Resource Management Council of Australia and New Zealand</i>
ARR	<i>Asset Restoration Reserve</i>
ASSET PLANS	<i>Asset Plans</i> outline proposed capital and operating expenditure to deliver an entities' Service Level Agreements.
AUSTRALIAN BUREAU OF STATISTICS	The <i>Australian Bureau of Statistics (ABS)</i> is Australia's official statistical organisation.
AUSTRALIAN CAPITAL TERRITORY ELECTRICITY AND WATER	The <i>Australian Capital Territory Electricity and Water (ACTEW) Corporation</i> supplies energy, water, and sewerage services to the ACT and surrounding region.
AUSTRALIAN COMPETITION AND CONSUMER COMMISSION	The <i>Australian Competition and Consumer Commission (ACCC)</i> promotes competition and fair trade in the market place to benefit consumers, businesses and the community. It also regulates national infrastructure services.
AUSTRALIAN ENERGY REGULATOR	The <i>Australian Energy Regulator (AER)</i> 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).
AWTP	<i>Advanced Water Treatment Plant</i>
B	
BENCHMARK RETAIL COST INDEX	The <i>Benchmark Retail Cost Index (BRCI)</i> for a particular year is the index used to calculate the total cost of electricity.
BOOT	<i>Build-Own-Operate-Transfer</i>
BRCI	<i>Benchmark Retail Cost Index</i>

BULK LOSSES *Bulk Losses are losses which include storage losses resulting from evaporation and seepage.*

C

CAB *Cost Allocation Base*

CAPM *Capital Asset Pricing Model*

CDSA *Credit Default Swap Allowance*

CEO *Chief Executive Officer*

CIS *Corporate Information System*

CIT *Central Irrigation Trust*

CM *Corrective Maintenance*

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.

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.*

CORPORATE INFORMATION SYSTEM *Corporate Information System (CIS) is a new financial system implemented by Seqwater that enabled cost and other data to be captured and budgeted by asset location.*

CORRECTIVE MAINTENANCE *Corrective Maintenance are maintenance tasks and associated expenditure relating to maintenance that is made in reaction to events or new information/inspections.*

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 PASS-THROUGH *Cost Pass-Through mechanisms allow adjustments to prices during the regulatory period.*

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).*

CPI *Consumer Price Index*

CRC	<i>Current Replacement Cost</i>
CSC	<i>Customer Service Committees</i>
CSO	<i>Community Service Obligation</i>
CVWB	<i>Crowley Vale Water Board</i>
CWSAs	<i>Critical Water Sharing Arrangements</i>
D	
DAM SAFETY MANAGEMENT PROGRAM	<p>The <i>Dam Safety Management Program (DSMP)</i> is a combination of policy, procedures and activities which, when methodically carried out, will ensure that each dam remains safe. It generally consists of the following activities:</p> <ul style="list-style-type: none"> (a) Establishment and implementation of Standing Operation Procedures and Operation and Maintenance Manuals; (b) Ongoing dam condition monitoring; (c) Regular dam safety inspections; and (d) Regular dam safety review.
DCF	<i>Discounted Cash Flow</i>
DELOITTE	<i>Deloitte Touche Tohmatsu</i>
DELOITTE TOUCHE TOHMATSU	<i>Deloitte Touche Tohmatsu (Deloitte)</i> is a consulting firm which provides a broad range of audit, tax, consulting and financial advisory services to public and private clients
DEMAND RISK	<i>Demand Risk</i> occurs when customer demand for water is uncertain and can result in variations between actual and forecast revenues.
DEPARTMENT OF ENERGY AND WATER SUPPLY	The <i>Department of Energy and Water Supply (DEWS)</i> is the current Queensland Government department responsible for water planning and resource management.
DEPARTMENT OF ENVIRONMENT AND RESOURCE MANAGEMENT	The <i>Department of Environment and Resource Management (DERM)</i> is the Queensland Government department formerly responsible for water planning and resource management.
DERM	The <i>Department of Environment and Resource Management (Queensland Government)</i> .
DEPARTMENT OF NATURAL RESOURCES AND MINES	The <i>Department of Natural Resources and Mines (DNRM)</i> is the Queensland Government department with responsibility for water planning and resource management. Refers to the department formerly known as Department of Environment and Resource Management.
DEWS	<i>Department of Energy and Water Supply</i>
DIRECT COSTS	<i>Direct Costs</i> are those costs that have been budgeted at the individual asset level.
DIRECTION	<i>Ministerial Direction</i>
DIRECT LABOUR COSTS	<i>Direct Labour Costs (DLC)</i> has been proposed by SunWater as the cost allocation base for non-direct costs for 2013-17.

DISTRIBUTION LOSSES	<p><i>Distribution Losses</i> are losses of water which occur when water is released or diverted through a <i>Channel Distribution System</i> or a pipeline system. The primary sources of distribution losses are through:</p> <p>(a) uncontrollable losses – evaporation, seepage, and overflows due to lack of customer usage after rainfall;</p> <p>(b) controllable losses – leakages from channels, pumps and/or broken pipes, un-metered or uncontrolled use, metering errors, overflows and ‘dumping’ of channel <i>Water</i> for maintenance requirements and for weed control management.</p>
DISTRIBUTION RETAILERS	<p><i>Distribution Retailers (DRs)</i> are the retail distribution water companies (Unitywater, Allconnex Water and Queensland Urban Utilities).</p>
DLC	<i>Direct Labour Costs</i>
DNRM	<i>Department of Natural Resources and Mines (DNRM)</i>
DR	<i>Distribution Retailers</i>
DSMP	<i>Dam Safety Management Program</i>
E	
EBA	<i>Enterprise Bargaining Agreement</i>
ECM	<i>Efficiency Carry-Over Mechanism</i>
ECONOMIC REGULATION AUTHORITY	<p>The <i>Economic Regulation Authority (ERA)</i> is the independent economic regulator for Western Australia.</p>
EFFICIENCY CARRY-OVER MECHANISM	<p>The <i>Efficiency Carry-Over Mechanisms (ECMs)</i> allow the regulated firm to retain efficiency savings for a reasonable period of time.</p>
ELT	<i>Executive Leadership Team</i>
ENTERPRISE BARGAINING AGREEMENT	<p>An <i>Enterprise Bargaining Agreement (EBA)</i> consists of a collective industrial agreement between either an employer and a trade union acting on behalf of employees or an employer and employees acting for themselves.</p>
ERA	<i>Economic Regulation Authority</i>
ERAWA	<i>Economic Regulation Authority of Western Australia</i>
ESC	<i>Essential Services Commission</i>
ESCOSA	<i>Essential Services Commission of South Australia</i>
ESCV	<i>Essential Services Commission of Victoria</i>
ESSENTIAL SERVICES COMMISSION	<p>The <i>Essential Services Commission (ESC)</i> is Victoria’s independent economic regulator of essential services supplied by the electricity, gas, water and sewerage, ports, and rail freight industries.</p>
ESSENTIAL SERVICES COMMISSION OF SOUTH AUSTRALIA	<p>The <i>Essential Services Commission of South Australia (ESCOSA)</i> 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.</p>

EXIT FEE	<i>Exit Fee or Termination Fee</i> is a fee applied when a distribution system WAE is permanently transferred to the river (or in some cases to scheme sub-systems).
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F

FAMPs	<i>Facility Asset Management Plans</i>
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FACILITY ASSET MANAGEMENT PLANS	<p>The <i>Facility Asset Management Plans (FAMPs)</i> were developed by Seqwater for its dams and water treatment plants,</p> <p>The FAMPs document a 10-year program of capital investment and operational maintenance investment required to maintain the capacity and quality performance of that facility. Works to enhance reliability and performance of the facility without materially modifying the facility are also incorporated where risks dictate. The FAMP documents form the basis for these investment recommendations and references the work that established the requirement and priority.</p>
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FORM OF PRICE CONTROL	The <i>Form of Price Control</i> refers to the means for regulating prices for example by price caps, revenue caps or hybrid and other caps.
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FTE	<i>Full Time Equivalent</i>
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FULL TIME EQUIVALENT	<i>Full Time Equivalent (FTE)</i> is a unit to measure employed persons in a way that makes them comparable although they may work a different number of hours per week.
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G

GAWB	<i>Gladstone Area Water Board</i>
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GCDP	<i>Gold Coast Desalination Plant</i>
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GLADSTONE AREA WATER BOARD	The <i>Gladstone Area Water Board (GAWB)</i> is a commercialised statutory authority with responsibility for storing and delivering water to industrial, electricity-generation and local government customers in the Gladstone area.
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GMW	<i>Goulburn-Murray Water</i>
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G&S	<i>Gilbert & Sutherland</i>
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GILBERT & SUTHERLAND	<i>Gilbert and Sutherland (G&S)</i> is an independent specialist consulting group focussed on agricultural, soil and water scientists and engineering.
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GOC	<i>Government Owned Corporation</i>
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GOVERNMENT PRICES OVERSIGHT COMMISSION	The <i>Government Prices Oversight Commission</i> was an independent body with the responsibility for conducting investigations into the pricing policies and practices of government monopoly, or near monopoly, suppliers of goods and services in Tasmania.
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GPOC	<i>Government Prices Oversight Commission</i>
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GRASSCO	GRASSCO Pty Ltd
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GRID SERVICE CHARGES	The <i>Grid Service Charges (GSC)</i> are the amounts that Seqwater can charge the Water Grid Manager (WGM) for the water services provided by the Grid Service Providers (GSPs) - Seqwater and LinkWater.
GSC	<i>Grid Service Charges</i>
GSC Review	<i>Review of the 2012-13 Grid Service Charges</i>
GSP	<i>Grid Service Provider</i>
GVWB	<i>Glamorgan Vale Water Board</i>
H	
HARDSHIP SCHEMES	<i>Hardship Schemes or Category 3</i> are schemes or segments that cannot achieve lower bound pricing. In SEQ, these were Cedar Pocket Dam WSS, Central Lockyer Valley WSS, Lower Lockyer Valley WSS and Mary Valley WSS.
HAV	Higher than Average Value
HEADWORKS UTILISATION FACTORS	The <i>Headworks Utilisation Factors (HUFs)</i> apportion each Water Supply Scheme's storage headworks volumetric capacity utilised by each water entitlement priority group in the scheme.
HIGH PRIORITY WATER ALLOCATION	A holder of <i>High Priority Water Allocation</i> will usually be able to access a quantity of water equal to their nominal volume more frequently and with less restriction than the holder of a water entitlement within a medium or other lesser priority group.
HP	<i>High Priority</i>
HPA	<i>High Priority Water Entitlement Group</i>
HUFs	<i>Headworks Utilisation Factors</i>
I	
ICRC	<i>Independent Competition and Regulatory Commission</i>
ICT	<i>Information, Communication and Technology</i>
IIMM	<i>International Infrastructure Management Manual</i>
INDEC	<i>Indec Consulting Pty. Ltd</i>
INDEC CONSULTING PTY. LTD	<i>Indec Consulting Pty. Ltd (Indec)</i> is a management advisory consulting firm providing financial and economic analysis, benchmarking and efficiency improvement programs, and asset, program and engineering management.
INDEPENDENT COMPETITION AND REGULATORY COMMISSION	The <i>Independent Competition and Regulatory Commission (ICRC)</i> is a statutory body set up to regulate prices, access to infrastructure services and other matters in relation to regulated industries in the ACT.
INDEPENDENT PRICING AND REGULATORY TRIBUNAL	The <i>Independent Pricing and Regulatory Tribunal (IPART)</i> 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.

INTEGRATED QUANTITY AND QUALITY MODEL	The <i>Integrated Quantity and Quality Model (IQQM)</i> is a computer program that simulates daily streamflows, flow management, storage, releases, instream infrastructure, water diversions, water demands and other hydrologic events.
INTERGENERATIONAL EQUITY	<i>Intergenerational Equity</i> is generally considered to be achieved when the contribution of each generation reflects the benefits it receives from that infrastructure.
INTERIM RESOURCE OPERATIONS LICENCE	<i>Interim Resource Operations Licence (IROL)</i> is a licence granted under section 175 of the <i>Water Act 2000 (Qld)</i> which authorises the licence holder to manage and operate <i>Water Infrastructure</i> (e.g. a <i>Water Supply Scheme</i>) and to interfere with the natural flow of <i>Water</i> , to the extent necessary for that operation, in an area where a <i>Resource Operations Plan</i> has not been approved.
INTERIM WATER ALLOCATION	A <i>Water Access Entitlement (WAE)</i> that confers on its holder an entitlement to access a share of water, prior to becoming a tradable water allocation. IWAs are generally a temporarily (but not permanently) tradable access right that is attached to land and provides access to water within a water supply scheme.
IPART	<i>Independent Pricing and Regulatory Tribunal</i>
IQQM	<i>Integrated Quantity and Quality Model</i>
IROL	<i>Interim Resource Operations Licence</i>
IWA	<i>Interim Water Allocation</i>
J	
K	
KPI	<i>Key Performance Indicator</i>
L	
LDGCI	<i>Lowood and District Golf Club, Inc.</i>
LGC	<i>Laidley Golf Club</i>
LINKWATER	<i>LinkWater</i> currently owns and operates the bulk transport assets that transports potable water around the SEQ Water Grid. <i>LinkWater</i> will be merged with Seqwater from January 2013.
LRMC	<i>Long-Run Marginal Cost</i>
LOWER BOUND COSTS (LOWER BOUND PRICING)	As defined by <i>COAG</i> , <i>Lower Bound Pricing</i> is the level at which to be viable, a <i>Water</i> business should recover, at least, the operational, maintenance and administrative costs, externalities, taxes or <i>TERs</i> (not including income tax), the interest cost on debt, dividends (if any) and make provision for future asset refurbishment/replacement.
M	
MAINTENANCE COST INDEX	<i>Maintenance Cost Index</i> was developed by QR to reflect changes in its central Queensland maintenance costs.

MAR	<i>Maximum Allowable Revenue</i>
MARKET RISK PREMIUM	<i>Market Risk Premium (MRP)</i> represents the premium over the risk-free rate that investors expect to earn on a portfolio of all assets in the market.
MAXIMUM REVENUE REQUIREMENT	<i>Maximum Revenue Requirement (MRR)</i> is the total amount of revenue that an efficiently operated business would need to receive to remain commercially viable, but not earn monopoly profits.
MBRI	<i>Mid Brisbane River Irrigators Inc.</i>
MCI	<i>Maintenance Cost Index</i>
MDB	<i>Murray-Darling Basin</i>
MEGALITRE	A <i>Megalitre</i> is 1 million (1,000,000) litres.
ML	<i>Megalitre</i>
MP	<i>Medium Priority</i>
MRP	<i>Market Risk Premium</i>
N	
NAMPs	<i>Natural Asset Management Plans</i>
NATIONAL WATER COMMISSION	The <i>National Water Commission</i> 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 <i>National Water Initiative (NWI)</i> 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.
NERA	<i>NERA Economic Consulting</i>
NERA ECONOMIC CONSULTING	<i>NERA Economic Consulting (NERA)</i> is a consulting firm which addresses economic and finance issues.
NETWORK SERVICE PLAN	The <i>Network Service Plans (NSPs)</i> present Seqwater's forecast of efficient costs, including operating costs and a renewals annuity, for each of the seven bulk water supply schemes and two distribution systems relevant to the Ministers' amended referral notice.
NOMINAL \$	<i>Nominal \$</i> denotes values expressed in current (or today's 2012-13) dollar terms.
NON-DIRECT COSTS	<i>Non-direct costs</i> are costs which are not directly attributable to the operations and management of a specific scheme and include both indirect and overhead costs associated with the provision of corporate and other business services.
NOW	<i>NSW Office of Water</i>
NPV	<i>Net Present Value</i>
NSP	<i>Network Service Plan</i>

NWC	<i>National Water Commission</i>
NWI	<i>National Water Initiative</i>
O	
OPERATIONS	<i>Operations</i> relates to the day-to-day activities associated with delivering water and meeting compliance obligations.
P	
PART A CHARGE	A <i>Part A Charge</i> is a fixed charge allocated on WAE.
PART B CHARGE	A <i>Part B Charge</i> is the volumetric charge paid according to actual water use. .
PB	<i>Parsons Brinckerhoff</i>
PARSONS BRINCKERHOFF	<i>Parsons Brinckerhoff (PB)</i> is a consulting firm specialising in transport, infrastructure and environmental matters.
PLANNED MAINTENANCE	<i>Planned Maintenance</i> is maintenance on an asset, that is operational, to improve its condition and/or performance to the required level. The maintenance is scheduled to be undertaken at an appropriate time.
PLANNING PERIOD	<i>Planning Period</i> is the period from which forecast renewals expenditures are to be drawn into the calculation of a renewals annuity.
PPI	<i>Producer Price Index</i>
PRICE CAP	Under a <i>standard price cap</i> : <ul style="list-style-type: none"> (a) the service provider does not receive the MAR irrespective of market conditions as sales can vary from those initially envisaged and, as a result, may bear volume risk; (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.
PRICEWATERHOUSECOOPERS	<i>PricewaterhouseCoopers (PwC)</i> is a consulting firm that provides industry-focused assurance, tax and advisory, corporate accountability, performance and process improvement, risk management, and mergers and acquisitions advisory services.
PRIORITY GROUP	<i>Priority Group</i> is defined under the <i>Water Act 2000 (Qld)</i> to be water allocations that have the same Water Allocation Security Objectives (WASO).
PRODUCER PRICE INDEX	<i>Producer Price Index</i> measures average changes in prices received by domestic producers for their output.
PV	<i>Present Value</i>
PwC	<i>PricewaterhouseCoopers</i>
Q	
QCA	<i>Queensland Competition Authority</i>

QCCCE	<i>Queensland Climate Change Centre of Excellence</i>
QCWO	<i>Quotation Compliant Work Order</i>
QECAIPD	<i>Queensland Engineering Construction Activity Implicit Price Deflator</i>
QFF	<i>Queensland Farmers' Federation</i>
QTC	<i>Queensland Treasury Corporation</i>
QUEENSLAND BULK WATER SUPPLY AUTHORITY	The <i>Queensland Bulk Water Supply Authority (Seqwater)</i> is a Queensland statutory authority responsible for a number of water supply assets across South East Queensland (SEQ).
QUEENSLAND CLIMATE CHANGE CENTRE OF EXCELLENCE	The former <i>Queensland Climate Change Centre of Excellence (QCCCE)</i> was the state-based climate science research centre in Australia, undertaking research and delivering specialised information to inform Queensland's response to climate change, climate variability and climate extremes. Ceased operation on 16 November 2012.
QUEENSLAND COMPETITION AUTHORITY	The <i>Queensland Competition Authority</i> 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 <i>Queensland Competition Authority Act 1997 (the QCA Act)</i> 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 <i>Queensland Farmers' Federation (QFF)</i> is a peak rural industry organisation in Queensland representing more than 13,000 primary producers across Queensland.
QUEENSLAND TREASURY CORPORATION	The <i>Queensland Treasury Corporation (QTC)</i> provides financial advice and risk management services, sourcing and managing debt funding for infrastructure and investing cash surpluses for Queensland's public sector organisations.
QWC	<i>Queensland Water Commission</i>
R	
RAB	<i>Regulatory Asset Base</i>
RAMPs	<i>Recreation Asset Management Plans</i>
RBA	<i>Reserve Bank of Australia</i>
Real \$ 2012-13	<i>Real \$ 2012-13</i> denotes values expressed in 2012-13 dollar terms (unless another year is specified).
REACTIVE MAINTENANCE	<i>Reactive Maintenance</i> is maintenance on an asset that can no longer function as required, to restore its function.
RECREATION ASSET MANAGEMENT PLANS	<i>Recreation Asser Management Plans (RAMP)</i>

REGULATORY ASSET BASE	<i>Regulatory Asset Base</i> 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.
REGULATORY PERIOD	<i>1 July 2013 to 30 June 2017</i>
RENEWALS	<i>Renewals</i> are non-maintenance expenditure that is required to maintain the service capacity of the assets.
RENEWALS PLANNING	<p><i>Renewals Planning</i> process generally comprises the following:</p> <ul style="list-style-type: none"> (a) Identification of asset renewals needs; (b) Evaluation of potential renewals works; and (c) Development and approval of proposed renewal programs/projects.
RESOURCE OPERATIONS PLAN	<p><i>Resource Operations Plans (ROPs)</i> are plans approved under section 103(2) of the <i>Water Act 2000 (Qld)</i>.</p> <p><i>Resource Operations Plans</i> are used to implement <i>Water Resource Plans</i> in specified areas. They detail the operating rules for <i>Water Infrastructure</i> and other management rules that will be applied in the day-to-day management of the flow <i>Water</i> in a reach or sub-catchment.</p> <p>Generally, <i>Resource Operations Plans</i> will specify:</p> <ul style="list-style-type: none"> (a) Water access rules; (b) Environmental Flow rules; (c) Water Trading rules; (d) Details of the conversions of Water Licences to Water Allocations; and (e) Water monitoring requirements.
REVENUE CAP	<p>Under a standard <i>Revenue Cap</i>:</p> <ul style="list-style-type: none"> (a) the service provider receives the Maximum Allowable Revenue (MAR) irrespective of market conditions or sales and, as a result, does not bear volume risk; (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 retains any cost savings; and (c) customers' prices vary during the regulatory period according to changes in volumes.
RFPL	<i>Riverside Farming Pty Ltd</i>
ROL	<i>Resource Operations Licence</i>
ROP	<i>Resource Operations Plan</i>
RPL	<i>Rivermead Pty Ltd.</i>
S	
SAMP	<i>Strategic Asset Management Plan</i>
SCARM	<i>Standing Committee for Agriculture and Resource Management</i>

SCARM GUIDELINES	<i>SCARM Water Industry Asset Valuation Study, Draft Guidelines on Determining Full Cost Recovery</i>
SCHEDULED MAINTENANCE	<i>Scheduled maintenance is planned maintenance on an asset, that is operational, to minimise deterioration in its condition and/or performance. The maintenance is periodic.</i>
SCI	<i>Statement of Corporate Intent</i>
SEQ	<i>South East Queensland</i>
SEQ Market Rules	<i>South East Queensland Water Market Rules</i>
Seqwater	<i>Queensland Bulk Water Supply Authority</i>
SERVICE STANDARDS	<i>Service Standards are also referred to as the combination of Water Supply Arrangements and Service Targets which were established in 2001 for SunWater in consultation with customers.</i>
SINCLAIR KNIGHT MERZ	<i>Sinclair Knight Merz (SKM) is a consulting firm specialising in strategic consulting, engineering and project delivery.</i>
SKM	<i>Sinclair Knight Merz</i>
SMEC	<i>Snowy Mountain Energy Consultants</i>
SOP	<i>Strategic and Operational Plan</i>
SPP	<i>State Procurement Policy</i>
SRMC	<i>Short-Run Marginal Cost</i>
SRW	<i>Southern Rural Water</i>
SRWP	<i>Southern Regional Water Pipeline</i>
STATE WATER	<i>State Water Corporation</i>
STATE WATER CORPORATION	<i>State Water Corporation (State Water) is New South Wales' rural bulk water delivery business.</i> <i>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.</i>
STRATEGIC ASSET MAINTENANCE	<i>Strategic Asset Maintenance are maintenance tasks and associated expenditure relating to asset replacements and renewals and involves a mix of operating and capital expenditure.</i>
STRATEGIC ASSET MANAGEMENT PLAN	<i>Strategic Asset Management Plan (SAMP) is the asset management that aligns customer service standards with asset objectives.</i>
T	
TAMPs	<i>Total Asset Management Plans</i>
TARIFF	<i>Tariff is the price Seqwater charges its Customers for the supply of services.</i>
TCV	<i>Treasury Corporation of Victoria</i>

TDC	<i>Total Direct Operating Costs</i>
TechnologyOne	<i>TechnologyOne</i> is a new Asset Management System commenced by Seqwater in 2009 which is used as the new Asset Register, as well as to manage maintenance.
TEMPORARY TRANSFER	<i>Temporary Transfer</i> is the transfer of available WAE during the current Water Year.
TERMINATION FEE	<i>Termination Fee or Exit Fee</i> is a fee applied when a distribution system WAE is permanently transferred to the river (or in some cases to scheme sub-systems).
TIER 1 WORKING GROUP	<i>The Tier 1 Working Group or the Statewide Irrigation Pricing Working Group</i> established as a representative group of SunWater and its <i>Customers</i> to consider state wide issues for the purposes of the 2006-11 price paths.
TIER 2 WORKING GROUP	The <i>Tier 2 or the Scheme Irrigation Pricing Working Groups</i> established for each scheme to negotiate and resolve scheme-specific issues (i.e. customer service standards, tariff structures and <i>Water</i> usage forecasts) for the purposes of the 2006-11 price paths.
the Authority	<i>The Queensland Competition Authority</i>
the QCA Act	<i>Queensland Competition Authority Act 1997 (Qld)</i>
the Water Act	<i>Water Act 2000 (Qld)</i>
the WHS Act	<i>Workplace Health and Safety Act 2011 (Qld)</i>
TRANSMISSION LOSSES	<i>Transmission Losses</i> are losses which result from evaporation and seepage associated with watercourses.
U	
USEFUL ASSET LIVES	<i>Useful Asset Lives (UAL)</i> in conjunction with asset age, have commonly been utilised in estimating the remaining asset lives and the timing of asset replacement activities.
V	
VARIABLE COSTS	<i>Variable Costs</i> are costs that can be expected to vary with water usage over the regulatory period. These costs should also include costs that could be avoided when demand is extremely low or did not exist.
VOLUME RISK	<i>Volume risks</i> 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	<i>Water Allocation</i>
WACC	<i>Weighted Average Cost of Capital</i>
WAE	<i>Water Access Entitlement</i>

WAR	<i>Water Allocation Register</i>
WASO	<i>Water Allocation Security Objective</i>
WATER ACCESS ENTITLEMENT	A <i>Water Access Entitlement (WAE)</i> such as a water allocation, interim water allocation (IWA), water licence or other contractual arrangement (such as the Morton Vale Pipeline Contract), that confers on its holder an (ongoing) entitlement to exclusively access a share of water.
WATER ACT 2000	The <i>Water Act 2000 (the Water Act)</i> is an Act to provide for the sustainable management of water and other resources and the establishment and operation of water authorities. Unless specified otherwise, all references to ‘ <i>the Water Act</i> ’ refer to the <i>Water Act 2000 (Qld)</i> , Reprint No. 9D. Reprint as in force on 5 December 2012.
WATER ALLOCATION	A <i>Water Allocation</i> is a type of <i>Water Access Entitlement (WAE)</i> . A <i>Water Allocation</i> confers on its holder an ongoing entitlement to exclusively access a share of water. <i>Water allocations</i> are a permanently tradable property right separate to land providing access to water within a water supply scheme.
WATER ALLOCATION SECURITY OBJECTIVE	The <i>Water Allocation Security Objective (WASO)</i> is an objective stated in a <i>Water Resource Plan</i> for the protection of the probability of being able to obtain <i>Water</i> in accordance with a <i>Water Allocation</i> .
WATER CHARGE (INFRASTRUCTURE) RULES (CWLTH)	The <i>Water Charge (Infrastructure) Rules (Cwlth)</i> sets out the <i>Australian Competition and Consumer Commission’s (ACCC’s)</i> final advice to the Minister on the water infrastructure charge rules.
WATER GRID MANAGER	The <i>Water Grid Manager (WGM)</i> holds contracts to provide potable and purified recycled water to the <i>Distribution Retailers (DRs)</i> and power stations.
WATER INDUSTRY REGULATORY ORDER 2003	The <i>Water Industry Regulatory Order 2003</i> is a statutory instrument setting out the economic regulatory framework for utilities in Victoria. It was amended in 2005 to allow the economic regulator the ability to specify the standards and conditions of services and supply to apply to certain water businesses.
WATER LICENCE	<i>Water Licence</i> is a licence granted under the <i>Water Act 2000 (Qld)</i> for <i>Taking Water</i> and using, or interfering, with the flow of <i>Water</i> .
WATER PRICING CONVERSION FACTORS	The <i>Water Pricing Conversion Factors (WPCF)</i> 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	<p><i>Water Resource Plans</i> are statutory plans produced and approved under section 50(2) of the <i>Water Act 2000 (Qld)</i>. They provide a 10-year blueprint for future sustainability by establishing frameworks to share <i>Water</i> between human and environmental needs by defining an acceptable balance between various <i>Water</i> uses, including provision for present demands, environmental needs and allowance for future requirements.</p> <p><i>Water Resource Plans</i> are developed through detailed technical and scientific assessment as well as extensive community consultation to determine a balance between competing requirements for <i>Water</i>.</p> <p>A <i>Water Resource Plan</i> may also provide for a <i>Water Trading</i> system to be established.</p>
WATER RESOURCE PLANNING	<p>A <i>Water Resource Planning</i> process is designed to plan for the allocation and sustainable management of <i>Water</i> to meet Queensland's future <i>Water</i> requirements, including the protection of natural ecosystems and security of supply to <i>Water</i> users. Outcomes of this planning process are set out in <i>Water Resource Plans (WRPs)</i>.</p>
WATER SUPPLY SCHEME	<p>A <i>Water Supply Scheme</i> is a geographically distinct area of responsibility, as defined in a <i>Water Resource Plan</i> or a <i>Resource Operating Plan</i>, managed under a <i>Resource Operations Licence</i> or <i>Interim Resource Operations Licence</i>.</p>
WATER YEAR	<p>The accounting period for <i>Taking Water</i> as specified in a <i>Resource Operations Plan (ROP)</i> or <i>Water Licence</i>.</p> <p>A <i>Water Year</i> is usually a 12-month period, 1 July to 30 June.</p>
WCA	<i>Working Capital Allowance</i>
WCIR	<i>Water Charge (Infrastructure) Rules (Cwlth)</i>
WCQ	<i>Written Contractor Quote</i>
WCRWS	<i>Western Corridor Recycled Water Scheme</i>
WEIGHTED AVERAGE COST OF CAPITAL	<p>The <i>Weighted Average Cost of Capital (WACC)</i> is the weighted sum of the costs of debt and equity expressed as shares of the entity's funding mix; the cost debt is based on "benchmark" capital structure, and the cost of equity is based on the CAPM.</p> <p>The WACC is the most common means of determining the value of the opportunity cost of capital.</p>
WGM	<i>Water Grid Manager</i>
WHS	<i>Workplace Health and Safety</i>
WIRO	<i>Water Industry Regulatory Order</i>
WORKPLACE HEALTH AND SAFETY ACT 2011	<i>The Workplace Health and Safety Act 2011 (the WHS Act)</i> is an Act about workplace health and safety, and for related purposes.
WPCFs	<i>Water Pricing Conversion Factors</i>
WPI	<i>Water Pricing Index</i>
WRP	<i>Water Resource Plan</i>
WSCs	<i>Water Service Committees</i>

WSS*Water Supply Scheme*

WTP*Water Treatment Plant*

WWTP*Wastewater (Sewage) Treatment Plant***X****Y****Z**

PREAMBLE

In January 2012, the Queensland Government directed the Queensland Competition Authority (Authority) to recommend prices for Seqwater's irrigation customers in seven water supply schemes (WSS) to apply from 1 July 2013 to 30 June 2017.

Seqwater estimated irrigation costs at \$5.6 million for 2013-14. In consultation with stakeholders, the Authority reviewed these costs and associated cost drivers and considers that costs should be reduced to \$4.5 million, this reflects an approximately 20% or \$1.13 million cost saving.

The Authority's recommended cost savings for 2013-14 are comprised of:

- (a) renewal annuities – reduced by \$0.03 million (5% of submitted annuities);
- (b) direct operating costs – reduced by \$0.5 million (17% of submitted direct costs); and
- (c) non-direct costs – reduced by \$0.6 million (29% of submitted non-direct costs).

In addition, for each year of 2013-17, the Authority recommends a cost saving (productivity gain) of 1.5% per annum applied to total operating costs (excluding insurance, rates and electricity), resulting in a further cost savings of \$0.5 million by 2016-17.

The Authority has published its estimates of prudent and efficient costs and the resulting cost-reflective prices for reference purposes. The Authority has recommended prices consistent with the Government's pricing policies, which include the maintenance of current revenues and the moderation of real price increases.

In 2013-14, the Authority's recommended prices imply total revenue from irrigation charges of \$1.7 million. This compares with the Authority's estimate of prudent and efficient cost-reflective revenue for 2013-14 of about \$4.5 million. This implies a CSO of about \$2.8 million, to be determined by Government in negotiations with Seqwater.

This Final Report is presented in two volumes. Volume 1 outlines the key issues, guiding principles and recommendations. Volume 2 is comprised of a report for each WSS, outlining the application of the Volume 1 principles and details the Authority's responses to scheme-specific matters.

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EXECUTIVE SUMMARY

Ministerial Direction

The Queensland Competition Authority (the Authority) was directed by Government to recommend irrigation water prices for Seqwater's irrigation WSSs, for the four-year period 1 July 2013 to 30 June 2017 (2013-17).

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 dam safety and metering upgrade costs related to changes in national standards, and any rate of return on existing assets.

Accordingly, the fully cost-reflective irrigation prices established under this review do not include a profit to Government or contribute to dividends paid to Seqwater's shareholders. Irrigation prices will break-even over a wide range of time periods. The shortfalls in cost recovery are expected to be paid by Government in the form of a Community Service Obligation (CSO).

The Authority is to adopt Seqwater's current nine irrigation tariff groups. Tariff-structures are to have regard to the fixed and variable nature of Seqwater's costs. The Authority is also to have regard to Seqwater's legitimate commercial interests.

Where current prices exceed prudent and efficient costs, they are to be maintained in real terms. Where cost-reflective prices imply real price increases (that is, greater than inflation of 2.5%), the Authority is to consider recommending price paths to moderate the impacts on irrigators.

Business Overview

On 1 July 2008, the Government transferred to Seqwater six irrigation WSS in South East Queensland (SEQ) that were previously owned and operated by SunWater. Seqwater also owns and operates the Central Brisbane River WSS. Seqwater provides bulk water and/or distribution services to 1,455 irrigators. For 2012-13, Seqwater forecast total revenue from irrigation charges of approximately \$2.0 million. The Government CSO is about \$1.3 million.

Regulatory Framework

To manage volume risks associated with the recovery of Seqwater's prudent and efficient (allowable) costs, the Authority proposes cost-reflective tariffs. To manage uncontrollable changes in allowable costs, the Authority recommends an end-of-period adjustment for over- or under-recovery. Within-period adjustments could be considered in limited circumstances.

The Authority recommends also that the Department of Natural Resources and Mines (DNRM) introduce permanently tradable water access entitlements (WAE) during the regulatory period for all WSS. This will promote water trading (the movement of tradable WAE to higher value uses) and help to increase the productivity of irrigators and agricultural production in SEQ.

Pricing Framework

The Authority concludes that a two-part tariff is appropriate, with fixed costs recovered through a fixed tariff and variable costs recovered through a volumetric tariff for each tariff group. The Authority recommends volumetric tariffs that are levied on the basis of water use. Where price paths apply, the Authority's recommended fixed tariffs are less than cost-reflective, and are levied on the basis of nominal WAE.

The Authority recommends termination fees for Pie Creek and Morton Vale Pipeline and considers that the Morton Vale Pipeline Contract could be renegotiated by Seqwater in consultation with irrigators. If so, the recommended termination fee could apply in this tariff group.

Based on the Ministerial Direction and its understanding of current legislative arrangements, the Authority has recommended irrigation charges for Central Brisbane River WSS. Whether Seqwater is legally entitled to impose irrigation charges in this scheme is a contractual matter between Seqwater and irrigators, in the event that the Government determines such charges should apply.

Renewals Annuity

To establish prudent and efficient renewals annuities for each tariff group, the Authority recommends reducing 2006-08 expenditure by 4% (\$0.03 million) and 2008-09 expenditure by 95% (\$0.81 million), accepting 2009-13 expenditure, and reducing forecast expenditure by 13% (\$7.3 million).

On average, renewals account for about 14% of irrigation prices for 2013-17. In total, the Authority recommends a total reduction of 13.5% (\$8.14 million) to Seqwater's submitted all sectors past and forecast renewals costs, initially totalling \$60.4 million (real values). This translates to a 5% reduction in irrigation only renewals annuities, mainly due to the allocation of costs to high priority WAE.

In general, to allocate fixed bulk renewals costs between priority groups, the Authority recommends the use of a headworks utilisation factor (HUF) or equivalent, which allocates proportionately more costs to high priority (urban and industrial) customers, where they exist within a WSS.

Operating Expenditure

Based on reviews of Seqwater's proposed all sectors direct operating costs, the Authority recommends a \$1.0 million (8%) reduction to Seqwater's initial forecast of \$12.1 million. This translates to a 17% reduction in irrigation direct operating costs reflecting higher savings in majority irrigation WSSs.

The Authority has also reduced all sectors non-direct costs (administration and overheads) by 40% (or \$4.4 million) when compared to Seqwater's initially forecast non-direct expenditure of \$11.1 million.

This is due in part to a Government decision to reduce Seqwater's non-direct costs for irrigators by \$1.6 million (reflecting a total all sectors cost reduction by Government of about \$12 million). The Authority then excluded costs that do not relate to irrigation (\$2.4 million) and (\$0.4 million) due to the recommended reduction of direct operating costs (upon which non-direct costs are allocated). This translates to a 29% reduction in irrigation non-direct operating costs, mainly due to the exclusion of flood centre costs from Central Brisbane River WSS.

In summary, the Authority recommends reducing all sectors total operating costs by \$5.4 million (in 2012-13 dollars), which is a 23% reduction to Seqwater's originally submitted \$23.3 million.

The Authority has also applied a general productivity gain of 1.5% annually to direct and non-direct costs (with the exception of insurance), applied cumulatively each year of the regulatory period. This results in an additional all sectors real cost saving of \$2.5 million cumulatively for 2013-17.

The Authority recommends annual escalation of costs during 2013-17 as follows: 3.6% for total labour and contractors; 4% for materials; and 2.5% for electricity (generally) and other non-direct and direct costs. An exception for electricity is where regulated electricity tariffs for 2013-14 have been increased by about 15% (from 2012-13) to reflect the Authority's electricity Draft Determination.

To ensure that Seqwater's legitimate commercial interests are recognised, the Authority proposes that if uncontrollable costs change materially, relative to forecast costs, Seqwater or irrigators can apply for an adjustment to prices. As this is a four year regulatory period, and given the relative immateriality of irrigation revenue to Seqwater, only end-of-period adjustments are expected, if any.

The Authority recommends that non-direct costs be allocated to irrigation tariff groups using total direct operating costs (excluding variable electricity) as the cost allocation base. In general, the Authority also recommends that for bulk WSSs, all fixed repairs and maintenance costs and 50% of

fixed operations costs should be allocated between priority groups using HUFs (or adjusted WAE) and the other 50% of fixed operations costs be allocated using nominal WAE. Central Brisbane River WSS is the exception, where adjusted WAE is used to allocate all fixed costs.

Consultation

Seqwater should publish on its website detailed Network Service Plans (NSPs) by 30 September 2013 and annually thereafter. The NSPs should detail past and forecast renewals costs, and explain significant variations between actual and forecast material items.

Seqwater should establish irrigator advisory committees in each scheme and annually consult on the basis of the published NSPs. Seqwater should publish on its website any customer submission and Seqwater's response. The annual cost of NSPs and consultation should be allocated to irrigators.

Total Costs

Seqwater submitted total estimated irrigation costs of \$5.62 million for 2013-14. The Authority considers that costs should be reduced to \$4.49 million – a 20% or \$1.13 million saving.

These cost savings for 2013-14 are comprised of: renewal annuities – reduced by \$0.03 million (5% of submitted annuities); direct operating costs – reduced by \$0.5 million (17% of submitted direct costs); and non-direct costs – reduced by \$0.6 million (29% of submitted non-direct costs).

Major cost components as a portion of recommended total costs, are presented in Figure 1. Seqwater's submitted and the Authority's estimate of costs are in Figure 2.

Figure 1: Total Irrigation Costs (\$ million)

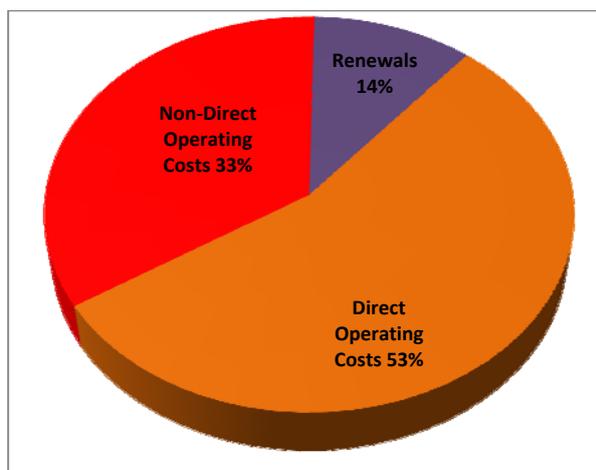
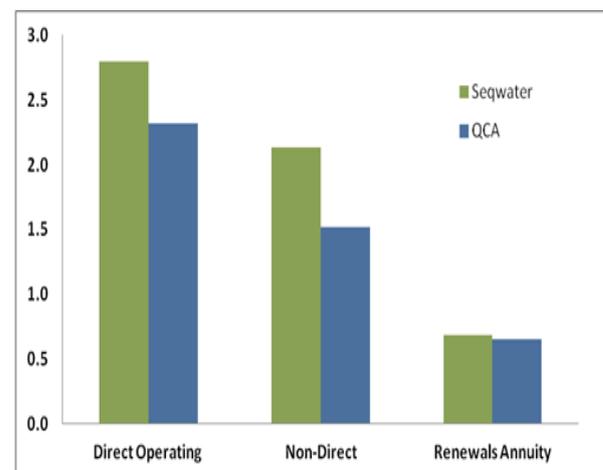


Figure 2: Recommended Costs (\$ million)



In addition, for each year of 2013-17, the Authority recommends a cost saving (productivity gain) of 1.5% per annum applied to total operating costs (excluding insurance, rates and electricity), resulting in a further cost savings of \$0.5 million by 2016-17.

Final Prices

The Authority has been directed to recommend prices (and tariff structures) for Seqwater's nine irrigation tariff groups for 2013-17.

Firstly, cost-reflective charges are estimated for each tariff group. That is, fixed costs are divided by current WAE to derive fixed charges, and variable costs are divided by typical water use to derive volumetric charges.

Secondly, the Authority must then consider Government's pricing policies, leading to recommended prices and price paths for each tariff group. These may differ from cost-reflective prices.

The Authority recommends charges that maintain current irrigation revenues (2012-13 prices times average irrigation water use over 2006-12).

The recommended volumetric charge for each tariff group reflects variable costs so as to manage volume risk and send efficient price signals. In most schemes, recommended volumetric charges fall in 2013-14. All volumetric charges are increased at CPI over the balance of the regulatory period.

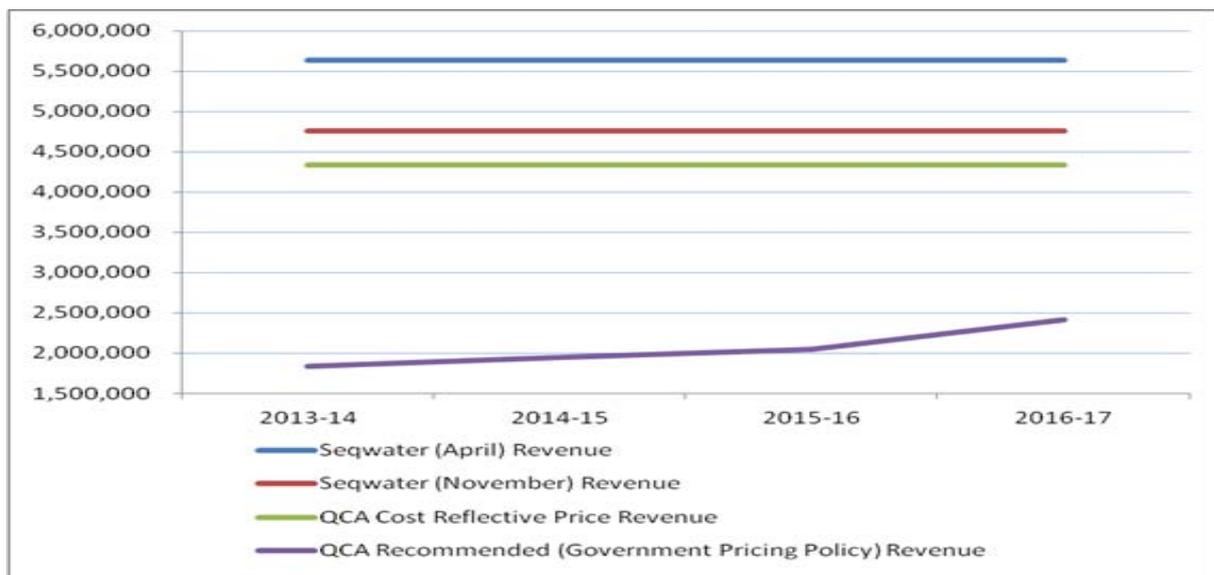
To maintain revenues, the balance not recouped by volumetric charges is recovered by fixed charges. Where current revenues are below cost-reflective revenues, the Authority recommends price paths where fixed charges increase annually by \$2 per ML (plus CPI) until cost-reflective levels are reached.

In two tariff groups, Cedar Pocket Dam and Pie Creek, volumetric charges are recommended to materially increase on 1 July 2013 (reflecting the Authority's estimates of variable costs).

For all tariff groups, the impact on water bills of the Authority's recommended tariff structures (that is, fixed and volumetric charges) will vary depending on an irrigator's unique water use profile.

In 2013-14, the Authority's recommended prices imply forecast total revenue from irrigation charges of approximately \$1.7 million, with an estimated CSO of \$2.8 million, to be determined by Government in negotiations with Seqwater. This reflects the Authority's prudent and efficient cost-reflective revenue target for 2013-14 of about \$4.5 million. Figure 3 presents a comparison of the revenue implied by Seqwater's submitted irrigation prices, the Authority's cost-reflective prices and the Authority's recommended prices.

Figure 3: Comparison of Irrigation Revenues 2013-17 (Real \$)



As noted above, the Authority generally recommends that fully cost-reflective volumetric charges be adopted from 1 July 2013. The exception is Pie Creek, where cost-reflective prices (and the termination fee) are exceptional (being three times the highest SunWater volumetric tariff) and inappropriate given the evident structural changes (increasing urban encroachment and the decline of dairy production). The Authority recommends, therefore, that Government and Seqwater review service delivery arrangements in Pie Creek, and the recommended prices apply as a transitional measure for 2013-17, during that recommended review to be led by Government.

Table 1 presents Seqwater's submitted prices and the Authority's cost-reflective and recommended prices for 2013-14. Table 2 presents the Authority's recommended draft and final termination fees.

Table 1: Irrigation Water Prices by Tariff Group (Nominal \$/ML)

Tariff Group	Actual	Seqwater (April 2012)	Seqwater (November)	Draft Cost- Reflective	Draft Recommended	Final Cost- Reflective	Final Recommended
	2012-13	2013-14	2013-14	2013-14	2013-14	2013-14	2013-14
Cedar Pocket Dam							
Fixed (Part A)	15.68	271.65	306.07	221.93	9.70	270.81	7.28
Volumetric (Part B)	16.81	0.00	0.00	32.02	32.02	36.94	36.94
Central Brisbane River							
Fixed (Part A)	0.00	56.52	52.44	38.34	22.66	21.11	15.11
Volumetric (Part B)	0.00	0.00	0.00	12.31	12.31	10.14	10.14
Central Lockyer Valley							
Fixed (Part A) – Bulk River	12.37 ¹	96.15	66.53	51.71	0.00	53.14	0.00
Volumetric (Part B) – Bulk River	32.91	0.00	0.00	18.48	18.48	9.89	9.89
Morton Vale Pipeline (Bundled)							
Fixed (Part A + C)	21.98	106.66	71.98	66.57	26.07	55.78	27.46
Volumetric (Part B + D)	37.68	0.00	0.00	34.19	34.19	13.10	13.10
Logan River							
Fixed (Part A)	17.50	34.54	27.85	26.37	21.87	27.19	23.11
Volumetric (Part B)	27.93	0.00	0.00	15.27	15.27	9.98	9.98
Lower Lockyer Valley							
Fixed (Part A)	24.49	124.28	125.39	103.57	25.72	105.35	28.98
Volumetric (Part B)	29.99	0.00	0.00	43.77	43.77	22.25	22.25
Mary Valley							
Fixed (Part A)	17.90	39.76	27.77	24.91	19.95	25.44	20.81
Volumetric (Part B)	11.19	0.00	0.00	8.42	8.42	8.30	8.30
Pie Creek (Bundled)							
Fixed (Part A + C)	40.63	351.10	415.26	351.77	8.37	340.92	34.82
Volumetric (Part B + D)	58.03	0.00	55.72	188.87	188.87	191.36	78.96
Warrill Valley							
Fixed (Part A)	18.96	30.87	25.63	20.39	20.39	21.85	21.91
Volumetric (Part B)	22.37	0.00	0.00	34.52	34.52	7.31	7.31

Table 2: Termination Fees (\$ per ML of WAE)

Tariff Group	2013-14	2014-15	2015-16	2016-17
Draft Report				
Pie Creek	3,595.46	3,685.33	3,777.51	3,871.89
Morton Vale Pipeline	163.35	167.42	171.71	176.00
Final Report				
Pie Creek	154.11	157.96	161.92	182.27
Morton Vale Pipeline	104.94	107.58	110.33	113.08

¹ This charge was set for 2006-11 but has not been applied.

1. BACKGROUND

The Queensland Competition Authority (the Authority) has been directed to recommend irrigation water prices for Queensland Bulk Water Supply Authority (Seqwater) water supply schemes (WSSs), for the four-year period 1 July 2013 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 (as at 30 June 2013), 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 Seqwater and its legitimate commercial interests. Seqwater's tariff groups, as proposed in Seqwater's submitted Network Service Plans (NSPs), are to be adopted and tariffs are to have regard to the fixed and variable nature of costs.

The Authority is also required to at least maintain prices in real terms and, where real cost increases apply, consider price paths to moderate the impacts on customers. Price paths may extend beyond the 2013-17 regulatory period, or not be introduced at all. In either case the Authority is to provide reasons for the approach proposed.

1.1 Ministerial Direction

In January 2012, the then Treasurer of Queensland and the Minister for Finance and the Arts, pursuant to Section 23 of the *Queensland Competition Authority Act 1997* (the QCA Act), directed the Authority to develop irrigation prices to apply to Seqwater's irrigation WSSs from 1 July 2013 to 30 June 2017 (2013-17 regulatory period).

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

- (a) prices that allow Seqwater to recover the following allowable costs:
 - (i) efficient operational, maintenance and administrative costs to ensure the continuing delivery of water services;
 - (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 2013);
- (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 Seqwater;
- (b) provide for a commercial return on, and of, prudent capital expenditure in respect of augmentation assets constructed after 30 June 2013;

- (c) have regard for the legitimate commercial interests of Seqwater and the requirement for Seqwater 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 Seqwater's NSPs and not to investigate additional nodal pricing arrangements;
- (f) 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;
- (g) 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
- (h) 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 Seqwater'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 reasons 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 relevant irrigation WSSs were approved by the Queensland Government for 2006-11, on the basis of SunWater's recommendations prior to the transfer of ownership of these schemes to Seqwater on 1 July 2008.

These prices were developed during 2005-06 as part of a consultative process between SunWater and the State-wide Irrigation Pricing Working Group (Tier 1) and Scheme Irrigation Pricing Working Groups (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) there would be no customer funding of priority spillway upgrades.

SunWater was required to maintain prices in real terms for schemes with prices above lower bound costs. In South East Queensland (SEQ), these were Logan River WSS and Warrill Valley WSS. Schemes or scheme segments that could not achieve lower bound pricing were defined as Category 3 (or hardship) schemes. In SEQ, these were Cedar Pocket WSS, Central Lockyer Valley WSS, Lower Lockyer Valley WSS and Mary Valley WSS.

CSO payments were made to Seqwater by the Government to assist with the transition to lower bound pricing. Further CSO payments were provided to fund the development of resource operations plans (ROPs).

1.3 Interim Prices for 2011-13

In response to a Ministerial Direction, Seqwater extended 2011-12 and 2012-13 prices by applying the Consumer Price Index (CPI) for Brisbane (All Groups). Specifically, the CPI for the preceding year (using results to 30 March) applied to 2011-12 prices was 3.6% and for 2012-13 prices was 1.3%.

1.4 Review Process

The Authority has consulted extensively with Seqwater 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;
- (c) published notes on issues arising from consultation;
- (d) commissioned independent consultants as part of the review;
- (e) published all reports and submissions on its website; and
- (f) considered all submissions and reports in preparing this Final Report.

Under section 26 of the QCA Act, the Authority must have regard for a range of related matters. Where relevant, these have been taken into account. The Authority considers that the recommended tariff structures, regulatory arrangements, efficiency targets and transition price paths effectively address these matters.

The Authority's proposed regulatory arrangements (and particularly those relating to transparency and consultation) should provide sufficient scope to ensure that appropriate incentives are in place to ensure that prudent and efficient costs are incurred over time and that customers are provided with prices reflecting relevant costs commensurate with appropriate service standards. Such arrangements will also ensure that Seqwater's legitimate commercial interests are achieved.

2. BUSINESS OVERVIEW

Seqwater is a Queensland Government authority established under the South East Queensland Water (Restructuring) Act 2007.

On 1 July 2008, Seqwater was made responsible for a number of water supply assets in the SEQ region which were transferred from local governments and SunWater.

Accordingly, Seqwater's customers include 1,455 irrigators. Seqwater has irrigation customers in seven WSSs, which service nine irrigation tariff groups.

For 2012-13, Seqwater forecast that total revenue from irrigation charges will be \$2.0 million and the related Government CSO will be \$1.3 million. Total irrigation revenue, therefore, is expected to be \$3.3 million. This does not include revenue from Central Brisbane River WSS irrigators and represents a continuation of the current arrangements in the Central Lockyer Valley WSS (where some fixed charges are temporarily suspended due to the absence of specified volumes of customer water access entitlements (WAE)).

For 2013-14, Seqwater initially proposed cost-reflective irrigation revenues of \$5.6 million (including from Central Brisbane River and Central Lockyer Valley WSSs not included in 2012-13 forecasts), comprised of revenue from irrigation charges and CSO payments.

By comparison, for 2012-13, the Government determined that the former SEQ Water Grid Manager (WGM) must pay Seqwater \$685.6 million for its grid services.

Under the Ministerial Direction, the Authority is to establish prudent and efficient cost-reflective prices (Chapter 7: Total Costs and Final Prices). The Ministerial Direction requires that where current prices exceed prudent and efficient costs, prices are to be maintained.

Where cost-reflective prices imply real price increases, the Ministerial Direction also requires that the Authority consider recommending price paths to moderate the impacts on irrigators.

From 1 January 2013, due to the recent merger with LinkWater and the SEQ WGM, Seqwater will recover regulated costs from the water prices paid by the SEQ water retailers and industrial customers (such as the power stations).

In mixed-use WSSs, irrigators have also been paying a portion of these costs via a renewals annuity approved by Government in 2005-06. Seqwater, therefore, had been collecting some costs twice. Seqwater has proposed that this issue be resolved once the Seqwater Irrigation Review 2013-17 is completed.

This issue was previously noted in the Authority's Grid Service Charges (GSCs) 2012-13 Report. As irrigation prices from 2013-14 will be based on cost-reflective prices (within the framework of the Ministerial Direction) any adjustments for this purpose will need to be considered in the context of Seqwater's 2013-14 urban and industrial water prices.

2.1 Background

2.1.1 The SEQ Water Grid

Since 2008, the SEQ urban water and wastewater sector has undergone extensive reform.

The reforms initially involved the establishment of the SEQ Water Grid, the amalgamation of 22 separate entities to establish the SEQ WGM, three state-owned Grid Service Providers (Seqwater, LinkWater and WaterSecure), and three council-owned water retailers (Allconnex Water, Queensland Urban Utilities and UnityWater).

On 1 July 2011, the Queensland Government merged Seqwater and WaterSecure.

On 1 January 2013, the Queensland Government merged Seqwater, LinkWater and the SEQ WGM. The new entity is known as Seqwater.

Seqwater

Established under the *South East Queensland Water (Restructuring) Act 2007*, Seqwater reports to the Queensland Government via the responsible Ministers – currently the Honourable Mark McArdle MP, Minister for Energy and Water Supply and the Honourable Tim Nicholls MP, Treasurer and Minister for Trade.

Seqwater is responsible for the supply of bulk urban, industrial and irrigation water across the SEQ region. It is responsible for delivering potable and purified recycled water to the water retailers and power stations in SEQ. Seqwater also provides bulk raw water to seven schemes with irrigation customers.

Seqwater owns and operates assets located in SEQ such as dams, weirs and water treatment plants (WTPs). It also owns the recently constructed Wyaralong Dam, the Gold Coast Desalination Plant and the Western Corridor Recycled Water Scheme.

Since the 1 January 2013 merger, Seqwater now also owns and operates the region's bulk water transport assets that move potable water around the SEQ Water Grid, including bulk pipelines, pumping stations and reservoirs.

The Queensland Government regulates Seqwater's catchments, storages, water treatment activities and the delivery of major water projects. Seqwater is also subject to regulation by Queensland Health (for example, under the *Water Fluoridation Act 2008*).

2.1.2 Seqwater Operations

Since 2008-09, Seqwater has managed the initial transfer and consolidation of a diverse workforce and a diverse range of assets. It has undertaken various transitional work needed in the initial stages of operation, the commissioning and operation of a suite of major new drought assets and the recent mergers with WaterSecure (1 July 2011) and LinkWater and the SEQ WGM (1 January 2013).

Financial Information

In 2008-09, Seqwater's financial systems were perhaps adequate for financial reporting, but did not reflect the systems required of a regulated business.

By 2009-10, Seqwater implemented a new Corporate Information System (CIS) which enabled cost and other data to be captured and budgeted by asset location. The CIS started

recording data that has been used as the basis for the expenditure forecasts for regulatory submissions, as reflected in the 2011-12 and 2012-13 budgets.

Transfer of Irrigation Assets

Effective from 1 July 2008, five former SunWater schemes were transferred to Seqwater. These schemes are the Central Lockyer Valley (including Morton Vale Pipeline), Logan River, Lower Lockyer Valley, Mary Valley (including Cedar Pocket Dam – now a separate WSS) and Warrill Valley WSSs.

With them, Seqwater inherited the 2006-11 SunWater price paths, which were determined in 2005-06 as part of the Tier 1 and Tier 2 SunWater irrigation pricing process and subsequently approved by the Queensland Government.

In addition, Seqwater received other contractual arrangements in place with SunWater (for example, contracts for capital and water charges paid by customers in the Morton Vale Pipeline tariff group).

Seqwater is also responsible for the Central Brisbane River WSS where to date no prices have been applied to irrigation customers, pending the outcome of this review.

Seqwater currently recovers regulated costs via the water prices paid by the SEQ water retailers and industrial customers (such as the power stations). In mixed-use schemes (with urban, industrial and irrigation customers), irrigators have also been paying a portion of these costs via a renewals annuity approved by Government in 2005-06 (as part of the SunWater price paths).

Seqwater, therefore, had been collecting a very small portion of its costs twice. Seqwater proposed that this issue be resolved once this irrigation pricing review is completed. This issue was previously noted in the Authority's GSCs 2012-13 Report.

As irrigation prices from 2013-14 will be based on cost-reflective prices (within the framework of the Ministerial Direction) any adjustments for this purpose will need to be considered in the context of Seqwater's 2013-14 urban and industrial water prices.

2.2 Services Provided and Customers

As noted above, Seqwater provides bulk water to water retailers, other industrial customers, irrigation and other WAE holders.

Seqwater forecast that total revenue from irrigation charges in 2012-13 will be \$2.0 million and the related Government CSO will be \$1.3 million. Total irrigation revenue, therefore, is expected to be \$3.3 million. This does not include revenue from Central Brisbane River WSS and revenue in the Central Lockyer Valley WSS (arising from the temporary suspension of fixed charges).

In general, the irrigation CSO represents the difference between irrigation costs and irrigation revenues, which arises due to price paths not achieving (lower bound) cost recovery levels.

In April 2012, Seqwater initially proposed cost-reflective irrigation revenues for 2013-14 of \$5.6 million (including Central Brisbane River and Central Lockyer Valley WSSs), comprised of revenue from irrigation charges and CSO payments.

This proposed increase of \$2.3 million (in terms of total cost-reflective revenues) is comprised of approximately a \$2.0 million proposed increase in operating expenditure, a

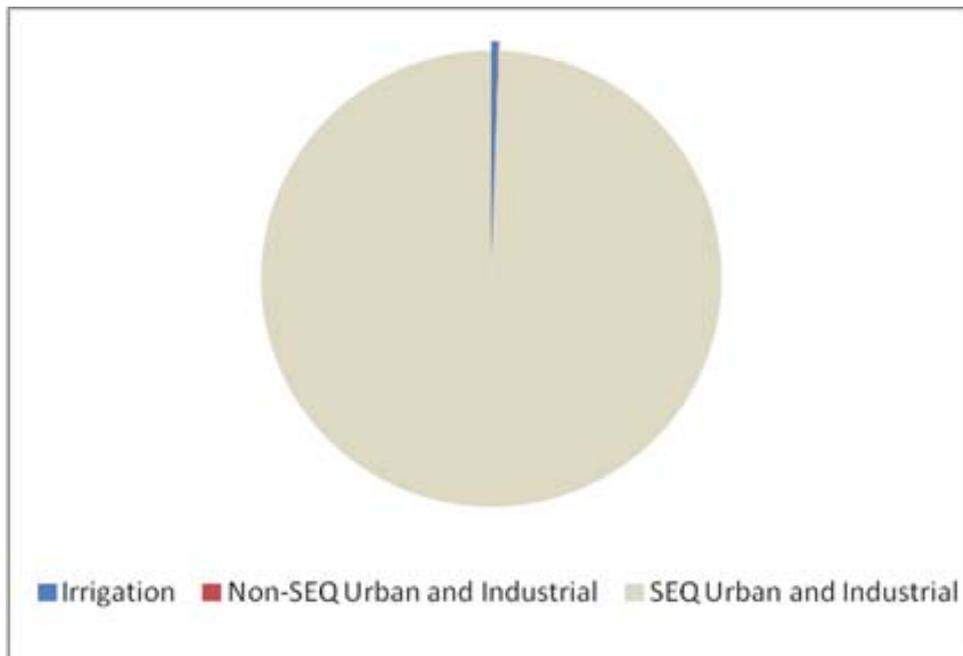
\$0.2 million increase in renewal annuities and \$0.1 million resulting from inflation (assuming CPI of 2.5%).

In November 2012, in response to the Authority's initial investigation of Seqwater's proposed irrigation costs and subsequent to the imposition of the Queensland Government's further bulk water savings (including the abolishment of 62.5 full-time equivalent (FTE) Seqwater positions and reduction of the Queensland Water Commission (QWC) levy), Seqwater proposed cost-reflective irrigation revenues for 2013-14 of \$4.8 million comprised of revenue from irrigation charges (all schemes) and CSO payments.

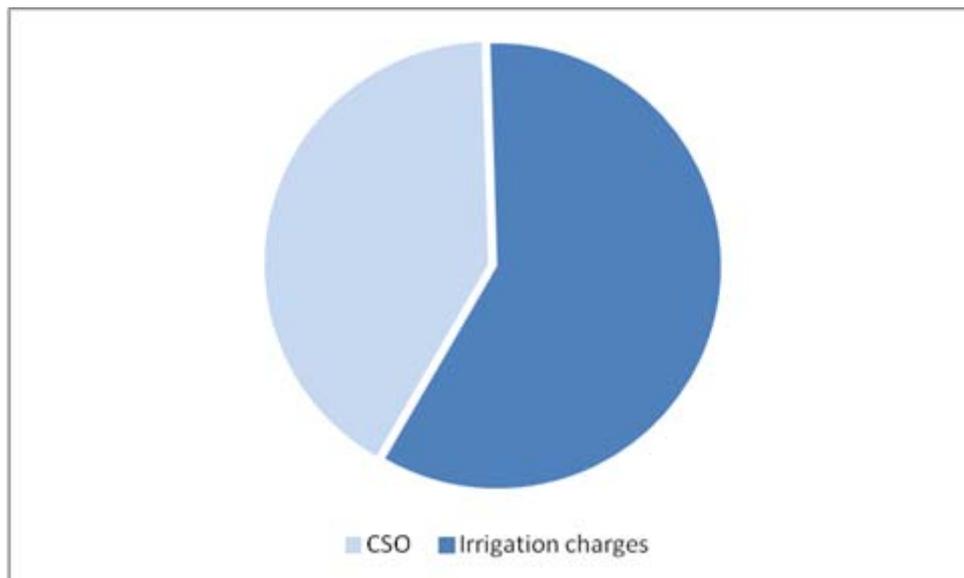
By comparison, for 2012-13, the Government determined that Seqwater should receive \$685.6 million for its provision of urban and industrial water. In 2012-13, therefore, irrigation revenues (including CSO) account for approximately 0.5% of Seqwater's regulated revenue with the majority of Seqwater's regulated revenues coming from urban and industrial customers (99.5%).

In 2013-14, irrigation revenues (including CSO) may account for up to 1% of Seqwater's regulated revenue. Figures 2.1 and 2.2 below refer.

Figure 2.1: Seqwater's Water Revenues by Customer Sector



Source: Seqwater (2012a).

Figure 2.2: Irrigation Water Revenues

Source: Seqwater (2012a).

2.2.1 Irrigation Customers

Seqwater provides water services to approximately 1,455 irrigators operating within seven WSSs and nine tariff groups.

The irrigation customers hold various WAEs including: water licences, interim water allocations (IWA) and water allocations (WA). Refer Chapter 3: Regulatory Framework and scheme specific Volume 2 reports for further details.

Irrigators use the water (when available) to support a wide variety of agriculture activities, including dairy farming, and vegetable and fodder crops.

2.2.2 Other Industrial and Urban Customers

Seqwater currently also supplies water to the Gympie Regional Council and other bodies such as local sporting clubs and water boards who directly hold WAE in these schemes. The revenue from these customers for 2012-13 is budgeted at \$0.6 million.

2.3 Service Delivery Framework

Seqwater's irrigation customers are authorised under their WAE to take water from dams and waterways managed by Seqwater within the following nine tariff groups (Table 2.1), seven of which are bulk WSSs and two are distribution systems.

2.3.1 Asset 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 water resource plans (WRPs), ROPs, resource operations licences (ROLs) and interim resource operations licences (IROLs).

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

Table 2.1: Seqwater's Irrigation Tariff Groups

<i>Bulk WSSs</i>	<i>Associated Distribution System</i>
Cedar Pocket Dam	
Central Brisbane River	
Central Lockyer Valley	Morton Vale Pipeline
Logan River	
Lower Lockyer Valley	
Mary Valley	Pie Creek
Warrill Valley	

Source: Seqwater (2012a).

Seqwater owns and maintains the service infrastructure and provides a contracted service to its customers according to their WAEs.

As there are limited opportunities for infrastructure, and particularly storage, augmentation in Seqwater's existing irrigation schemes, growth or changes in demand are met primarily through permanent and temporary trading of WAEs, where the planning framework (and in particular the WAEs held by customers) allows this to occur.

2.3.2 Supply Contracts

The planning regime (*Water Act 2000*, ROPs and ROLs) requires the establishment of a supply contract between customers and the service provider (Seqwater).

The majority of Seqwater's irrigation customers are subject to the terms and conditions of standard supply contracts, deemed (not signed) under the *Water Act 2000*. The exception is where an individual or scheme specific (signed) supply contracts have been established.

This issue is further addressed in Chapter 3: Regulatory Framework.

Water Quality

The contractual terms in relation to water quality, for irrigators, explicitly state that Seqwater makes no warranty about water quality, and will not take any actions, measures or steps to prevent any adverse effects on the quality of water supplied.

2.3.3 Water Access Entitlements

In some WSSs, where a ROP exists for that scheme and therefore permanently tradable water allocations exist, customers can temporarily or permanently trade WAE in accordance with the regulatory framework.

In other WSSs, where IWAs exist under an IROL, customers can temporarily trade (seasonally assign) their WAE where individual volumes for each property are known; however, permanent trading is not possible. Where IWAs exist but individual volumes for each property are not known, no trading (temporary or permanent) can occur.

Similarly, in WSSs where only water licences exist and no individual nominal volumes are specified in megalitres (ML), there is no ability to temporarily or permanently trade such

WAEs. This situation exists, for example, in the Central Lockyer Valley WSS for some customers.

In such schemes and for those WSSs with IWAs it is, however, possible for an irrigator to surrender their WAE. By contrast, permanently tradable water allocations (under a ROP) cannot be surrendered.

The Authority considers the implications of these differences for SEQ irrigators in Chapter 3: Regulatory Framework.

2.3.4 Service Standards

Service Standards (also referred to as the combination of Water Supply Arrangements and Service Targets) were established in 2001 by SunWater in consultation with customers.

Subsequently, the relevant Water Supply Arrangements and Service Targets were transferred to Seqwater for irrigation schemes. However, there are no specified Service Standards in the Central Lockyer Valley WSS (where agreement could not be reached in 2001 or since) and in Central Brisbane River WSSs (as to date, no water charges have applied).

2.4 Seqwater's Urban, Industrial and Irrigation Regulated Assets and Services

Seqwater's water assets are summarised in Table 2.2.

Table 2.2: Asset Overview

<i>Asset Type</i>	<i>Asset Type</i>	<i>Number</i>
Water Storage	Dams	26
	Weirs	47
	Off-stream storage and lagoons	6
Groundwater	Bores and bore fields	6
Water Treatment	Water treatment plants supplying the water retailers	44
	Desalination plants	1
	Advanced water treatment plants	3
	Recycled water treatment plant and pipeline network	1
	Other water treatment plants (recreation sites etc.)	7
Potable Water Transport	Potable water pipelines	534 km
	Reservoirs	28
	Pump Stations	22
	Dosing Stations	7

Source: Seqwater (2012a)

The following sections present a more detailed description of the nature and function of the types of water supply assets owned by Seqwater.

2.4.1 Water Storages

Seqwater owns 26 dams, 47 weirs and six off-stream storages and lagoons across SEQ, covering 364 square kilometres from Little Nerang Dam on the Gold Coast to the south, to Cedar Pocket Dam on the Sunshine Coast to the north, and west to Clarendon Dam.

Seqwater owns the land inundated by dams, up to the flood margin, but does not generally own other land in the dam catchment. At some storages (such as Wivenhoe and Somerset dams) Seqwater owns some land beyond the flood margin as a result of acquisitions at the time of construction. However, these holdings are a small percentage of the entire catchment, and are typically used for commercial activities, including farming.

2.4.2 Groundwater

Seqwater manages six groundwater benefitted (supplemented) areas. The majority of these groundwater areas were constructed in response to the recent drought by local governments and were transferred to Seqwater upon completion.

2.4.3 Water Treatment

Seqwater owns and operates a total of 49 WTPs throughout SEQ, of which 44 provide services to the water retailers (although five are not operational). There are seven smaller WTPs that provide water to staff in remote locations, while others are required to supply water to recreation areas at Seqwater's dams.

2.4.4 Water Transport Assets

Since 1 January 2013, Seqwater owns the assets that transport potable water around the SEQ Water Grid, including over 534 km of pipelines. These assets connect water supplies, drinking water treatment facilities and drinking water storages through a network of two-way flow bulk water pipelines.

2.5 Unregulated Assets and Services

Seqwater also owns a number of unregulated assets. The revenues from these other assets are minor compared to Seqwater's revenues from urban and industrial water services.

Seqwater also owns a hydroelectric generation plant at Wivenhoe Dam, which is operated by Stanwell Corporation under a Build-Own-Operate-Transfer (BOOT) arrangement. The hydroelectric generation plant does not contribute to water supply services, and is therefore 'unregulated'.

Similarly, Seqwater receives revenue from the leasing of water assets, such as reservoirs, for placement of third-party telecommunication equipment. These revenues are treated as revenue offsets (to benefit Seqwater's water customers) as the income results from Seqwater's position as a monopoly water service provider.

Seqwater holds 3,000ML of medium priority WAE in the Mary Valley WSS and proposes that these WAE attract the same costs as other medium priority WAE in the scheme. Accordingly, irrigation customers will not pay any costs associated with this Seqwater WAE.

2.6 Prices

Under the Ministerial Direction, the Authority is to establish prudent and efficient

cost-reflective prices. Seqwater categorises its costs into either renewals expenditure (Chapter 5) or operating expenditure (Chapter 6).

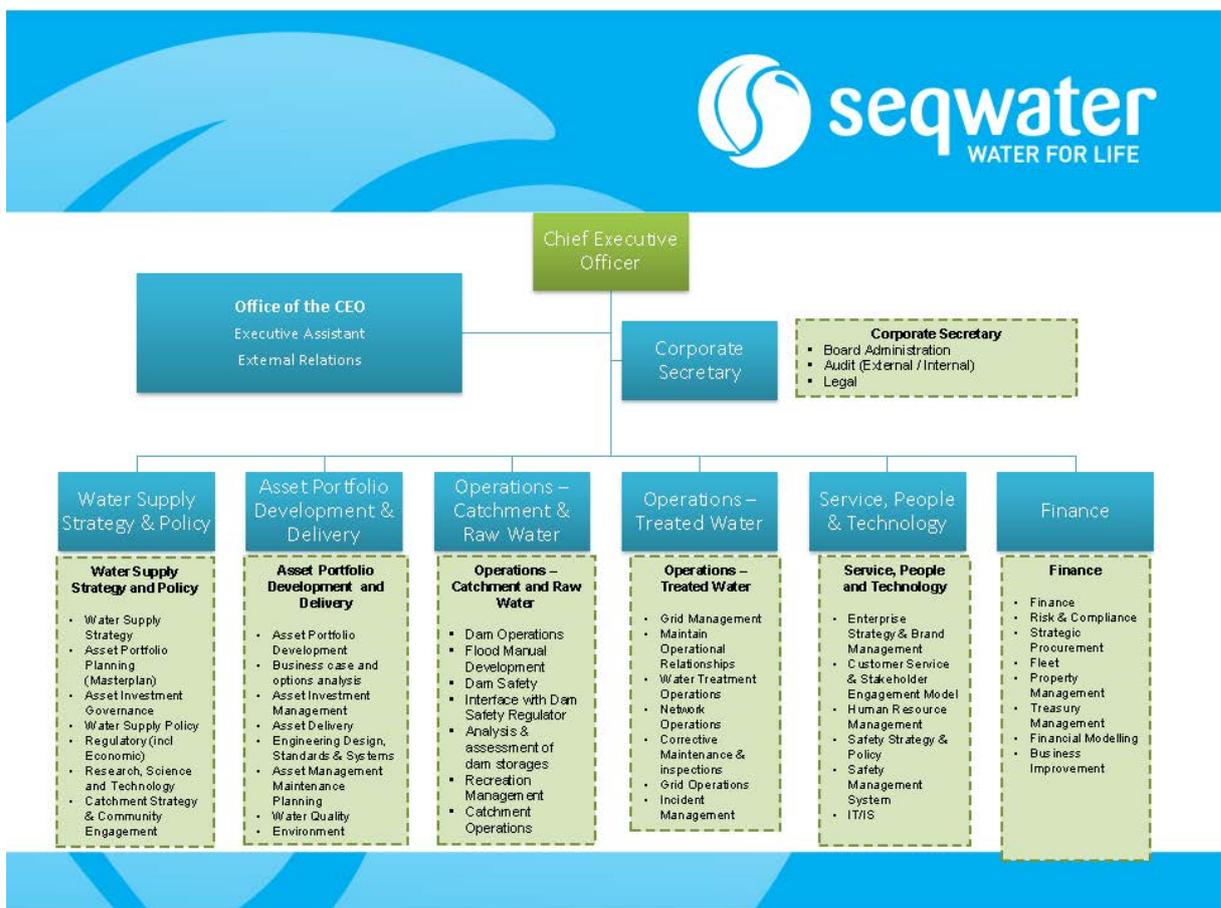
The Authority has in this Final Report included cost-reflective prices (Chapter 7: Total Costs and Final Prices) for reference purposes. The Ministerial Direction requires that where current prices exceed prudent and efficient costs, they are to be maintained in real terms.

The Ministerial Direction also requires the Authority to consider recommending price paths to moderate the impact on irrigators of real price increases.

2.7 Organisational Structure

A summary of Seqwater’s current organisational structure is provided in Figure 2.3.

Figure 2.3: Seqwater Organisational Chart



3. REGULATORY FRAMEWORK

The Ministerial Direction requires the Authority to recommend prices that, in general, recover efficient operational costs and expenditure on renewing and rehabilitating existing assets. The Authority must also recommend appropriate regulatory arrangements to manage risks associated with the allowable costs outside Seqwater's control. In considering tariff structures, the Authority is to have regard for the fixed and variable nature of 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. Cost risks relate to changes in market conditions for inputs or as a result of regulatory imposts.

Table 3.1: Summary of Risks and Authority's Recommendations

Risk	Nature of the Risk	Allocation of Risk	Authority's Recommendation
<i>Short-Term Volume Risk</i>	<i>Risk of uncertain use from fluctuating water demand or supply.</i>	<i>Seqwater cannot manage these risks and under current legislative arrangements, they are the responsibility of customers. Allocate risk to customers.</i>	<i>Cost-reflective tariffs.</i>
<i>Long-Term Volume Risk (Planning and Infrastructure)</i>	<i>Matching storage capacity (or new entitlements from improving distribution loss efficiency) to future demand.</i>	<i>Seqwater cannot augment bulk infrastructure (Government is responsible). Seqwater can manage distribution system assets and losses.</i>	<i>Seqwater should bear the risks, and benefit from the revenues, associated with reducing distribution (and bulk) losses, (where/when the resulting water savings can be permanently traded).</i>
<i>Market Cost Risks</i>	<i>Changing input costs.</i>	<i>Seqwater should bear the risk of its controllable costs. Customers should bear the risks of uncontrollable costs.</i>	<i>End of regulatory period adjustment for over- or under-recovery. Price trigger or cost pass-through on application from Seqwater (or customers), in limited circumstances.</i>
<i>Risk of Government Imposts</i>	<i>Changes to water planning framework imposing costs on service provider.</i>	<i>Customers should bear the risk though there may be some compensation associated with National Water Initiative (NWI) government decisions.</i>	<i>Cost variations may be immediately transferred to customers using a cost pass-through mechanism (depending on materiality).</i>

To reduce risks of managing water and costs, and allow water to be allocated to its highest and best use, the Authority recommends that the Department of Natural Resources and Mines (DNRM) by 30 June 2015, issue permanently tradable WAE in Lower Lockyer Valley and Warrill Valley WSSs. For Central Lockyer Valley WSS, the Authority recommends that DNRM issue interim water allocations by 30 June 2016 and permanently tradable WAE by 30 June 2017.

As electricity costs are not generally material, Seqwater or customers may apply for an end-of-period (30 June 2017) adjustment to address material variances between forecast and actual costs.

3.1 Background

Ministerial Direction

The Authority has been directed to recommend irrigation prices for seven Seqwater WSSs. A copy of the Ministers' Referral Notice forms **Appendix A**.

The Ministerial Direction requires that, in general, other than for WSSs 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 Authority is to recommend appropriate regulatory arrangements, including price review triggers and other mechanisms, to manage the risks associated with allowable costs outside the control of Seqwater. In considering tariff structures, the Authority should also have regard to the fixed and variable nature of the underlying costs.

3.1.1 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 Seqwater. Regulatory arrangements for managing such risks can include a means for avoiding, reducing or ameliorating their effect, or compensating Seqwater.

The risks associated with the recovery of allowable costs relate to variable and unpredictable water use (volume risk) and uncertain associated costs (cost 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).

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 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 – often complemented by a range of other mechanisms.

3.1.2 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 water use and estimated efficient costs.

Under a standard revenue cap:

- (a) the service provider receives the MAR irrespective of market conditions or sales and, as a result, does not bear volume risk;
- (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 retains 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 and, as a result, may bear volume risk;
- (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 as part of the Authority's 2012 review of SunWater irrigation prices. The Issues Paper can be found on the Authority's website.

3.2 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. Cedar Pocket Dam, Central Lockyer Valley, Logan River, Lower Lockyer Valley and Mary Valley WSSs selected a price cap. 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.

In Warrill Valley WSS and Morton Vale Pipeline tariff group a 'drought tariff' applied. Under this arrangement, the fixed Part A charge decreased when water availability (as measured by the announced allocation) was low and increased when water availability was high. Any variance between actual revenue received and the revenue target was to be carried forward to the next price path – that is, a revenue cap form of price control applied.

Since Seqwater took over from SunWater (1 July 2008) the drought tariff has not applied. Seqwater has advised that it has insufficient past data to calculate the extent of under- or over-recovery arising from the application of the price cap arrangements during the current price paths.

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 revenues and the Part B tariff (30%).

Central Brisbane River WSS did not form part of the 2006-11 price paths and no charges were specified, so neither a price cap nor a revenue cap applied.

3.3 Water Access Entitlements

WAE define the rights and conditions of access to water and are relevant to the nature of risks associated with access to water and the allocation of risks between Seqwater and its customers.

The type of WAE held by Seqwater customers varies between WSSs and, in many cases, from those applying in SunWater schemes.

SunWater WSSs (except for Three Moon Creek and Callide Valley Groundwater WSSs which have IWAs) have water allocations which are separate from land and can be permanently traded and cannot be surrendered. Where a customer, with a tradable distribution system WAE (water allocation), exits from a distribution system a termination fee applies. Water allocations cannot be surrendered.

Seqwater irrigation customers hold four types of WAE as follows:

- (a) water allocations (a volumetric share of water established under a ROP).

Holders of water allocations can permanently and temporarily trade WAE. They cannot surrender such water allocations. This is similar to arrangements for most SunWater irrigators;

- (b) IWA (generally a volumetric share of water established prior to a ROP).

Holders of IWA may only engage in temporary trading but are able to surrender an IWA (without a cost penalty) to DNRM. However, if an IWA is surrendered it cannot automatically be regained (if at all) when required. DNRM can resell a surrendered IWA;

- (c) water licences (an authority to take water other than a water allocation or IWA).

Water licences cannot be traded at all but can be surrendered. Once surrendered (unlike IWA) water licences are extinguished by DNRM; and

- (d) the 1995 Morton Vale Pipeline contract.

Customers under the Morton Vale Pipeline contract can also temporarily trade (within that tariff group) and while they can terminate their contract, termination fees apply. The Queensland Farmers Federation (QFF 2012) has expressed concern about the terms and conditions relating to this contract. However, such a review is beyond the scope of the current investigation.

Volume 2 scheme specific reports outline the detailed nature of WAE in each WSS.

Table 3.2 summarises the type of WAE, whether it can be traded or surrendered, and the status of service targets for each tariff group.

The implications for the allocation of risks are addressed below in respect of each category of risk (as relevant).

Table 3.2: Summary of Each WAE Type

WAE	Tariff Groups	Permanently Tradable	Temporarily Tradable	Able to Surrender	Contract	Service Targets
Water Allocation	Cedar Pocket Dam			No		
	Central Brisbane River	Yes	Yes	(Exit from Pie Creek to Mary Valley tariff group permissible)	Yes	Yes [#]
	Logan River					
	Mary Valley					
	Pie Creek					
Interim Water Allocation	Lower Lockyer Valley		Yes			
	Warrill Valley	No	(except for Central Lockyer)	Yes	Yes	Yes [#]
	Central Lockyer Valley (in part)					
Water Licence	Central Lockyer Valley (in part)	No	No	Yes	Yes	No
1995 Morton Vale Contract	Morton Vale Pipeline	No	Yes	Yes – with a termination fee	Yes	Yes

Note [#] - Central Brisbane River and Central Lockyer Valley WSSs do not have Service Targets

3.4 Short-Term Volume Risk

SunWater Review 2012-17

For the SunWater review, the Authority concluded that:

- (a) SunWater could not 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 deliver according to the requirements of the WAEs);
- (b) SunWater could not 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; and
- (c) as 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.

To remove the volume risk from SunWater, the Authority proposed that variable costs be recovered through volumetric charges. Fixed costs were to be recovered through fixed charges based on the WAEs. Such an approach was considered to avoid the need to address under- or over-recovery of revenues resulting from changes in demand or supply, remove the need for regulatory intervention, and promote price stability over the regulatory period.

Draft Report

Stakeholder Submissions

Seqwater

In relation to demand risk, Seqwater submitted that:

- (a) the service framework that applies to SunWater is largely identical to Seqwater's irrigation service framework; and
- (b) the Authority's conclusions for SunWater also apply to Seqwater. Seqwater, like SunWater, cannot manage demand risk and this risk should be allocated to, and borne by, customers through a cost-reflective tariff structure - that is, where the fixed charge recovers fixed costs, and a volumetric charge recovers costs that vary with demand (in this case, over the four year regulatory period).

In relation to supply risk, Seqwater submitted that:

- (a) the same contractual terms apply to both Seqwater and SunWater's irrigation customers. Seqwater is only required to provide water to the extent that the customer has rights to take water under their WAE; and
- (b) Seqwater has the same supply constraints as SunWater. That is, Seqwater cannot influence water availability in the short term as it cannot influence rainfall or hydrology. Seqwater does not develop drought management plans in relation to irrigation supplies under the *Water Supply (Safety and Reliability) Act 2008*.

Seqwater noted that it bears volume risk in the Central Lockyer Valley tariff group as nominal volumes are not assigned. During the previous price path only the variable costs were recovered (Seqwater has estimated that it has foregone approximately \$152,000 by not collecting fixed charges in 2011-12 alone). This matter is further addressed in Volume 2.

Other Stakeholders

To make effective on-farm investment, permanent trading (as opposed to temporary trading) is required (QCA 2012c).

Other Jurisdictions

Australian Government

The Australian Government's Water Charge (Infrastructure) Rules (WCIR) provide for price approvals or determinations for owner operators that provide services for over 250 GL (250,000 ML) of water entitlements or WAE.

WCIR Part 6 states that a regulator is responsible for approving or determining the maximum regulated charges that such operators may charge. Part 6 specifies that a regulator must have regard to changes in demand (or consumption forecasts) and price stability.

An annual review process (Division 3 of Part 6) will ensure that operators recover sufficient revenue (given the highly variable rainfall) while maintaining relatively stable prices.

New South Wales (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 (NOW)) may levy for bulk water services.

In its 2010 price determination for State Water, IPART (2010) 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 net present value (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 (Council of Australian Governments (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 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).

IPART (2012) compared State Water's current 40:60 fixed to variable tariff structure (which includes a volatility allowance to compensate State Water for the higher revenue risk resulting from this tariff structure), to an alternative tariff structure of 90:10 fixed to variable. IPART concluded that, over the longer term, there is no material difference associated with

State Water's 20-year cumulative revenue between these two tariff structures. IPART, however, acknowledged the merits of State Water adopting a 90:10 tariff structure and recommended State Water explore introducing this revised tariff structure over time.

Victoria

In Victoria, the Essential Services Commission (ESC 2008) assessed prices to apply for both urban and rural customers between 2008 and 2013. ESC 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 regulatory 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 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.

Authority's Analysis

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

The Authority noted several references in the Ministerial Direction which indicated 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; and
- (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.

Demand Risk

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

- (a) changes in crop composition or area 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 Seqwater's water);

- (d) customer access to alternative supplies; and
- (e) the price of water obtained from Seqwater.

It is not possible to forecast demand over the four-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 limits on Seqwater's ability to manage demand (or supply) risks by changing storage or delivery capacity. These constraints, associated risks and the implications for the form of price control are addressed below in Volume Risk (Long Term).

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

The standard supply contract gives WAE holders a right, but not an obligation to take water. That is, Seqwater is required to deliver water according to customer demand, subject to water availability. For Central Lockyer Valley where water licences are in place without specific allocations to irrigators, Seqwater must still manage the water system and incur costs to ensure that the requirements of its IROL are met. In this respect, therefore, Seqwater's service framework is the same as SunWater's.

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

Therefore, Seqwater is unable to fully manage variations in revenue due to changes in demand. Seqwater 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 recognised that the impact of water scarcity on customers must also be taken into account. In the current context, individual customers may, to some extent, meet their demand requirements through sourcing additional WAEs through either temporary or permanent trade or accessing alternative supplies where available.

However, as noted above, Seqwater has a number of schemes that hold IWA or water licences. IWA can only be temporarily traded (with an exception of those in Central Lockyer Valley WSS). An IWA can be surrendered to DNRM (DNRM becomes the legal holder of the surrendered IWA).

A water licence may not be temporarily or permanently traded. A water licence may be surrendered either by the customer directly to DNRM or allowing the licence to lapse (when renewal is due). If surrendered, the licence is not held by DNRM or reallocated to another customer, it ceases to exist.

The Authority noted that the ability to permanently trade WAE may, in general, be preferred by irrigators as a basis for on-farm investment.

Essentially, the absence of permanent trading means that risks are less able to be ameliorated by irrigators or by Seqwater, as there are limitations to their ability to on-sell water to other parties (total risks are higher). Essentially, Seqwater can still not manage short-term demand risk.

However, as noted by QFF (2012) there are also customers (for example, in Pie Creek tariff group and Cedar Pocket Dam WSS) where temporary trading will be preferred, even where permanent trading is available. This situation arises where the cost-reflective (particularly fixed) charges are high and demand is quite variable.

To allow customers and Seqwater to better manage demand risk, the Authority considered that permanently tradable water allocations should be in place for every Seqwater irrigation customer. For this purpose, the Authority also recommended that relevant ROPs (or sections of ROPs) be amended and water allocations be issued in the balance of Seqwater's irrigation WSSs by 30 June 2015. Such an arrangement will also direct water to its highest and best use and is consistent with recommendations to this effect at the last price review.

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 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 Seqwater 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 Seqwater 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 Seqwater to pursue efficiency opportunities. Accordingly, the Authority considered 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 volumetric 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 noted the Australian Competition and Consumer Commission's (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 considered that, for Seqwater, a cost-reflective tariff structure will provide stable prices over the four-year regulatory period and also minimise regulatory costs.

Supply Risk

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

In preparing DNRM's Regional Water Supply Strategies, climate change models were provided by the then Queensland Climate Change Centre of Excellence (QCCCE). The modelling indicated that for Queensland (including South East Queensland) the medium term impacts of climate change and climate variability on average rainfalls are highly uncertain. It is certain, however, that Queensland will experience more hot days (increasing evaporation) and fewer cold days. Storm intensity is also likely to increase.

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

Further, as the future variability of rainfall is not possible to be forecast with any certainty (beyond one to two years), supplemented water availability cannot be predicted. Supply risk is considered to be significant in these circumstances. Seqwater cannot influence water availability in the short term in that it cannot influence rainfall or hydrology.

Seqwater can only supply water to a customer with a WAE in accordance with the requirements of the water planning framework. Announced allocations specify the portion of a customer's WAE available for use (by priority group), depending on available water. Such announcements are updated throughout the water year (generally after rainfall events).

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

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

In contrast, Seqwater's customers have some, albeit limited, scope to manage short-term supply risks. Users of irrigation water may be able to manage their water supply risks by holding surplus WAE with Seqwater, sourcing alternative supplies (e.g. groundwater or building on-farm dams) and using water trading markets.

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

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 (2010) recognised the historical variation between forecast and actual supply and ascribed this risk to WAE holders through a revenue volatility allowance. The Authority did

not recommend this approach as, in Seqwater'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 preferred a mechanism that addresses actual variations, rather than anticipating an historical average.

Similar price control arrangements and tariff structures are available to ensure revenue adequacy for Seqwater. Demand and supply variability will combine to change the quantum of water used by Seqwater's customers. In some years, water usage will be more influenced by demand and in other years by supply.

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

Seqwater 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 specifically allocates such risks to customers).

Moreover:

- (a) the 1995 Morton Vale Pipeline Contract requires Seqwater to only supply water to customers to satisfy customer requirements when there is a sufficient level of water availability. Therefore, the contract attributes supply risk to Morton Vale Pipeline customers. This is consistent with SunWater and Seqwater supply contracts; and
- (b) Seqwater water licence customers and IWA holders are subject to the same supply contracts as water allocation holders, because this contract was originally drafted in anticipation of water licences and IWAs transitioning to water allocations over time. This supply contract (as earlier noted) requires Seqwater to only supply water to satisfy customer requirements when there is a sufficient level of water availability. Therefore, the supply contract also attributes supply risk to customers holding licences and IWA².

Moreover, customers are the beneficiaries of the installed capacity reflected in these WSSs and, as Seqwater cannot manage the relevant risks, short-term volume risks should be assigned to customers.

Central Lockyer Valley WSS

For Central Lockyer Valley WSS, there are no individual customer volumes identified for irrigators and therefore there is no estimate of the capacity to which each irrigator is entitled. In their absence it is not possible to assign fixed costs to individual irrigators.

In the absence of individual customer nominal volumes, the cost-reflective fixed charge in the Central Lockyer Valley WSS should be estimated on the basis of total ML allocated to the scheme and no fixed charge should apply until customer nominal volumes are in place.

Further details on the approach proposed by the Authority are provided in the Volume 2: Central Lockyer Valley WSS Report.

² QFF (2012) has expressed concern that the supply contracts have not been negotiated with rural customers (deemed contracts). The Authority understands that these contracts are legally binding as they have been deemed so pursuant to the *Water Act 2000*.

Allocation of Risk and Costs upon Surrender

As noted above, customers can surrender an IWA or water licence, creating some demand or revenue risk for Seqwater. Seqwater's policy is to discontinue charges following any surrender. Where Seqwater has rights to charge a distribution system termination fee on past contracts (on the basis that the customer is obliged to maintain their WAE), it has chosen not to do so. This remains Seqwater's policy position. The Authority accepted Seqwater's position not to charge a termination fee provided these fixed costs are not in any way passed through to other customers.

The Authority noted that water licences, once surrendered, are extinguished. However, a surrendered IWA is held by DNRM until such a time as it is made available for sale to the market. Then the fixed costs associated with that IWA (or subsequent water allocation) should be borne by the new customer, consistent with the Authority's general approach.

Insofar as IWAs are concerned, Seqwater will only bear such costs until they are re-issued to another party.

It should be noted that under the Authority's (draft) recommendation that tradable water allocations be introduced by 30 June 2015, this risk should only exist for two years of the regulatory period. After that time, issued water allocations are not able to be surrendered and termination fees would apply to distribution tariff groups upon sale.

Final Report

Stakeholder Submissions

Demand Risk

R. Hinrichsen (2013) submitted that under the proposed tariff structure all financial risk is borne by irrigators. Seqwater will recover its costs even when no water is provided. This does not reflect the commercial realities irrigators face.

DNRM to Introduce Permanently Tradable Water Allocations

Seqwater (2013a) submitted that DNRM should issue permanently tradable water allocations by 30 June 2015, but questioned whether this can be achieved in Central Lockyer Valley WSS by this time.

In response to the Authority's Draft Report, DNRM (2013) has submitted that it will issue permanently tradable water allocations in the Lower Lockyer Valley WSS and the Warrill Valley WSS by 30 June 2015. However, DNRM submitted that it cannot issue permanently tradable water allocations in the Central Lockyer Valley WSS by 30 June 2015 as:

- (a) it is complex, with a combination of water licences for groundwater, area based IWAs for surface water and contract holders in the Morton Vale Pipeline system;
- (b) the supplemented groundwater part of the WSS has no Water Allocation Security Objective (WASO), so the WRP would need to be amended; and
- (c) the introduction of permanently tradable water allocations is usually driven by the need for trading. Currently, water use is very low and, therefore, no demand for trading currently exists.

Instead of introducing permanently tradable water allocations in the Central Lockyer Valley WSS by 30 June 2015, DNRM submits that it will issue individual customer IWA by June

2017. DNRM say this timing has the advantages of leaving open the option to convert to permanently tradable water allocations when it is deemed necessary, establishing a volume for each entitlement that could be used as a basis for the establishment of Part A charges, and allowing seasonal assignment / temporary water trading.

DNRM also submitted that there are more significant water planning priorities in the Burdekin and Pioneer WSSs.

In a subsequent submission DNRM (2013b), DNRM indicated that the proposed timeframe reflected the complexity of converting current entitlements and the statutory process required to establish volumetric entitlements. Factors affecting the timing include the need for consultation with irrigators and the availability of resources.

In Round 2 consultations in Warrill Valley WSS, Central Lockyer Valley WSS and Lower Lockyer Valley WSS (QCA 2013c) irrigators and QFF (2013) supported the Authority's recommendations that DNRM introduce permanent trading by 30 June 2015.

Authority's Analysis

Demand Risk

In response to R. Hinrichsen and Warrill Valley WSS irrigators, the Authority did consider in the Draft Report (above) the short-term volume risk faced by irrigators in regards to water availability. The Authority acknowledges that irrigators have very little capacity to manage this risk. However, Seqwater has no capacity to manage short-term volume risk under the current regulatory arrangements. Therefore, volume risk is to be allocated to customers via the Authority's recommended tariff structures.

DNRM to Introduce Permanently Tradable Water Allocations

In accordance with the Draft Report and DNRM's submission, the Authority maintains its recommendation that permanently tradable water allocations be in place for the Lower Lockyer Valley WSS and the Warrill Valley WSS by 30 June 2015.

For the Central Lockyer Valley WSS, where DNRM has submitted that it will implement IWA, not permanently tradable water allocations by June 2017, the Authority considers that the arguments in favour of delaying this process, advanced by DNRM, are reasonable given DNRM's resourcing constraints and competing priorities. However, the Authority maintains that the timely establishment of permanently tradable water allocations would (eventually) deliver significant benefits to the Central Lockyer Valley WSS and surrounds (for example, movement of WAE to higher value agricultural production).

The Authority notes that continuing to defer the establishment of individual customer volumes in the Central Lockyer Valley WSS results in Seqwater continuing to forego Part A revenue, under the Authority's recommended prices. This amounts to approximately \$220,000 in 2015-16 or more than \$1 million revenue every five years that this is delayed.

Further, DNRM have not committed to the establishment of permanently tradable water allocations in the Central Lockyer Valley WSS in responding to the Authority's Draft Report. Rather, DNRM has committed to issuing only customer IWA by June 2017 (four years from commencement of the 2013-17 regulatory period).

The Authority notes that there appear to be a number of inactive irrigation customers in the Central Lockyer Valley WSS. The current arrangements do not enable such customers to sell their WAE. A further deferral of the planning processes by DNRM will mean that irrigators seeking to increase production will not be able to access additional WAE via

temporary or permanent trading until 30 June 2017 (and then only temporary trading may be available under DNRM's proposal).

In response to DNRM's submission on timing, the Authority considers that:

- (a) complexity alone should not be a permanent impediment to establishing water allocations. The Authority notes that in 2005-06, the then Government approved a price path based on customer WAE being issued by 30 June 2007;
- (b) the requirement to amend the Moreton WRP should not be an impediment to issuing permanently tradable water allocations. The Authority understands that WRPs are reviewed from time to time (e.g. three reprints have been issued since the WRP took effect in 2007); and
- (c) low water use may indicate that many WAE holders are not active users, and would sell their WAE if a Part A charge applied. This trade would move water from inactive users, to productive / higher value uses. In turn, this would support the Government's objective to double agricultural output by 2040.

Acknowledging that priorities should focus on areas of greatest benefit to the State and accepting that additional time is needed, the Authority recommends that individual customer IWA be issued by 30 June 2016 (three years from commencement of the regulatory period). From this point, Part A fixed charges could apply.

Moreover, the Authority recommends that permanently tradable water allocations be established in the Central Lockyer Valley WSS by 30 June 2017.

Conclusion

Seqwater does not have the ability to manage demand or supply risk and therefore, as the irrigators are the beneficiaries of the infrastructure services, the associated risk should be allocated to irrigators.

The Authority considers that short-term volume risk should be borne by customers through a cost-reflective two-part tariff. All variable costs should be recovered through the volumetric charge, with fixed costs recovered through a fixed charge based on customer WAE.

In the absence of individual customer nominal volumes, the cost-reflective fixed charge in the Central Lockyer Valley WSS should be estimated on the basis of total ML allocated to the scheme and no fixed charge should apply until customer nominal volumes are in place.

The absence of permanent trading in some schemes means that irrigators and Seqwater are less able to ameliorate risks due to limitations to their ability to on-sell water to other parties. Total risks are higher. To reduce total risks for all parties, DNRM should put in place permanently (and temporarily) tradable water allocations in the Lower Lockyer Valley and Warrill Valley WSSs by 30 June 2015.

In the Central Lockyer Valley WSS, DNRM should establish individual customer IWA by 30 June 2016 and permanently tradable water allocations by 30 June 2017.

In the Draft Report, the Authority recommended Part A fixed charges for Lower Lockyer Valley and Warrill Valley WSSs as customer IWA existed. However, the Draft Report recommended that Part A fixed charges not apply in Central Lockyer Valley WSS until water allocations were issued.

However, in light of the recommended (revised) timing for Central Lockyer Valley WSS, the Authority now recommends that Part A fixed charges apply once individual customer IWA are issued.

The surrender of water licences and IWA may result in declining fixed charge revenue streams. Seqwater's current practice and policy is for the fixed charges associated with the surrendered IWA and water licences not to be collected. The Authority accepts this policy position provided the foregone revenues are not collected from other irrigators.

Recommendations

Short-term volume risk should be assigned to customers through a tariff structure that recovers fixed costs through fixed charges and all variable costs through volumetric charges.

Fixed costs should be allocated to customers on the basis of nominal WAE. In the case of the Central Lockyer Valley WSS, the fixed charge should be estimated on the basis of total scheme WAE, but not be applied until individual customer IWA are in place.

Also:

- (a) in Lower Lockyer Valley and Warrill Valley WSSs, DNRM should ensure that permanently tradable water allocations be in place by 30 June 2015;**
 - (b) in the Central Lockyer Valley WSS, DNRM should ensure that individual customer IWA are issued by 30 June 2016 and permanently tradable water allocations be in place by 30 June 2017;**
 - (c) to facilitate (a) and (b), DNRM should amend relevant WRPs and ROPs (or sections of ROPs); and**
 - (d) Seqwater should bear the costs of surrendered IWA and water licences (as proposed by Seqwater).**
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3.5 Volume Risk (Long Term)

Draft Report

SunWater Review 2012-17

The Authority (2012a) concluded that SunWater:

- (a) has no substantive capacity to augment bulk infrastructure (for which responsibility rests with Government); and
- (b) should bear the risks, and benefit from the revenues, associated with reducing distribution system losses.

Stakeholder Submissions

Seqwater

Seqwater submitted that it does not have any effective means of increasing storage capacity of its own accord, as water supply planning in SEQ is fulfilled by the QWC. [The Authority understands that this function was transferred to DNRM when QWC ceased to exist on 1 January 2013.]

Seqwater holds distribution loss WAE for the Morton Vale Pipeline and Pie Creek tariff groups. In addition (and unlike SunWater), Seqwater holds specified bulk (also referred to as transmission loss) WAE in the Lower Lockyer Valley and Warrill Valley WSSs (refer to scheme specific reports for details).

The overall amount of losses WAE held by Seqwater is not material in comparison to SunWater but the appropriateness of the distribution loss WAE does warrant consideration to ensure they are appropriate.

Other Jurisdictions

South Australia

In Water for Good, South Australia's 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.

Authority's Analysis

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 Seqwater operates includes the *Water Act 2000*, customer contracts, and various WRPs, ROPs and ROLs.

Water Act 2000

Under the regulatory framework, Seqwater must comply with specified levels of service that include the maximum duration, frequency, and severity of water restrictions that may be expected by end users of the water. The Authority noted that the levels of service objectives do not specifically refer to irrigation levels of service.

The Authority noted that Seqwater has no formal role in establishing the required capital works for meeting future demand. These decisions are made by Government.

Subordinate Legislation

The WRPs, ROPs, ROLs provide limited scope to meet growth in future bulk water demand through an increase in storage capacity. The ROPs currently specify the volume of water that can be supplied under WAEs and the ROL specifies the extent to which the infrastructure operator can interfere with natural flows.

In order to increase Seqwater'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 the Department for Energy and Water Supply (DEWS) 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 the Department of Environment and Resource Management (DERM) may amend the ROP and the ROL.

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

Upon modification by Government of a WRP, Seqwater 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 Seqwater would have excess capacity in the dam and bear the associated costs.

In addition, Seqwater could, without Government's approval, decommission or reconfigure distribution system infrastructure provided it could still meet its WAE supply obligations.

Bulk Transmission Losses

In Lower Lockyer Valley and Warrill Valley WSSs, Seqwater holds IWA to account for water losses incurred in meeting customer demand. Chapter 4: Pricing Framework discusses the (efficient) portion of these IWA that should be allocated to customers.

As the IWA held for losses cannot be permanently traded, it is not possible for any revision to these to be used to meet growth in future demand or for any other purpose.

It should be noted that bulk transmission losses relate to channels in the bulk schemes and in that respect are not dissimilar to the nature of distribution system infrastructure (though on a much more limited scale).

Conclusion

The Authority considered that under the current legislative framework, the augmentation of bulk infrastructure is a responsibility of the Queensland Government.

Seqwater hold some loss WAE in bulk WSS but these currently cannot be permanently traded. They should be tradable (as such trade could improve the efficiency of water delivery, lower costs to customers, allocate water to its highest and best use and meet future

growth). Once these bulk losses WAE are tradable if they still exist after completion of the ROP, Seqwater should be able to manage them in the same way that it can manage tradable distribution losses WAE. This is different to SunWater, where no bulk losses WAE were specified.

Distribution Systems

Seqwater holds distribution loss WAE in the Morton Vale Pipeline tariff group and the Pie Creek tariff group.

In distribution systems, the ROPs specify a quantum of WAEs to account for distribution losses in the distribution system. After the ROP commences, the Water Allocation Register (WAR) records the WAE. The WAR then records any changes to the volume of the WAE from that moment forward.

If Seqwater can demonstrate to Government that it has permanently reduced the amount of water loss, then these distribution loss WAEs can, under certain conditions, be sold to customers, increasing the water available to customers from the bulk scheme. This gives Seqwater some ability to respond to higher demand.

However, in Morton Vale Pipeline, Seqwater holds distribution loss WAE (in the form of an IWA) which cannot be permanently traded. Therefore, Seqwater cannot currently respond to higher demand (for example) through selling loss WAE. This is the case, at least, until these WAE become permanently tradable water allocations (as recommended by the Authority in all WSSs by 30 June 2015).

Therefore, currently Seqwater may only respond in the Mary Valley WSS where it holds 426 medium priority losses WAE and 60 ML of high priority loss WAE (all are permanently tradable water allocations) held for the purpose of supplying the Pie Creek tariff group associated with this WSS.

Opportunities to provide an improved quality of service or additional supplies should also be pursued where commercially viable. Seqwater 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) where the benefits of saved water outweigh the expenditure required.

Further, the legislative framework does not inhibit Seqwater's ability to modify its existing distribution system (or to construct additional distribution systems). There may be opportunities for Seqwater to reconfigure distribution systems in a manner that maintains Seqwater's ability to deliver its WAEs, whilst reducing costs in these systems. The Authority considered that any such reduction in service standards or costs should be carried out in consultation with customers, noting that Seqwater should ultimately decide.

In some distribution systems Seqwater 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.

The risks associated with such improvements should be borne by Seqwater as Seqwater 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 Seqwater should provide sufficient incentive for Seqwater 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 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.

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

At the same time, there are some but limited opportunities for Seqwater to increase saleable WAEs by reducing distribution losses. To provide a clear incentive for Seqwater to reduce distribution losses, the Authority recommended that the proceeds from the sale of new WAEs (i.e. previously distribution loss WAEs) be retained by Seqwater and excluded from estimates of its MAR. This should include, where relevant, distribution and bulk losses where WAE are specified (currently IWA), and become tradable water allocations.

Notwithstanding the above, the Authority noted that Seqwater holds far fewer distribution loss WAE than SunWater and that the beneficial impacts are likely to be less material and may not exist once the ROP is completed.

Final Report

Stakeholder Submissions

Mid Brisbane River Irrigators Inc (MBRI 2013d) submitted that:

- (a) Seqwater should bear the risks, and benefits, from the revenues associated with reducing distribution system and (where relevant) bulk losses, where WAE may be permanently traded [as recommended in the Draft Report];
- (b) long-term risk should also be shared by the supply authority [Seqwater] at the time and not by the irrigators whose WAE is less than 0.16% of the capacity of the infrastructure; and
- (c) consider that irrigation WAE are unsupplemented.

Authority’s Analysis

In response to MBRI’s submission, the Authority:

- (a) notes MBRI’s support for the Authority’s position. As no grounds have been identified to alter its approach, the Authority’s recommendation is maintained;
- (b) considered long-term risks relevant to Seqwater (Draft Report) and concludes that augmentation of bulk infrastructure is the responsibility of the Queensland Government, not Seqwater. As Seqwater cannot manage long-term volume risks, it is not appropriate to allocate these costs to Seqwater, without compensation; and

- (c) regarding whether irrigation water is supplemented, Chapter 4: Pricing Framework concludes that irrigators receive a supplemented supply as specified in the ROP.

Accordingly, while the Authority has considered MBRI's submission, there are no compelling grounds to alter the Draft Report recommendation and it is maintained.

Recommendations

Seqwater should bear the risks, and benefits, from the revenues associated with reducing distribution system (and where relevant, bulk) losses, where WAE may be permanently traded.

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

3.6 Cost Risks

Previous Review 2006-11

In developing prices for 2006-11, the Tier 1 group (SunWater 2006b) considered how to manage 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 prices 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 cost risk was borne by SunWater from that time (and subsequently Seqwater, subsequent to the change of ownership on 1 July 2008).

SunWater Review 2012-17

The Authority concluded that 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.

The recommended mechanisms were:

- (a) an end of regulatory period revenue adjustments. Only efficient costs that are 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, but only 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); and

- (c) cost pass-through mechanisms to potentially allow automatic adjustments to prices during the regulatory period when the nature of costs can be reasonably foreseen and the subsequent change unambiguous (such as in the case of Government imposts).

For SunWater, the Authority reviewed the prudence and efficiency of costs and forecast them as considered appropriate. While SunWater did request that all actual electricity costs were automatically passed through, given the uncertainties regarding the appropriate electricity-efficiency gains (in renewals) and potential changes to operational practices, it was not considered appropriate to approve automatic pass-through of actual electricity costs where they exceed the Authority's forecasts. These estimates included estimates of carbon costs.

Draft Report

Stakeholder Submissions

Seqwater

The relevant cost risks are similar for both irrigation costs and non-irrigation costs. Seqwater noted that the Authority's investigation of 2012-13 GSCs included consideration of the review thresholds for cost risks. [Following recent changes in institutional arrangements GSCs are no longer relevant.]

It would be preferable to establish common principles and a common process, taking into account the different legislative and decision making processes and timeframes for both pricing regimes.

However, Seqwater acknowledged that irrigation prices and GSCs are currently set over different regulatory periods, and it would be difficult to achieve perfect alignment of approaches in practice. [Moreover, GSCs no longer apply.]

Accordingly, Seqwater generally agreed with the approach recommended for SunWater. That is, revenue certainty should be achieved through the use of end-of-period adjustments, price review triggers or cost pass-through mechanisms. Seqwater considers that, as per the draft SunWater report recommendations, the emphasis of any such adjustments should ensure that Seqwater bears the risk of its controllable costs, while customers bear the risks of uncontrollable costs.

Notwithstanding the above, Seqwater submitted that the following cost risks be approved by the Authority on an ex-ante basis for an end-of-period adjustment:

- (a) electricity pumping costs at off-stream storages; and
- (b) operating costs associated with the introduction of national metering standards during the regulatory period.

Off-stream storages

During periods of heavy flows, water may be pumped into off-stream storages and then returned to the watercourse when required. Each relevant ROP specifies the prevailing conditions necessary to commence and cease pumping into the off-stream storages. The requirement to pump is difficult to predict and does not occur regularly.

The electricity costs associated with pumping flows from off-stream storages can be significant. For example, during the 2011 Queensland floods, Seqwater was required to pump a large volume of water into Lake Clarendon in the Central Lockyer Valley WSS.

This led to average electricity pumping costs of \$27,000 per month for several months compared to the average of \$2,000 per month over the previous two years.

Given future electricity pumping costs are beyond the control of Seqwater and are highly unpredictable, Seqwater submitted that they should be able to recoup costs above forecast (currently \$100,000 per year) at the end of the regulatory period.

National metering standards

National standards for water meters have been developed under the NWI. The new standards have yet to be implemented in Queensland and are not currently a regulatory requirement as far as Seqwater is aware.

Consistent with the Ministerial Direction, capital expenditure (renewals) costs for meter upgrades to meet national metering standards have been excluded from submitted costs. However, if national metering standards are introduced during the regulatory period, it is possible that Seqwater will incur additional operating costs. For example, changes to the frequency of meter reads or the need for testing and calibration of meters may impose additional costs.

Seqwater has not included additional costs in its operating cost forecasts for the regulatory period, to accommodate the introduction of the national metering standards. However, to the extent that the new standards are introduced during 2013-17 and Seqwater incurs additional operating costs in meeting these standards during the regulatory period, Seqwater proposed that the Authority subsequently permit recovery of these costs through an end-of-period adjustment.

Seqwater considered that these costs are beyond its control and their recovery is consistent with the Authority's recommendation for addressing cost risks as outlined in its SunWater review.

Other Stakeholders

QFF (2012) noted that:

- (a) if adjustments are to be made at the end of or during the price path to account for under- or over-recovery of costs then Seqwater must justify that the costs apply to irrigation and are efficient;
- (b) Seqwater must also show that it has taken steps to establish arrangements that will deliver the most efficient costs;
- (c) Seqwater raises the issue of the pumping costs for off-stream storages but it is not clear for each scheme whether these costs apply; and
- (d) if national metering standards are to be introduced at some stage and recovered as an end-of-period adjustment and question what steps will be taken to assess the need for and cost-benefit of implementing these standards.

QFF also questioned whether the Authority will include new energy costs/tariffs or adopt the approach used in the SunWater analysis.

Other Jurisdictions

Australian Government

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 \$15 million or 5% of the value of the applicants regulatory asset base 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 unforeseen at the time of the Decision.

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

Authority's Analysis

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 an increase in costs will not allow Seqwater to recover its costs. The risk can arise as a result of market conditions increasing costs greater than forecast at the commencement of the regulatory period. They can also arise as a result of 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 for most Seqwater WSSs and can be revised (or introduced) by Seqwater without customer agreement. However, consultation with customers is required to vary (or establish) service standards.

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

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

In a lower bound cost environment, any variation in costs may impact significantly on Seqwater'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. In establishing the efficiency of proposed costs, Seqwater will need to demonstrate that the costs are relevant to irrigation, and identify the arrangements in place which ensure their efficiency. The mechanisms include:

- (a) End of regulatory period revenue adjustment. An ex-post adjustment would allow Seqwater to recover under-recovered costs outside Seqwater's control in the next regulatory period. A case for such an adjustment would be required from Seqwater. 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 Seqwater 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.

Consistent with the general approaches of the ESC and ESCOSA, the Authority only proposed to consider an application from Seqwater for such a purpose if it arises from:

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

The Authority noted that threshold levels were set for GSCs for certain review events (changes in law or government policy, emergency events, feed water quality events, change in demand or source change in cost of debt, under-over spend of capital expenditure).

As irrigation costs are less than 1% of total Seqwater's regulated revenue, the Authority did not consider it appropriate to define (or specify) the nature of categories which would trigger a price review for irrigation services preferring to adopt the approach accepted for SunWater (which defines criteria rather specific events). The Authority noted that this is acceptable to Seqwater.

Moreover, the Authority noted that the risk of variation in revenue due to the variation of circumstances for Seqwater should be manageable given the small relative

regulated revenue arising from irrigation. Most necessary adjustments are expected to be made through an end-of-period review.

Another instance where the Authority considered 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 generally considered appropriate to adopt review triggers to allow for changes in 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 Seqwater 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

- (d) Efficiency Carry-over Mechanism (ECM). ECMs allow the regulated firm to retain efficiency savings for a reasonable period of time. The effectiveness of such a regime depends upon the service standards being precisely defined and a detailed understanding of the nature of costs and the basis for any changes.

It was considered at this stage that the costs of implementing an ECM regime through the regulatory framework may exceed the benefits. Instead, broad efficiency targets were considered more suitable and are detailed further below.

Nevertheless, in order to provide incentives to increase efficiency, Seqwater needs to expect to benefit from demonstrable management initiatives designed to achieve efficiencies over and beyond those identified by the Authority. To ensure incentives to achieve efficiency gains over those already proposed by the Authority exist, the Authority did not propose to offset increases in costs resulting from changes (presumably increases) in uncontrollable costs against efficiency gains emanating from demonstrable management initiatives.

That is, Seqwater will be allowed to benefit from its initiatives over the balance of the 2013-17 regulatory period. 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. However, in subsequent periods, irrigators would benefit from the lower future costs.

Regulatory Imposts

Seqwater 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 Seqwater 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 Seqwater to make and amend the water supply arrangements.

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.

Seqwater 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.

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

Electricity

The Authority reviewed a sample of electricity costs for prudence and efficiency, forecast them as considered appropriate and incorporated forecasts in recommended prices.

Unlike for SunWater, the Authority noted that electricity is a particularly small cost for Seqwater (mainly bulk schemes) and the potential for improvements in their management is far less than for SunWater.

Accordingly, it was proposed that any material variations to forecasts only be considered as part of an end-of-period adjustment.

Off-Stream Storages

In response to Seqwater's submission regarding off-stream storage electricity pumping costs, the Authority accepted that a portion of such pumping costs are outside of Seqwater's control (as pumping requirements are specified in the ROP or IROL and cannot be predicted due to their high variability). Seqwater should be able to recover the prudent and efficient costs of meeting ROP and IROL obligations [provided these are clearly associated with a particular scheme].

This differs from the circumstances of SunWater, where the Authority concluded that 100% of off-stream pumping costs relate to water use (therefore, a variable cost) and should be recovered through the volumetric charge.

That is, off-stream Seqwater electricity pumping costs that do not vary with water use, should be recovered through the fixed charge.

The Authority accepted that actual pumping costs may vary materially from those forecast by Seqwater.

Therefore, the Authority was prepared to accept prudent and efficient forecast pumping costs (established in Chapter 6) and review them at the end of regulatory period. It was recommended that Seqwater must retain records of actual pumped volumes and costs over the 2013-17 regulatory period for this purpose.

National Metering

The Ministerial Direction requires that prices include efficient operational, maintenance and administrative costs relevant to compliance with Australian and Queensland Government initiatives on metering and measurement.

However, the Ministerial Direction is clear that the capital expenditures associated with the national metering standard should not be recovered through prices. The decision to implement such standards is a matter for the Minister.

Therefore, the Authority would consider any Seqwater application for an end-of-period adjustment for these currently excluded costs – subject to a Ministerial Direction to do so.

Consideration could then be given to prudent and efficient costs associated with the subsequent implementation (during the 2013-17) of the national metering standard, or elements thereof, as required of Seqwater by the Government. Depending on their materiality and the degree of control exercised by Seqwater in their implementation, these could be addressed as a within-period adjustment or be treated as a cost pass-through.

Final Report

Stakeholder Submissions

MBRI (2013d) submitted that:

- (a) the allocation of costs to irrigators does not relate to any service provided and is so small that these risks should be borne by Seqwater and only be adjusted (not paid) at the end of each pricing period and incorporated in the new price path, if appropriate;
- (b) irrigators pump from the river at their own expense, including electricity. Seqwater's electricity costs are not directly or indirectly attributable to or beneficial for MBRI irrigators. It is non-irrigation customers that benefit from electricity usage; and
- (c) off-stream storage costs do not benefit irrigators in the Central Brisbane River WSS.

Authority's Analysis

The Authority considers that:

- (a) an end-of-period adjustment (as submitted by MBRI) is the preferred method to adjust for changes in costs that are outside of Seqwater's control; and
- (b) electricity costs were reviewed by SKM and found to be prudent and efficient. That is, fixed and variable electricity costs are incurred in various irrigation WSSs and, accordingly, irrigators should be allocated the appropriate portion of these costs.

Refer Chapter 6: Operating Expenditure for the discussion of operating cost allocation; and

- (c) there are no off-stream storage costs in the Central Brisbane River WSS. However, where these costs apply in other WSSs, they need to be recovered. Any end-of-period adjustment to account for material changes in costs must be justified by Seqwater in a submission to the Authority (post June 2017).

Accordingly, while the Authority has considered the submission, there are no compelling grounds to alter the Draft Report recommendations and they are maintained.

Recommendations

- (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.**
 - (b) Prudent and efficient forecast electricity costs should be incorporated in recommended prices and any material variations to forecasts considered as part of an end-of-period adjustment.**
 - (c) In relation to off-stream storage pumping costs incurred in a manner that does not relate to meeting customer demand (water use), Seqwater should apply for an end-of-period adjustment for any material variation to the nominated amount which has been incorporated in costs.**
 - (d) To support any application for an end-of-period adjustment (for material variations in fixed electricity pumping costs associated with off-stream storages) Seqwater must retain records of actual pumped volumes and costs over the 2013-17 regulatory period.**
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3.7 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 Seqwater, the Authority has examined the nature of the risks involved. The following table summarises those risks and the Authority's approach (refer Table 3.3).

Table 3.3: Summary of Risks, Allocation and the Authority's Recommendations

<i>Risk</i>	<i>Nature of the Risk</i>	<i>Allocation of Risk</i>	<i>Authority's Recommendation</i>
Short-Term Volume Risk	Risk of uncertain usage resulting from fluctuating customer demand and/or water supply.	Seqwater 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.	Seqwater has no substantive capacity to augment bulk infrastructure (for which responsibility rests with Government). Seqwater has some capacity to manage distribution system infrastructure and losses provided it can deliver its WAE.	Seqwater should bear the risks, and benefit from the revenues, associated with reducing distribution (and bulk) losses (where/when the resulting water savings can be permanently traded).
Market Cost Risks	Risk of changing input costs.	Seqwater 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 Seqwater (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).

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).

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

The Ministerial Direction requires the Authority to recommend irrigation prices and tariff structures for Seqwater's irrigation schemes for 2013-17 and to adopt the nine tariff groups submitted by Seqwater.

The Authority concludes that a two-part tariff is appropriate, with fixed costs recovered through a fixed tariff and variable costs recovered through a volumetric tariff.

In Pie Creek and Morton Vale Pipeline, the Authority has unbundled tariffs to separately reflect bulk and distribution costs. Proposed tariffs A and B reflect the fixed and variable bulk costs, respectively. Proposed tariffs C and D reflect the fixed and variable distribution system costs, respectively.

Variable charges are allocated on the basis of metered water use and fixed charges are allocated on the basis of nominal WAE. As DNRM is yet to establish individual irrigator nominal WAE in the Central Lockyer, fixed charges are not recommended to apply until these are in place – the Authority recommends by 30 June 2016.

In relation to WAE held by Seqwater to account for losses, there is limited data available to determine the efficient level of loss WAE. The Authority recommends for Lower Lockyer Valley, Pie Creek and Warrill Valley that the costs of current total loss WAE be recovered from customers, as insufficient evidence exists to recommend otherwise.

In contrast, for Morton Vale Pipeline, Seqwater submitted that excess loss WAE are likely to exist. Until these are reviewed, the Authority considers it inappropriate for irrigators to bear the cost of total loss WAE and recommends that Morton Vale Pipeline customers only pay the costs associated with 50% of the interim loss WAE in this tariff group.

For all loss WAE, the Authority maintains its recommendation that DNRM review and determine the efficient level of loss WAE in each relevant scheme by 30 June 2015, except for Morton Vale Pipeline, where this should be finalised by 30 June 2017.

In contrast to the Draft Report, the Authority has recommended an interim termination fee for Pie Creek based on 11 times the recommended Part C tariff for Pie Creek (rather than the cost-reflective Part C).

Termination fees for Morton Vale Pipeline are prescribed in the Morton Vale Pipeline Contract; however, if this is renegotiated, the Authority recommends its general approach of 11 times the cost-reflective Part C.

For distribution systems, the Authority also recommends that Seqwater should never recover any shortfall in relevant fixed-cost revenue from remaining customers.

The Authority has taken all relevant matters and submissions (received prior to the finalisation of the Final Report) into account, and on the basis of its understanding of the legislative framework considers that Seqwater is not prevented from recovering irrigation water charges.

Even if the Authority's understanding is not correct, the Authority has a statutory responsibility to recommend irrigation water charges as required by the Ministerial Direction, consistent with Seqwater's contractual rights to impose irrigation water charges. Moreover, the Ministerial Direction does not require the Authority to determine whether Seqwater is legally entitled to impose and recover irrigation charges in the Central Brisbane

River WSS. This is a contractual matter between Seqwater and the irrigators, in the event that the Government determines such charges should apply.

The Authority recommends that from 1 July 2013, Seqwater should levy charges on the 6,771ML of medium priority irrigation water that was previously made available free of charge in the Central Brisbane River WSS.

4.1 Introduction

The Ministerial Direction requires the Authority to recommend irrigation prices and tariff structures to apply from 1 July 2013 to 30 June 2017 for Seqwater's nine irrigation tariff groups in seven WSSs.

Seqwater supplies raw water to 1,445 irrigation customers, as well as industrial users and local governments.

The water planning framework distinguishes between high and medium priority WAEs, reflecting the reliability of supply, however, Seqwater's irrigation customers only hold medium priority.

In the previous pricing review, some WSS were offered the option of adopting a drought tariff (generally reducing the Part A fixed charge during drought and increasing the Part A charge when the drought had ceased). However, for the purpose of this review drought tariff structures are not proposed by Seqwater.

In setting recommended prices, the Authority must take into account the Government's pricing policies, which constrain the extent to which prices can change (refer Chapter 7: Total Costs and Final Prices).

Accordingly, not all of the Authority's recommended prices will be cost-reflective, although the Authority estimates these for reference purposes.

4.2 Tariff Groups

Previous Review 2006-11

The previous SunWater Irrigation Price Paths Final Report (2006b) nominated eight tariff groups for five SunWater WSSs that now form part of the Authority's review of Seqwater's irrigation prices for 2013-17.

Stakeholder Submissions

Seqwater

Seqwater (2012a) noted that the Ministerial Direction requires the Authority to adopt the nine tariff groups as proposed by Seqwater in its NSPs.

The difference from the previous review is due to the addition of Central Brisbane River WSS (a single tariff group not previously owned by SunWater) and the reclassification of Cedar Pocket Dam tariff group (then within Mary Valley WSS) as a separate scheme – now Cedar Pocket Dam WSS.

Table 4.1: Seqwater Proposed Tariff Groups

<i>Water Supply Scheme</i>	<i>Tariff Group</i>
Cedar Pocket Dam	Cedar Pocket Dam
Central Brisbane River	Central Brisbane River
Central Lockyer Valley	Central Lockyer Valley
Central Lockyer Valley	Morton Vale Pipeline
Logan River	Logan River
Lower Lockyer Valley	Lower Lockyer Valley
Mary Valley	Mary Valley
Mary Valley	Pie Creek
Warrill Valley	Warrill Valley

Source: Seqwater (2112a).

4.3 Tariff Structures

Ministerial Direction

Under the Ministerial Direction, the Authority is required to recommend tariff structures that have regard to the fixed and variable nature of Seqwater's underlying costs.

Previous Review 2006-11

The tariff structures established as part of the previous review were maintained throughout the 2006-11 price paths and during the interim years 2011-12 and 2012-13. For bulk water services, two-part tariff structures were generally applied. The decision to apply a two-part tariff was based on the following key 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 provided. 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 the service provider (then SunWater); and
- (e) simplicity: relatively simple tariff structures provide more transparent and accountable outcomes and ease of implementation (SunWater 2006a).

The Tier 1 state-wide stakeholder group (consisting of SunWater and customer representatives) endorsed the two-part tariff structure but noted there may be some difficulty in determining the relative proportion of the fixed and variable components.

The Tier 1 group also noted that a high fixed charge may be appropriate as water supply infrastructure costs are largely fixed over time, but there is an apparent inequity in paying relatively high charges when there may be little or no water available. The fixed and variable components were derived at a scheme-specific level.

Where distribution system services were also provided, distribution system prices were bundled with bulk prices and two-part tariffs also applied. Some key features of the past approach were that:

- (a) the volumetric 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 fixed costs 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 as it reflected historical tariff structures.

Subsequently, where actual water use during 2006-11 was less than the water use forecasts underpinning these negotiated prices, the water service provider would have under-recovered those fixed costs contained in the Part B tariff.

The tariff structures agreed for 2006-11 varied for the Seqwater WSSs (Table 4.2).

Table 4.2: Tariff Structures 2006-11 (excluding Central Lockyer Valley WSS)

<i>Tariff Group</i>	<i>Part A</i>	<i>Part B</i>
Central Brisbane River	n.a.	n.a.
Central Lockyer Valley	(refer Volume 2)	(refer Volume 2)
Morton Vale Pipeline	70%	30%
Logan River	53%	47%
Lower Lockyer Valley	70%	30%
Cedar Pocket Dam	70%	30%
Mary Valley	80%	20%
Pie Creek	70%	30%
Warrill Valley	61%	39%

Source: SunWater 2006a. Note: Central Brisbane River WSS did not have a price during 2006-11.

Seqwater advised for Morton Vale Pipeline that a supply contract between irrigators and the service provider (now Seqwater) has been in place since 1995. Irrigators entered into this contract to secure the development of the pipeline. The contract requires that customers pay charges as well as a specified annual fixed capital charge per ML of WAE towards the capital cost of the pipeline.

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 group determined a preliminary set of scheme-based water use forecasts. These were developed based on the assumptions adopted for the previous price review, new data on WAE, announced allocations and direct input from customers as part of the consultation process. Historical water use data for 10-25 years (where available) was examined.

SunWater Review 2012-17

Tariff Structures

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

SunWater proposed that the tariff structure be revised so that the fixed charge recovered fixed costs and the volumetric charge recovers variable costs – noting that the Ministerial Direction required the Authority to have regard to the fixed and variable nature of costs.

SunWater submitted that for all bulk and distribution schemes fixed charges should be set to recover fixed costs levied per unit of nominal WAE. 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 were considered (by SunWater) to vary with usage.

In the distribution systems, 2006-11 tariffs incorporated bulk and distribution cost-recovery into a bundled two-part tariff. SunWater (2011i) proposed to unbundle these charges so that the recovery of distribution and bulk costs were identified separately.

Water Use Forecasts

SunWater (2011d) submitted that it should not bear demand risk, nor did it intend irrigation prices to recover the costs of any capacity augmentations. If SunWater's proposals had been accepted, water use forecasts would not have been relevant to 2012-17 price setting.

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

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012a) submitted that the prices inherited from SunWater's 2006-11 review did not signal the marginal cost of water use. This pricing structure also included a minimum charge that applied where annual charges were less than the minimum charge. Seqwater (2012a) proposed for 2013-17 that:

- (a) a cost-reflective two-part tariff structure should apply with volumetric charges reflecting costs that vary with water use over the regulatory period and fixed charges recovering fixed costs; and

- (b) the minimum charge should not continue as the above approach will recover all costs, subject to any price paths (and CSOs) applying.

Seqwater also submitted that for bulk WSSs, because all costs associated with providing bulk irrigation services are fixed, no variable charges should apply. The exception is Pie Creek where Seqwater identified variable electricity costs.

Regarding the Central Lockyer Valley WSS, Seqwater submitted that:

- (a) in the Morton Vale Pipeline unbundled tariffs should apply (that is, separate bulk Part A and B and distribution Part C and D tariffs); and
- (b) given that Seqwater cannot levy a fixed charge on irrigators of the Central Lockyer Valley tariff group (as DNRM is yet to issue individual irrigators with nominal WAE), Seqwater propose that an interim volumetric charge apply that recovers both fixed and variable costs with an end-of-period adjustment to ensure revenue adequacy.

Other Stakeholders

General Principles

Stakeholders variously noted:

- (a) support for a tariff structure that reflects fixed and variable costs (QFF 2012);
- (b) the possibility of implementing Part A, Part B and Part C tariffs (that is unbundling of charges) should be investigated (G. Drynan 2012);
- (c) the impacts of increased Part A tariffs need to be considered (QFF 2012);
- (d) higher fixed charges will not encourage on-farm water use efficiency (S. and H. Sinclair (2012) and QFF (2012);
- (e) a concern that if minimum charges no longer to apply (as proposed by Seqwater) larger irrigators will be subsidising smaller irrigators (QFF 2012); and
- (f) there needs to be certainty associated with tariff structures prior to irrigators entering into contracts (L. Brimblecombe 2012).

Some irrigators were not certain what combination of Part A and Part B would be best and considered that the Draft Report needed to provide insight (QCA 2012c).

Relative share of fixed and variable cost

There was some support for a 100% (or very high) fixed charge on the basis that:

- (a) it will increase temporary and permanent water trading. If the Authority recommended a low Part B charge then a 100% Part A charge should instead apply, as it would encourage irrigators to trade water to higher valued uses – benefitting the economy and promoting WSS viability (G. Drynan 2012 and G. Rozynski 2012). In Lower Lockyer Valley WSS, a 50% fixed charge would promote water trading to irrigators who can meet these fixed costs (Jendra 2012);
- (b) a very low (or zero) variable charge should lead to cost savings as meters will not need to be read quarterly (QCA 2012c and QFF 2012); and

- (c) current pricing arrangements may no longer be sustainable for Seqwater and there may be a need for [a 100% Part A] bulk charges relating to the nominal entitlement, whether it is used or not (Grassco Pty Ltd 2012).

Conversely, a 100% (or very high) fixed charge was not supported on the basis that:

- (a) for Pie Creek, Lower Lockyer Valley and Cedar Pocket Dam having a high cost-reflective fixed Part A tariff will act as a disincentive to permanent trading as irrigators realise that the fixed charge will increase over time towards cost-reflectivity (QFF, 2012); and
- (b) it will cause financial hardship particularly in periods of low water availability and could decrease the capital value of WAE (S. Crockett 2012, G. Drynan 2012, Grassco Pty Ltd 2012, QCA (2012c), J.B. and B.L. Keller 2012 and QFF 2012).

In Central Brisbane River WSS, J.B. and B.L. Keller (2012) submitted that high fixed charges are a significant impost and the split instead should be either 60:40 or 50:50;

- (a) it increases water charges without a corresponding increase in levels of service or the reliability/security of WAE (Drynan 2012);
- (b) it is inappropriate where permanent trading of WAE is not permitted, for example, current restrictions on water trading in Central Lockyer Valley, Lower Lockyer Valley and Warrill Valley WSSs limit irrigators' ability to respond to high fixed Part A charges (QFF 2012 and QCA 2012c); and
- (c) as [instead] a larger variable charge would provide an incentive for Seqwater to provide a higher quality service and pursue efficiencies as Seqwater's revenues would be dependent on the amount of water provided to irrigators (G. Drynan 2012, QCA 2012c and J.B. and B.L. Keller 2012).

Water Use Forecasts

It is difficult to forecast water use [for the purpose of the Authority recommending tariffs] as water availability and crop types continue to change (QCA 2012c). Due to full storages, water-use in the next two years will likely be higher than the past average, which included several droughts followed by flood (QCA 2012c).

Other Jurisdictions

Tariff Structures

IPART (2010), 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 StateWater'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 use, the risk of error in forecasting water use is reduced by basing forecasts on recent averages.

State Water proposed two pricing options: 40:60 fixed to usage charge ratio (consistent with the 2006 Determination) and a 90:10 fixed to usage charge ratio.

Under the first option, a higher rate of return was considered appropriate to compensate StateWater for the high risk of revenue volatility. The second option did not include a premium on the rate of return, as the revenue risk is much lower.

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

IPART (2010) determined that a two-part tariff with a 40:60 fixed 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 to account for this risk.

Since the Draft Report, in NSW, as part of the recent review of State Water (the rural bulk water service provider), IPART (2012b) recommended maintaining the current 40:60 fixed to variable tariff structure combined with a volatility allowance to allow State Water to manage revenue volatility.

IPART considered the current tariff structure (with volatility allowance) provides an appropriate sharing of risk between State Water and its customers. However, IPART recommended that State Water investigate a 90:10 fixed to variable tariff structure.

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 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 and 20% through a variable charge (PwC 2010a).

Since the Draft Report, in Victoria, the ESC (2011) are currently reviewing prices to apply to water and waste-water services provided by 19 water businesses (including rural water service providers) for the 2013-18 regulatory period. The ESC has published pricing principles that include support for a two-part tariff structure that comprises a fixed charge and a volumetric charge where:

- (a) the volumetric charge is calculated having regard to short-run (or long-run) marginal costs; and
- (b) the fixed charge is calculated to recover the difference between the total revenue requirement and the revenue recovered through the volumetric charge.

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

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.

ERA considered that 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 was 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.

Water Use Forecasts

In Queensland, the Authority (2010a) recommended that the 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.

In New South Wales, as part of the 2010 bulk water review, IPART (2010) 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 more recent data that incorporates recent trends.

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

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

In South Australia, the Renmark Irrigation Trust (RIT) estimates water usage on historical information. The CIT did not forecast use as it does not fluctuate significantly. Further, fixed costs are recovered through 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 the previous chapter, the Authority concluded that, for the purpose of managing the volume risks related to Seqwater'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 were 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 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) established 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 was a general commitment to the application of two-part tariffs across Australian regulatory regimes. The Authority (QCA 2002) has also previously recommended the application of two-part tariffs in its review of GAWB.

The Authority (QCA 2000) considered the basis for setting 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.

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 (marginal cost), promote informed decisions by users. Customers will irrigate until the marginal benefit outweighs Seqwater's variable cost. This makes clear the cost of supplying each 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 costs not recovered through a volumetric charge.

The Authority noted that other jurisdictions have deviated from an approach where the fixed component of the charge reflects 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 tariffs that more closely align with costs.

Relevant to the issue of determining fixed and variable costs is also the issue of unbundling tariff structures. In the distribution systems, tariffs currently recover bulk water and distribution system costs as bundled two-part tariffs. The Authority noted in the previous review that the ACCC considers the unbundling of tariffs to increase trading opportunities and potentially speed-up trade approvals.

Seqwater submitted that distribution tariffs should recover the distribution costs only and all customers of bulk and distribution systems should pay bulk water costs via bulk tariffs. The Authority proposed to unbundle bulk and distribution tariffs (as for SunWater).

Unbundled tariffs will signal 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 an efficient price signal to customers as they consider enterprise options, water use, on farm investment, water trading, and exit from or entry into distribution systems. That is, the Authority considered for both Morton Vale Pipeline and Pie Creek that costs should be recovered via unbundled tariffs. Further, aligning these tariffs with fixed and variable costs would better manage volume risk and send efficient price signals.

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

The Authority noted customer preference for certainty associated with tariff structures (L. Brimblecombe 2012). The recommended tariff structures provide certainty over the regulatory period to the extent that there are no changes due to within-period price changes.

The Authority would expect that such variations are unlikely as Seqwater's revenue from irrigation is immaterial compared to total revenues (so Seqwater has the ability to manage within-period cost variations).

Volumetric Charge

To be effective, the volumetric charge should reflect at least its marginal cost³. Typically, this is measured by reference to those costs which vary with usage (variable costs).

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.

Currently, a key reason for the adoption of two-part tariffs is to manage volume risks over the regulatory period. It was noted that the Ministerial Direction required the Authority to recommend irrigation prices to apply over the four-year regulatory period (rather than undertaking annual reviews). It was therefore considered that to manage volume risks over this period, it is more appropriate to define variable costs in terms of those costs which can be expected to vary with water usage over the four-year 2013-17 regulatory period.

The Authority's analysis of which costs are fixed and variable, and the basis for their allocation, appeared in Chapter 7 [now Total Costs and Final Prices].

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 were:

- (a) volumetric charges higher than variable costs should be applied to promote environmental and conservation objectives, including on-farm water use efficiency (S. and H. Sinclair and QFF, 2012). Under the institutional arrangements in Queensland, the establishment of the quantum, and allocation of water, between environmental and consumptive use is the responsibility of DNRM and other (than pricing) institutional arrangements are relevant for this purpose. For example, the WRP, IROL, ROP and ROL processes are in particular directed to the distinction between environmental and consumptive uses of water in a catchment. The Authority is required to establish prices to recover Seqwater'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;

³ 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 Seqwater'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 signals the full economic cost of future consumption.

- (b) volumetric charges based on variable costs may be too low to ensure Seqwater has an incentive to supply. That is, a larger variable charge is necessary to provide Seqwater with the incentive to provide a higher quality service.

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 provider 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 noted that, under the prevailing legislative framework and contractual arrangements, Seqwater has an obligation to supply existing customers with water in accordance with customer WAE and 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 DEWS.

To the extent that Seqwater holds additional WAEs that have not been allocated, the higher the fixed costs, the greater the incentive for Seqwater to sell permanently or make those WAEs available on a temporary basis (as the fixed costs associated with any Seqwater WAEs are not paid for by other customers and thus represent holding costs for Seqwater – noting that Seqwater holds only a limited volume of such WAE).

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 Seqwater to increase supply (as sales will increase revenues above immediate costs).

It was noted, however, that relevant Government agencies are responsible for planning and augmentation of infrastructure for Seqwater 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 the LRMC. In this regard, PwC (2010a) 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 (related to irrigation supply) was proposed by Seqwater. Therefore, LRMC pricing is of limited or no relevance for bulk irrigation supply.

Seqwater may be able to reduce distribution losses, and therefore increase supply, through investment in distribution systems. As noted in Chapter 3: Regulatory Framework, Seqwater should retain 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, Seqwater 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 considered that, if incentives apply, they should be applied at a whole-of-business level. Consequently, Seqwater would have the option of curtailing centralised costs whilst leaving resourcing at a scheme level largely unchanged.

As noted, Seqwater 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; and

- (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 costs).

As indicated in Tables 4.3 and 4.4, permanent water trading has occurred in three schemes while temporary trades have occurred in seven schemes, allowing water to be allocated to its highest and best use. The Authority notes, however, that trading in Seqwater WSSs (relative to many SunWater WSSs) is modest and, in some cases, very limited.

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 4.3: Volume of Permanent Water Traded for Seqwater Schemes (ML)

WSS	2008-09	2009-10	2010-11	2011-12	Total WAE	Average Trades as % of Total WAE
Cedar Pocket Dam	0	0	0	0	495	0.0%
Central Brisbane River	0	0	290	367	286,041	0.1%
Central Lockyer Valley (includes Morton Vale Pipeline)	0	0	0	0	16,499	0.0%
Logan River	0	0	999	230	23,411	1.3%
Lower Lockyer Valley	0	0	0	0	12,778	0.0%
Mary Valley (includes Pie Creek)	0	0	0	0	32,093	0.3%
Warrill Valley	0	0	0	0	33,700	0.0%

Source: DNRM Permanent Water Trading Report (2009, 2010, 2011, 2012). Note: 2011-12 data reflect trading to 31 April 2012. Note: Additional trades of water (linked to land) of 500 ML in Moreton ROP area (not specified but from Central Lockyer Valley, Lower Lockyer Valley and/or Warrill Valley WSSs).

Table 4.4: Volume of Temporary Water Traded for Seqwater Schemes (ML)

WSS	2008-09	2009-10	2010-11	2011-12	Total WAE	Average Trades as % of Total WAE
Cedar Pocket Dam	10	10	10	15	495	2.3%
Central Brisbane River	0	0	40	210	286,041	0.02%
Central Lockyer Valley (includes Morton Vale Pipeline)	0	6	0	0	16,499	0.01%
Logan River	201	127	302	22	23,411	0.7%
Lower Lockyer Valley	63	396	23	82	12,778	1.1%
Mary Valley (includes Pie Creek)	594	1,795	891	666	32,093	3%
Warrill Valley	470	627	275	172	33,700	1.1%

Source: Seqwater (2012b-h). Note: 2011-12 data reflect trading to 31 March 2012. Note: Mary Valley figures include water leasing.

The Authority also noted an issue raised by irrigators that having a very low (or zero) variable charge should lead to cost savings where quarterly meter reading may not be required (QCA 2012c). Seqwater (2012s) submitted in response that [regardless of the level of volumetric charges] quarterly meter readings are a water planning requirement in each of Seqwater's WSSs, as specified in each relevant IROL or ROP.

In summary, in the current circumstances, the volumetric charges should recover 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 Seqwater 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 June 2013.

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.

Bulk Water

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

Least Cost Service Provision

An additional concern raised by irrigators in SunWater schemes during consultation was 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 was noted in the previous chapter (Regulatory Framework), that to increase the volumetric component above variable costs would impose volume risks that Seqwater was not able to manage, and in response to which Seqwater 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.

Low Supply

As noted in submissions identified above (Grassco Pty Ltd 2012, QCA 2012c, and J.B. and B.L. Keller 2012), another concern of many customers related 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. Specifically, irrigators noted that a 100% fixed charge is not

supported as this may cause financial hardship particularly in periods of low water availability. Irrigators also submitted that a high fixed charge could decrease the capital value of WAE.

Under current legislative and contractual arrangements (and the Ministerial Direction), customers must bear all the costs of water supply incurred by Seqwater, irrespective of whether it is made available (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.

The Authority also considered whether customers are obliged to pay fixed charges where they have not signed contracts with Seqwater. Bulk water services are generally provided in accordance with the deemed and/or standard river supply contract, pre-existing or subsequent supply contracts.

Section 122A (4) of the *Water Act 2000* specifies that the deemed and/or standard supply contracts are to apply unless a different contract is (or was) in place. Under this provision, a contract does not need to be signed, but Seqwater and customers are deemed to be covered by the relevant supply contracts.

These contracts require customers to pay fixed water charges (or a regulated charge) which reflect the customer's WAE (or one which is consistent with any statutory regime for prices oversight).

Should Seqwater'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 Seqwater'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 difficulty of forecasting water usage, could be expected to result in substantial ex-post adjustments in order for Seqwater to recover its allowable revenue.

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

The Morton Vale Pipeline Contract was established in 1995 (pre-dating the standard supply contract established in 2000) and accordingly, applies rather than a standard supply contract.

Effect on Trading

The Authority noted stakeholder views (G. Drynan 2012, Grassco Pty Ltd 2012, QCA 2012c, QFF 2012, G. Rozynski 2012) in support of a 100% fixed Part A charge, on the basis that it will increase the level of temporary and permanent water trading moving water to higher value uses (benefitting the economy and promoting WSS viability). The Authority agrees that cost-reflective, relatively high Part A charges generally promote water trading (as irrigators seek to sell entitlements not required by them in response to high fixed costs).

The Authority also noted the support for 100% Part A bulk charges but proposed to adopt the best possible estimate of such a fixed cost.

Notwithstanding the above, QFF (2012) submitted its concern that in the absence of permanent trading (water allocations), irrigators have only a limited ability to respond to high Part A charges through water trading. Whilst temporary trading may (in some WSSs) limit irrigator opportunities to manage their exposure to relatively higher Part A (fixed) charges, irrigators without the ability to permanently trade generally hold WAE that can be surrendered without penalty.

In Chapter 3: Regulatory Framework the Authority recommended that to address the concerns of stakeholders about the absence of permanent trading in some WSSs, DNRM should introduce fully tradable water allocations in the balance of Seqwater's WSSs by 30 June 2015. Accordingly, the Authority considered this to be a short term risk. Subsequently, irrigators will be able to sell water allocations and be compensated for that permanent sale.

The status of WAE in Seqwater's nine tariff groups (that is, ability to temporarily or permanently trade and ability to surrender without penalty) is summarised in Table 4.5.

Table 4.5: Constraints to Trading and Surrender of Types of WAE

<i>Tariff Group</i>	<i>Type of WAE</i>	<i>Trading</i>	<i>Surrender</i>	<i>Other Considerations</i>
Morton Vale Pipeline	Supply Contract - Volumetric	No permanent trading but temporary trading allowed	Yes	Can only trade within tariff group
Central Lockyer Valley	IWA or Water Licences	No permanent or temporary trading	Yes	N/A
Lower Lockyer Valley	IWA	No permanent trading but temporary trading allowed	Yes	N/A
Warrill Valley	IWA	No permanent trading but temporary trading allowed	Yes	N/A
Cedar Pocket Dam	Water Allocation	Permanent and temporary trading	No	Cannot trade beyond WSS and only 11 customers.
Central Brisbane River	Water Allocation	Permanent and temporary trading	No	N/A
Logan River	Water Allocation	Permanent and temporary trading	No	N/A
Mary Valley	Water Allocation	Permanent and temporary trading	No	N/A
Pie Creek	Water Allocation	Permanent and temporary trading	No	High costs per ML may discourage permanent trade

Source: DNRM (2012).

QFF (2012) submitted, however, for Pie Creek, Lower Lockyer Valley and Cedar Pocket WSSs that a high cost-reflective Part A tariff will act as a disincentive to permanent trading. The Authority noted that there is currently an oversupply of temporary WAE in these schemes as irrigators are not using their WAE and do not wish to sell their farms. Nevertheless, proportionately high fixed charges would assist Seqwater to manage volume risk.

It is acknowledged, however, (as was the case for SunWater) that where a tariff group faces very high cost-reflective prices in the long-run, there may be a case for Seqwater to consider optimisation or reconfiguration of distribution systems, in consultation with customers.

Ultimately, Seqwater would need to decide as it is obliged to meet the requirements of the water planning framework. This would be the case unless Government sought to intervene (for example, if Government amended the planning framework to enable such changes).

In the Lower Lockyer Valley and Central Brisbane River WSSs, customers suggested a 60:40 or 50:50 tariff structure as it would promote water trading to irrigators who can meet these fixed costs (Jendra 2012 and J.B. and B.L. Keller 2012). However, such charges are not likely to address the volume risks for Seqwater unlike cost-reflective tariffs.

Central Lockyer Valley WSS

Seqwater submitted that irrigators of the Central Lockyer Valley tariff group have not been issued individual WAE (used for determining fixed charges). Seqwater, therefore, proposed an interim tariff structure comprised of a 100% volumetric tariff.

As outlined in Chapter 3: Regulatory Framework, the Authority recommended that in the absence of an individual irrigator WAE, the bulk fixed charge should be estimated on the basis of total scheme WAE. The volumetric charge should accord with the Authority's general approach (that is, reflecting variable costs). However, the Authority recommended that the Part A charge not be applied to customers of the Central Lockyer Valley tariff group until DNRM issues permanently tradable WAE. Once issued, the Part A tariff should apply.

Distribution Systems

Similar issues generally arise in relation to fixed (and variable) costs for distribution systems as with bulk schemes.

Unbundling

Seqwater initially proposed to only unbundle the Morton Vale Pipeline tariff group. However, the Authority also recommended unbundled tariffs for Pie Creek.

The Authority considered the Pie Creek tariff group to be a distribution system to which unbundling should apply as:

- (a) Pie Creek assets comprise a series of channels and pipes used for distributing water. This is consistent with the definition⁴ of a distribution system (that is, ancillary, non-bulk assets performing water distribution functions for channel irrigators);
- (b) Pie Creek customer off-takes are located on the channel or pipeline infrastructure;
- (c) there is a discrete set of costs, including electricity pumping costs from the river to the channel, that can be allocated to the Pie Creek tariff group; and
- (d) the Mary Basin ROP provides for distribution loss WAE.

Accordingly, the Authority proposed to recommend for Morton Vale Pipeline and Pie Creek, unbundled bulk and distribution system fixed and volumetric charges for the 2013-17 regulatory period.

Morton Vale Pipeline

As earlier noted, the Morton Vale Pipeline Contract, which specifies a nominal volume of WAE per property, requires that customers pay an annual fixed capital charge (towards the capital cost of the pipeline) and (in addition) annual irrigation water charges set by Government (the subject of the Authority's current irrigation pricing review for 2013-17).

⁴ As part of the SunWater review, The Hon. Stephen Minister Robertson MP, Minister for Natural Resources, Mines and Energy, wrote to the Authority to clarify which SunWater assets constituted bulk and distribution assets. <http://www.qca.org.au/files/W-SunWater-Sub-HonStephenRobertsonMP-AssetsBulkWater-1210.pdf>

In 1995, these arrangements (including the specified capital charge) were agreed to by customers to secure the development of the Morton Vale Pipeline in the form of an explicit contract. The Morton Vale Pipeline was completed in 1997 (Seqwater 2010).

On this basis, the Authority did not opine on the specified amount of the capital charge in the Morton Vale Pipeline Contract.

The Authority also noted that Government set irrigation water charges in 2000, and again in 2006, which included a price path towards cost recovery, in addition to the capital charge.

Water Use Forecasts

Water use data is required to address Government's requirement that current prices (revenues) be maintained. Chapter 7: Total Costs and Final Prices refers.

The Authority noted submissions made by stakeholders (QCA 2012c) that water use forecasting is problematic due to the changes that occur over time in cropping and the significant variability associated with in-flow events.

Stakeholders (QCA 2012c) also considered that due to currently full water storages, water use is likely to be higher than historical averages for 2012-14. In response, the Authority noted that significant uncertainty exists.

Minimum Charges

The Authority noted QFF's (2012) concern that Seqwater's proposal to abolish minimum charges may lead to large customers subsidising small customers. Cost-reflective tariffs should recover only the prudent and efficient costs of providing services to customers (regardless of size) according to WAE and therefore no cross-subsidy is evident.

Moreover, the Authority noted the requirement of the Ministerial Direction to provide revenue adequacy to Seqwater and in recommending tariff structures, have regard to the fixed and variable nature of costs. The Authority's proposed tariff structures (above) will achieve these requirements without the retention (or imposition) of a minimum charge.

Final Report

Submissions Received from Stakeholders on the Draft Report

The Authority received the following submissions:

- (a) Seqwater (2013a) submitted that the Mary Basin ROP defines Pie Creek as a [bulk] zone of the ROP (not a distribution system);
- (b) however, Seqwater agrees with the Authority's unbundled tariffs; and
- (c) QFF (2013a) submitted concern about the impact of Draft Report water use assumptions on the volumetric charges for certain WSSs and recommended that the Authority examine options (including 15 years of data) to better estimate typical water-use.

Authority's Response to Submissions Received

In response the Authority notes:

- (a) there are two Standard Supply Contracts for Mary Valley WSS (for river and distribution). Both contracts provide for the application of water charges and termination fees. The Authority has referred to Pie Creek as a distribution system for descriptive purposes for this review (including to ensure bulk and distribution costs are accounted for separately and to enable tariff unbundling). Determining the relevant contract for the Pie Creek tariff group is a commercial matter for Seqwater;
- (b) Seqwater's support for this proposal; and
- (c) QFF's recommendation and has adopted 15 years of data for this purpose (rather than the 10 years in the Draft Report). The resulting revised prices have been subjected to further consultation in the Central and Lower Lockyer Valley and Warrill Valley WSSs (refer Chapter 7: Total Costs and Final Prices and Volume 2 scheme reports).

Conclusions

The Authority considered stakeholder submissions on tariff structures and concludes that the recommended tariff structure should consist of a volumetric charge which should recover all (and only) variable costs. The fixed charge should reflect the balance of revenues required to maintain the Authority's estimate of Seqwater's revenue requirement. Variable costs should reflect those costs expected to vary with water usage over the four-year regulatory period.

Recommendations

- (a) The tariff structure should consist of a volumetric charge which should recover all (and only) variable costs associated with the delivery of water services. The fixed charge should reflect the balance of revenues required to maintain Seqwater's revenue requirement.**
 - (b) Variable costs should reflect those costs which are expected to vary with water usage over the four-year regulatory period.**
 - (c) Unbundled tariffs should apply to Morton Vale Pipeline and Pie Creek.**
 - (d) The appropriateness of current legislative and contractual arrangements, insofar as they relate to schemes where water availability is low for a sustained period, is a matter for Government.**
-

4.4 Distribution and Bulk Losses

SunWater holds WAE for distribution losses in its current WSSs, but not for bulk losses. There are, however, WAE specified for bulk losses associated with some Seqwater WSSs (where there are channels and pipelines within a bulk tariff group).

Previous Review 2006-11

SunWater was granted WAEs by DNRM to account for losses involved in delivering water to customers in the distribution systems (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.

Distribution losses were defined by SunWater (2006a) as losses which occur when water is released or diverted for distribution through a distribution system.

SunWater Review 2012-17

SunWater 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 DNRM.

SunWater submitted that distribution loss WAEs should be treated on the same basis as other types of WAEs due to the need to store them. 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 considered whether it was 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 noted that if it improved water delivery efficiency, reducing actual losses, it would be able to hold less WAEs for this purpose. However, SunWater submitted that it has no control over the allocated WAEs as they were conferred by DNRM. It also noted 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 DNRM'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 DNRM.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012a) submitted that distribution and bulk loss WAEs are held for losses incurred in supplying customer WAE. Seqwater also submitted that prices should incorporate costs relating to distribution and bulk loss WAE and supported the Authority's (SunWater) findings that:

- (a) costs associated with distribution losses are to be recovered exclusively from distribution system customers; and
- (b) customers should not pay for distribution loss WAE that are in excess of requirements to meet actual losses.

Table 4.6 below identifies medium priority (MP) and high priority (HP) loss WAE on a tariff group basis.

Table 4.6: Medium and High Priority Seqwater Loss WAE (ML)

<i>Tariff Group</i>	<i>MP Loss WAE</i>	<i>HP Loss WAE</i>	<i>Status</i>	<i>MP Customer WAE</i>	<i>Loss WAE as a % of Total WAE</i>
Lower Lockyer	1,500	0	Bulk loss IWA	11,268	12%
Morton Vale Pipeline	0	184	Distribution loss IWA	3,654	1%
Pie Creek	426	60	Distribution loss water allocation	835	37%
Warrill Valley	3,714	0	Bulk loss IWA	20,535	15%

Source: Seqwater (2012d, 2012f, 2112g and 2012h). Note: Total WAE = MP and HP loss WAE + MP customer WAE.

Lower Lockyer Valley and Warrill Valley

Seqwater (2012a) submitted that the losses associated with the Lower Lockyer Valley and Warrill Valley WSSs, although referred to as distribution losses in the relevant IROLs, are not genuine distribution losses as they relate to losses associated with bulk assets.

Seqwater (2012s) subsequently submitted that as part of amending the relevant ROP sections for these WSSs, DNRM will eventually undertake an assessment of appropriate levels. Seqwater considers that the full volume of these nominal losses could be required at any time and until DNRM reviews the loss WAEs, no adjustment by the Authority should be made.

Morton Vale Pipeline

Seqwater (2012a) submitted that for Morton Vale Pipeline, only limited data on actual distribution losses has historically been recorded and it reports only total nominal loss WAE to DNRM. Seqwater (2012a) also noted that actual losses associated with the Morton Vale Pipeline are likely to be substantially lower than nominal losses. Seqwater (2012s) subsequently submitted that for Morton Vale Pipeline, insufficient historical information is available for an assessment of appropriate losses. Seqwater considers that no adjustment should be made by the Authority. The Central Lockyer Valley WSS Volume 2 report refers.

Pie Creek

Seqwater (2012s) submitted that for Pie Creek tariff group, it recently undertook an analysis to demonstrate the need for the total nominal distribution loss WAE held.

Seqwater submitted that for Pie Creek in 2002-04 and 2005-06, 100% (or more) of current nominal distribution loss WAEs were required; and in 2008-10 losses were negligible due to atypical climatic conditions. The Mary Valley WSS Volume 2 report refers.

Other Stakeholders

QFF (2012) submitted that distribution losses in both the Morton Vale Pipeline and Pie Creek should be assessed to determine if the full volumes of nominal loss WAEs are required. If losses are not required, costs should be met by Seqwater, not irrigators.

Other Jurisdictions

The ACCC's Water Market Rules (2008b) noted that most operators do not have a separate distribution loss WAE.

Irrigation schemes, particularly those in NSW, appear to have been designed around an assumption of socialised transmission losses. This means that when operators do not hold loss WAE, some customer WAE is lost while in transit to their properties. The ACCC recommended that a distribution loss WAE be held by the operator.

Authority's Analysis

The Authority accepted 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.

Actual Distribution Losses

The variation between actual losses and distribution loss WAE is due to two factors:

- (a) the management of water releases under a system of announced allocations 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) Seqwater's apparent excessive holding of distribution loss WAEs in some schemes.

With respect to (a), this applies to Seqwater because it 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).

With respect to (b), however, the Authority noted Seqwater's submission that there is limited data available on actual losses delivered. For this reason, it is not generally clear that Seqwater's holding of nominal loss WAE is excessive in each of its WSSs.

Implications of Difference between Loss WAE and Actual Losses

The Authority noted that not all medium priority loss WAEs may be required to deliver medium priority WAEs. This means that, by default, excess loss entitlements remaining in storages may have generated a benefit for river and distribution customers as the surplus water may be redistributed in the form of higher announced allocations.

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 Seqwater and actual distribution losses; and
- (c) where low actual distribution losses are caused due to low demand by 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 DNRM 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 excess loss 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 concluded 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), conferring no right to this benefit to those customers.

Accordingly, the Authority concluded that river customers should not bear costs associated with distribution loss WAEs (actual or nominal).

There was, however, no contention on the issue of whether distribution or bulk customers (in schemes with distribution-like infrastructure specifying bulk loss WAE) should pay for actual losses. They clearly should do so in accordance with the requirement for losses to be released as part of delivering water to those customers.

The questions that remained, however, were:

- (a) whether Seqwater, or customers, should face the cost of Seqwater 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 considered that, in principle, customers should not pay for loss WAEs held by Seqwater in excess of that needed to meet actual loss releases required. Seqwater could, in WSSs where permanently tradable loss WAE have been issued, benefit from their sale.

However, the Authority noted that in many cases, on the basis of the available data and its highly variable nature, it was not possible to estimate efficient loss WAE and for that reason recommended DNRM review loss WAE where ROP amendments are needed to make permanent water trading available.

High Priority Loss WAEs

For Morton Vale Pipeline and Pie Creek there are no high priority customers. Nevertheless, 100% of high priority loss WAE can be required from time to time to ensure the integrity of the distribution systems and the Authority accepted that their cost should be met by (medium priority) customers. Seqwater submitted that if high priority loss WAE were not available when needed, water delivery could be compromised.

High priority loss WAE are generally needed to meet the needs of medium priority customers as they are used to fill the distribution system at the commencement of each irrigation season prior to water delivery recommencing. Periodically emptying the distribution system is necessary because, prior to the irrigation season, major distribution system maintenance work requires the distribution system to be emptied.

The Authority was able to confirm that Seqwater's practice of using high priority loss WAE to supply medium priority customers is consistent with the water planning framework.

Accordingly, for the Pie Creek tariff group, the price implications of holding high priority loss WAE are material. The Authority also noted the SunWater review concluded that SunWater held excessive loss WAE in most distribution systems.

The Authority, therefore, considered that the most appropriate mix of medium to high priority loss WAE for the Pie Creek tariff group should be considered by DNRM.

Ensuring Least Cost Service Delivery

To ensure least cost service delivery, Seqwater should explore cost-reducing opportunities such as optimising its portfolio of loss WAEs (that is, selling / holding less loss WAEs and buying WAE when needed). If the use by Seqwater of temporary transfers for this purpose required the consideration of an end-of-period adjustment to prices, the Authority would support such an approach wherever it delivered service at least cost.

Where customers benefit from Seqwater reducing its costs based on the permanent sale of some (converted) loss WAE, customers may at times need to accept an end-of-period adjustment to reflect the cost of temporary trades.

The Authority recognised there may be cost-reducing opportunities for Seqwater particularly where there is demand for additional WAE that subsequently would be traded either permanently or in the temporary market. In these circumstances, Seqwater should seek to convert unneeded loss WAE to tradable WAE (regardless of any review by DNRM).

The Authority did not propose to compel Seqwater to undertake such a review, but considered that an incentive for this purpose is valid. The efficient costs of a review initiated by Seqwater would be offset by the benefits from sales. Under the water planning framework, the sale (or lease) by Seqwater of loss WAE, due to increased efficiency, should not impact customer WAE reliability. The WAE can only be sold (or leased) if it is not required to deliver existing customer WAE. Demand for additional WAE would be needed for these arrangements to be effective.

DNRM confirmed the loss volumes for Pie Creek through the water resource planning processes. However, where permanently tradable WAE have not yet been finalised for certain Seqwater WSSs, the Authority considered that DNRM should review the efficient loss WAE as part of making ROP amendments by 30 June 2015.

The Authority identified that there are three possible means for reviewing loss WAEs under the *Water Act 2000*: amend ROPs; Ministerial Direction to Seqwater; or amend WRPs. The most effective is considered to be an amendment to the relevant ROPs.

Efficient Level of Losses for Cost Allocation

The Authority recommended that prudent and efficient bulk costs associated with loss WAEs should be paid for by customers, but these should exclude the costs associated with loss WAE held by Seqwater in excess of that needed to meet required actual loss releases. Seqwater should bear the costs of holding loss WAE greater than is needed to supply customers, if any, where permanently tradable loss water allocations are held.

Final Report

Submissions Received from Stakeholders on the Draft Report

Determining Efficient Level of Loss WAE

Seqwater (2013a) and QFF (2013b) supported the Draft Report recommendation that DNRM determine efficient bulk and distribution loss WAE.

DNRM (2013a) submitted that it does not support the Draft Report recommendation that DNRM review and determine the efficient levels of bulk and distribution loss WAE. The volume of WAE needed to cover the distribution losses is essentially a function of operation, asset maintenance and contractual arrangements between the scheme operator and the customer. It is inappropriate for a natural resource regulator such as DNRM to be exercising judgement as to what the appropriate loss WAE should be.

DNRM submitted that the initial allocation of loss WAE was established by DNRM based on a strategy aimed at minimising the risk of the water service provider having insufficient water to meet obligations to customers. The decisions were often based on limited information about the appropriate quantum of loss WAE. This led to a conservative [high] volume being allocated.

The mechanism for reducing the volume of distribution loss WAE would be to change its purpose to 'any'. This change may be applied for by the entitlement holder (Seqwater) under section 130 of the *Water Act 2000*. The WAE could then be sold.

Such a change would need to be instigated by Seqwater as the holder of the loss WAE. Grounds for such a change could be revised operational requirements, improved infrastructure and/or better information. Such an application would need to be supported by sufficient information to enable the Chief Executive of DNRM to decide the application's merits including documentation of the actual distribution losses incurred.

Timing

Seqwater (2013a) and QFF (2013b) supported the Draft Report recommendation that DNRM determine efficient bulk and distribution loss WAE by 30 June 2015.

DNRM submitted that instead of introducing permanently tradable water allocations in the Central Lockyer Valley WSS by 30 June 2015, it proposes to issue customer IWA by 30 June 2017. [DNRM proposed no alternative date for the ROP amendment that would be associated with the issuance of water allocations.]

Cost of Inefficient Loss WAE

Seqwater (2013a) supported the Draft Report recommendation that costs of (any) inefficient loss WAE, as identified by DNRM, be borne by Seqwater. Seqwater submitted that this should be subject to permanently tradable water allocations being in place.

QFF (2013b) submitted that customers should not pay for loss WAEs held by Seqwater in excess of requirements and that if (any) inefficient loss WAE is identified, then it may be necessary for prices to be adjusted from 1 July 2015.

Authority's Response to Submissions Received on the Draft Report

Determining Efficient Level of Loss WAE

The Authority notes Seqwater's and QFF's support for the recommendation that DNRM determine efficient bulk and distribution loss WAE.

The Authority also notes DNRM's submission that because the appropriate volume of loss WAE is essentially a function of scheme operation and contractual arrangements between the WSS and customers, it is DNRM's view that it is inappropriate for the resource regulator (DNRM) to exercise judgement as to what the appropriate volume of loss WAE should be.

In response, the Authority notes:

- (a) DNRM has an ongoing role in WRP and ROP compliance and review;
- (b) DNRM is well placed to initiate a review to determine the efficient level of bulk and distribution loss WAE, particularly in schemes where there are not yet water allocations, but rather the loss WAE are in the form of IWA and thus subject to DNRM's pending finalisation; and
- (c) DNRM's intention to introduce permanently tradable water allocations by 30 June 2015 for the Lower Lockyer Valley and Warrill Valley WSSs. As this involves amendment of the Moreton ROP, the assessment to determine the efficient levels of loss WAE (in these cases IWA) can take place concurrently and DNRM should do so.

Further, the Authority notes the outcome of the SunWater review which identified that the original volumes of loss WAE were conferred by DNRM. As part of that review, a number of SunWater's distribution systems were found to be holding loss WAE well in excess of requirements. A recommendation of the SunWater review (endorsed by Government) was that (the then) DERM immediately review loss WAEs in all distribution systems.

The Draft Report identified three possible means for reviewing loss WAEs under the *Water Act 2000*, with the most effective being an amendment to the ROP.

Accordingly, the Authority remains of the view that the efficient level of bulk and distribution system loss WAE needs to be reviewed and determined by DNRM according to the same timeframes established for ROP amendments (refer below and Chapter 3).

Timing

The Authority notes that Pie Creek is included in the Mary Basin ROP. All other tariff groups that have loss WAE (Lower Lockyer Valley, Morton Vale Pipeline and Warrill Valley) are yet to be included in the Moreton ROP.

The Authority notes that consistent with these facts, Seqwater supports the Draft Report recommendations on the timing of loss WAE reviews, on the proviso that any review to determine the efficient level of loss WAE, apply only to those tariff groups currently included in a ROP (that is, Pie Creek). For those not included in a ROP, the loss WAE review should be undertaken in conjunction with the other proposed ROP amendments (Lower Lockyer Valley, Central Lockyer Valley and Warrill Valley).

The Authority notes DNRM's (2013) submission which states that DNRM can meet the Draft Report's deadline of 30 June 2015 to amend the Moreton ROP to include the Lower Lockyer Valley and Warrill Valley, but not the Central Lockyer Valley.

The Authority intends the Final Report recommendations to be achievable. Accordingly, in relation to loss WAE in the Central Lockyer Valley WSS, the Authority recommends that DNRM review the loss WAE in this scheme and make a preliminary determination as to the efficient level of high and medium priority loss IWA by 30 June 2016 (along with its preliminary determination of customer IWA referred to in Chapter 3).

Further, the Authority recommends that DNRM amend the Moreton ROP by 30 June 2017, establishing the efficient level of loss WAE (water allocations) for the Central Lockyer Valley WSS, including Morton Vale Pipeline (along with permanently tradable water allocations for customers, as recommended in Chapter 3).

Cost of Inefficient Loss WAE

The Authority notes submissions from Seqwater and QFF that costs associated with (any) inefficient loss WAE be identified subsequent to DNRM's review with these costs be borne by Seqwater. QFF also submitted that it may be necessary to adjust prices from 1 July 2015 as a result of this review.

The Authority endorses these views but notes that for Central Lockyer Valley WSS, any adjustment to prices would need to be from 1 July 2017. The Authority notes that stakeholder submissions are consistent with Draft Report recommendations.

For Morton Vale Pipeline, Seqwater submitted that excess loss WAE likely exist. Until these are reviewed, the Authority considers it unfair for irrigators to bear the cost of total loss WAE and now recommends that Morton Vale Pipeline customers pay the costs associated with 50% of the interim loss WAE in this tariff group (see Volume 2).

Recommendations

- (a) **DNRM review and determine the efficient level of all loss WAE to ensure that bulk and distribution system customers do not pay for loss WAE held by Seqwater in excess of requirements. For the Lower Lockyer Valley, Warrill Valley and Pie Creek tariff groups, these reviews should be completed by 30 June 2015. In Central Lockyer Valley, DNRM should review and determine the efficient level of the loss IWA by 30 June 2016 and complete this review (issuing efficient loss water allocations) by 30 June 2017.**
 - (b) **Prudent and efficient bulk costs associated with necessary (efficient) bulk loss WAE be recovered from Seqwater’s bulk customers according to their WAE.**
 - (c) **Prudent and efficient bulk costs associated with necessary (efficient) distribution loss WAE be recovered from Seqwater’s distribution system customers according to their WAE.**
 - (d) **Costs of (any) inefficient loss WAE identified by DNRM, should not be borne by customers and should instead be borne by Seqwater (for example in the case of Morton Vale Pipeline). Depending on materiality, the impact of the identified inefficiencies may be considered by the Authority via an end-of-period adjustment to prices.**
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4.5 Termination (Exit) Fees

Previous Review 2006-11

SunWater charged termination fees when a distribution system WAE was permanently transferred to another section of the scheme, generally the river. As part of the 2006-11 review, the Morton Vale Pipeline Contract also provided for the application of a termination fee to apply to an exiting irrigator.

Without termination fees, Seqwater forgoes revenue intended to cover fixed costs associated with the traded WAE and/or the remaining customers would face the likelihood of higher prices to ensure the water service provider’s revenue adequacy.

Termination fees can represent a substantial payment and can act as a disincentive to exit and, in some cases, water trading. However, Seqwater may not impose termination fees where permanent trades are within the same distribution system or between river customers.

To avoid a termination fee, once water allocations are issued in the balance of Seqwater WSSs, instead of permanently trading to exit the scheme segment, customers generally have the option of continuing to pay annual fixed distribution system charges and using temporary trading to deliver water to the customer’s river property. In this way, customers can retain their access to the distribution system for which they pay the ongoing fixed costs.

SunWater Review 2012-17

SunWater confirmed that it charges the exiting user the present value (PV) of 10 years of annual fixed distribution charges. The annual fixed distribution charge excludes GST, however, GST is payable on termination fees.

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

Where bundled tariffs applied, SunWater calculated the fixed distribution system cost by subtracting the bulk Part A tariff from the distribution system Part A tariff (which included the bulk Part A tariff), to ascertain a notional fixed cost per ML customers.

The Authority's Final Report recommended that SunWater's termination fee should recover the ACCC's multiple of 11 times the (relevant Part C) cost-reflective fixed charges (including GST). This was recommended as the NPV of the fixed charges was close to 11 and on the basis of achieving administrative simplicity and consistency. A lower multiple could be applied at SunWater's discretion should it be consistent with SunWater's commercial interests (for example, in the interests of more efficient system management).

This approach recovers up to 60% of SunWater's relevant fixed costs from the exiting customer. The balance should be allocated to SunWater, thereby providing SunWater with a further incentive to reduce its fixed distribution system costs and/or attract new customers.

Importantly, remaining customers should not pay any of the outstanding costs.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012a) submitted that termination fees can apply where a customer terminates access to a distribution system.

As termination fees are only relevant in distribution systems, Seqwater submitted they are only to be considered for the Morton Vale Pipeline.

Seqwater's initial submissions state that Pie Creek is not a distribution system, on the basis that customers of this tariff group are only subject to the conditions of the river supply contract for the Mary Valley WSS. According to Seqwater, therefore, there are to be no termination fees for Pie Creek.

Details of the Seqwater's submissions relating to each tariff group are outlined in Volume 2.

Other Stakeholders

QFF (2012) submitted that:

- (a) termination fees should be established for both the Morton Vale Pipeline and the Pie Creek tariff groups;
- (b) the implications of the termination fee provision within the Morton Vale Pipeline contract needs to be clarified; and
- (c) in recommending termination fees, the Authority needs to be mindful that any termination fee will act as a restraint on trading out of the Pie Creek tariff group.

Other Jurisdictions

The ACCC (2008a) guidelines on termination fees concluded that for economic efficiency, it is desirable for water service providers to rationalise their network operations where it is

efficient to do so and that such rationalisation is best achieved through negotiated or regulatory mechanisms. In setting the termination fee, the ACCC attempts to balance certainty for service providers with irrigators' need to undertake efficient investments.

The ACCC also concluded that fully compensating water service providers 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 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, irrigators' borrowing rate or weighted average cost of capital (WACC), water service providers' 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 water service providers with incentives through setting termination fees at a level below the NPV of their stream 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 Murray-Darling Basin (MDB) Agreement allowed for a multiple of up to 15 times the fixed distribution component. The ACCC engaged consultants Frontier Economics to examine the impact of its decision to cap the multiple at 10 times the nominal fixed annual distribution system charge. Frontier Economics (2008) found that a multiple of 10 would lead to increases in 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 multiple of 10 times the nominal fixed annual distribution system charge (excluding GST), 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 ACCC's (2011) amended guidelines allowed the addition of GST and a termination fee multiple of up to 11 times (including GST).

The National Water Commission (NWC 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 noted that, in setting a termination fee, the ACCC sought to balance the financial cost to a service provider or remaining customers against the desirability of providing an incentive to the service provider to rationalise or reduce costs in a network.

The Authority also noted that the ACCC considered a trade-off between balancing incentives for efficiently functioning water markets and providing efficient investment incentives. Trading is an important mechanism to facilitate the transfer of water to higher value uses. However, the net benefit must take into account all costs (e.g. the cost of exiting).

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

In Queensland, however, all of Seqwater's WSS are outside the MDB. Seqwater's irrigation schemes are also characterised by smaller disconnected catchments where trading activity is currently limited. Where termination fees apply (and could potentially apply) it is not evident that Seqwater can effectively manage all the risks involved in attracting additional customers or reducing the largely fixed costs associated with these distribution systems. Importantly, remaining customers should not pay any of the outstanding costs.

The ACCC also considered 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).

After receipt of a termination fee, another user may transfer their WAE to the distribution system; and after receipt of a termination fee, where Seqwater holds a bulk WAE, Seqwater can sell the WAE to another customer seeking access to the distribution system.

The Authority's recommended approach (for SunWater) recovered up to 60% of the PV of Seqwater's estimated fixed costs (in perpetuity), from the exiting customer. In scenario (a) or (b) above, if WAEs are transferred into the distribution system (depending on when this occurs) Seqwater may receive distribution system revenues exceeding the fixed costs.

The Authority considered that, on the basis that Seqwater bears the risk of the under-recovery of 40% of estimated fixed costs, Seqwater should in the above scenarios retain any such additional revenue. This would provide Seqwater with a revenue incentive to attract customers into distribution systems from which customers have exited.

Such a benefit to Seqwater would offset the risk that Seqwater is unable to rationalise relevant fixed costs or secure additional WAEs in the distribution system, and so recover only 60% of future fixed costs via a termination fee.

Final Report

Submissions Received from Stakeholders on the Draft Report

Seqwater (2013a) concurred with the Authority's recommendations on termination fees and agreed that it should have some discretion about termination fees, but noted that the goal of cost-recovery remains paramount.

QFF (2103b) supported the Authority's recommended termination fee methodology.

Submissions, and the Authority's detailed considerations in respect to Morton Vale Pipeline and Pie Creek are in Volume 2.

Authority's Response to Submissions Received

QFF and Seqwater supported the Authority's general approach to termination fees. Irrigators also supported the Authority's view that remaining customers not bear future (unrecovered) fixed costs, resulting from other customers exiting a distribution system / tariff group.

Conclusion

The Authority recommends that, generally, termination fees are applied as a multiple of up to 11 (incl. GST) times the cost-reflective distribution system fixed Part C charge.

The general approach should apply in Morton Vale Pipeline, if Seqwater renegotiates or reviews the current Morton Vale Pipeline Contract. Specifically, the Authority notes that it would be possible for Seqwater to renegotiate the Morton Vale Pipeline contract so as to

recoup capital charges (which include the fixed costs) but exclude variable costs (which would not be incurred upon exit).

In Pie Creek, the Authority recommends that the termination fee be 11 times the recommended Part C charge. This is as an interim measure for 2013-17, recommended to apply while consideration is being given to future options by Government and Seqwater, in consultation with customers.

A lower multiple could be applied in either tariff group, at Seqwater's discretion, should it be consistent with Seqwater's commercial interests (e.g. in the interests of more efficient system management).

The recommended termination fees are provided in Chapter 7: Total Costs and Final Prices.

Recommendations

- (a) **Generally, Seqwater's termination fees should be calculated as a multiple of up to 11 times (including GST) the relevant (Part C) fixed cost-reflective tariff. Such an arrangement could apply to Morton Vale Pipeline customers, if Seqwater chooses to review/renegotiate the Morton Vale Pipeline Contract.**
 - (b) **In Pie Creek, the termination fee be 11 times the recommended Part C charge. This is as a transitional measure for 2013-17, while Government and Seqwater consider future options for Pie Creek, in consultation with customers.**
 - (c) **A lower multiple could be applied at Seqwater's discretion should it be consistent with Seqwater's commercial interests (e.g. in the interests of more efficient system management).**
 - (d) **Seqwater should never recover the balance of any shortfall (in fixed cost revenue) from remaining customers, resulting from the exit of other customer or Seqwater WAE.**
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4.6 Free Water Allocations

Previous Review 2006-11

In the past, some WAE holders have been exempt from paying storage and delivery charges to SunWater and subsequently, Seqwater.

During the previous review, Government policy stated in the Tier 1 Report (2006a) that free water allocations represented pre-existing entitlements and were a condition to the establishment of the schemes in which they occur. Therefore, costs could not be allocated to these WAE for the period of the price path.

SunWater did not receive CSO payments or any other form of subsidy for providing free water with the costs being allocated across the other customers of the relevant scheme.

SunWater Review 2012-17

SunWater (2011d) submitted that free water allocations should be considered on the basis of their original intent and 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 and, accordingly, should be recovered from the balance of WAE holders in the scheme.

In relation to (a) above, the Authority recommended that SunWater continue to meet, and bear the costs of, legacy arrangements.

In relation to (b) above, the Authority also recommended that pre-existing rights to free water (compensation arrangements) should be maintained where they continue as part of an existing agreement or as part of a current legislative or Government policy. Neither SunWater nor customers with pre-existing rights to free water should bear these costs.

Stakeholder Submissions

Seqwater

Seqwater (2012a) noted that irrigation customers in the Central Brisbane River WSS currently pay no charges and that the requirement for Seqwater to provide water free of charge to Central Brisbane River WSS irrigators expired on 7 December 2009, being the day that the Moreton ROP commenced. At that time, Seqwater became the holder of the ROL for the Central Brisbane River WSS.

Although charges have not yet been levied, Seqwater proposed that charges should apply to irrigation customers in the Central Brisbane River WSS from 1 July 2013.

Other Stakeholders

The Authority received a total of 101 submissions from customers of the Central Brisbane River WSS. The majority stated that no charges should be levied for the 6,771 ML of irrigation medium priority WAE in this scheme.

Authority's Analysis

The only free water issue, as raised by stakeholders as part of this review, pertains to the Central Brisbane River WSS. The Authority's review of this matter is detailed in Volume 2.

The Authority received a late submission from MBRI (2013f) on 26 April 2013 after finalisation of the Final Report. The submission was not made in response to any invitation by the Authority to address substantive matters at this late stage. The Authority notes that it has not had a proper opportunity to consider the late submission in the time frame required for the Final Report to be provided to the Ministers.

The Authority notes that MBRI is free to bring the submission to the attention of the relevant Ministers, who may wish to consider it in making a final decision.

The Authority has taken all relevant matters and submissions into account and on the basis of its understanding of the legislative framework, considers that Seqwater is not prevented from recovering irrigation water charges. Even if the Authority's understanding is not correct, the Authority has a statutory responsibility to recommend irrigation water charges as required by the Ministerial Direction, consistent with Seqwater's contractual rights to impose irrigation water charges.

Moreover, the Ministerial Direction does not require the Authority to determine whether Seqwater is legally entitled to impose and recover irrigation charges in the Central Brisbane River WSS. This is a contractual matter between Seqwater and the irrigators, in the event that the Government determines such charges should apply.

Recommendation

From 1 July 2013, Seqwater should levy charges on the 6,771ML of medium priority irrigation water that was previously made available free of charge in the Central Brisbane River WSS.

5. RENEWALS ANNUITY

The Authority is required to recommend a renewals annuity to recover prudent and efficient renewals expenditure on existing assets. Seqwater has maintained Asset Restoration Reserves (ARR) to record renewals expenditure and revenues. There is an ARR account for each tariff group and an opening balance for 1 July 2013.

In Central Lockyer Valley and Mary Valley WSSs the related bulk and distribution tariff groups previously shared a (bundled) ARR balance. These have been unbundled into four (separate) bulk and distribution ARR balances.

Seqwater estimated the 1 July 2013 opening ARR balance for each irrigation tariff group based on the opening ARR balance for 1 July 2006 (current price path), less renewals expenditure, plus renewals revenue and adjusted for interest over the 2006-13 period. The Authority's proposed approach reflects that adopted for SunWater.

To establish the prudence and efficiency of Seqwater's past (2006-13) and forecast renewals expenditure (2013-36), the Authority reviewed a sample of irrigation renewals expenditure. The sample of past items comprises 3% of irrigation costs by value, reflecting the Authority's observation that actual costs were below forecast. For expenditure incurred by SunWater over 2006-08 the Authority applied its SunWater findings, rather than conduct further samples. The sample of forecast items comprises over 50% of the forecast \$13.5 million irrigation renewals expenditure in real terms (2012-13).

As a result of these reviews, the Authority recommends that the following real direct cost savings (2012-13) be applied to whole of scheme (or all sectors) renewals costs:

- (a) reduce by 4% (\$0.03 million) renewals for 2006-08 (that is, period of SunWater ownership), consistent with the Authority's findings in the SunWater review;*
- (b) reduce by 95% (\$0.81 million) Seqwater's 2008-09 costs as they were not substantiated (due to data collection issues in the first year of Seqwater's ownership);*
- (c) approve 100% of 2009-13 renewals expenditure based on the Authority's reviews;*
- (d) exclude any forecast items not considered prudent and reduce the inefficient portion of sampled forecast direct renewals costs (together about \$1.7 million); and*
- (e) reduce by 13% (\$5.6 million) all other unsampled direct forecast renewals costs.*

The Authority recommends an 18% (\$0.84 million) reduction to Seqwater's past renewals expenditure and a 13% (\$7.3 million) reduction to Seqwater's forecast renewals costs. In summary, the Authority recommends a total reduction of approximately \$8.14 million of Seqwater's submitted all sectors renewals costs of \$60.4 million (real values), that is, about 13.5%. On average, renewals account for 14% of irrigation prices for 2013-17.

Seqwater's Statement of Obligations now requires Seqwater to consult with irrigators. However, Seqwater should amend its Strategic and Operational Plans to ensure this occurs at least annually during 2013-17. Seqwater should publish NSPs detailing past and forecast renewals costs and explain significant variations between actual and forecast material items. NSPs should be published on Seqwater's website by 30 September 2013 and annually thereafter. The website should include any customer submissions and Seqwater's responses.

To allocate fixed bulk renewals costs between priority groups, the Authority generally recommends HUFs or equivalent (or nominal WAE where material HP WAE are absent).

5.1 Background

This Final Report is generally presented in nominal terms (including inflation). However, due to the extended period over which renewals costs are forecast, and to ensure meaningful comparisons of costs over this longer time period, the Authority has typically expressed renewals costs and savings in this chapter in real terms (that is, the effect of inflation has been removed).

Ministerial Direction

Under the Ministerial Direction, the Authority is required to recommend a revenue stream that allows Seqwater 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 Seqwater.

Previous Reviews

In 1997, Ernst & Young were commissioned by the Standing Committee on Agriculture and Resource Management (SCARM) to prepare guidelines on renewing water supply assets – SCARM 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 continuously renewed infrastructure assets. 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.

SunWater's 2000-06 prices reflected SCARM's annuity method, which included: asset management plans defining the timing of renewal based on asset condition; an ARR to manage annuities balances including interest; and calculating renewals annuities based on the present value of proposed renewals expenditure plus the ARR.

SunWater's 2006-11 renewals annuities (applying to Seqwater from 1 July 2008) were also based on this approach (SunWater, 2006a, Working Paper No. 10) and involved: establishing the opening value of the ARR for each WSS based on actual expenditures and revenue for 2000-06; forecasting renewals expenditure over a 34-year period; and calculating the present value of the forecast expenditure after adjusting it for the ARR balances for each WSS.

During 2006-11 SunWater/Seqwater did not maintain a separate ARR for each bulk and distribution system – rather ARR balances were prepared on a whole-of-scheme or 'bundled' basis. Renewals costs were allocated between priority groups using water pricing conversion factors (WPCF) identified in relevant ROPs or as negotiated with customers.

SunWater Review 2012-17

For SunWater 2012-17, the Authority:

- (a) accepted the 1 July 2006 (irrigation only) opening ARR balances;
- (b) assessed the prudence and efficiency of 2006-12 renewals expenditure;
- (c) determined (all sector) opening ARR balances for 1 July 2012;
- (d) assessed the prudence and efficiency of forecast renewals expenditure;

- (e) recommended the methodology for apportioning costs between priority groups; and
- (f) recommended that SunWater undertake options analysis for all forecast material renewals items, report this information annually, consult with irrigation customers on the appropriateness of these proposals and publish SunWater's decisions.

Renewals Expenditures

Total actual and proposed renewals expenditures for Seqwater schemes for 2006-17 are detailed in Table 5.1. These expenditures reflect: direct renewal expenditure and associated non-direct costs from 2006-13 (as agreed as part of the price review in 2005-06); and forecast direct renewals expenditure for 2013-17 (which Seqwater has proposed exclude non-direct costs as these are incorporated in operating expenditure – see Chapter 6):

Table 5.1: Seqwater's Renewals Expenditure (All Sectors) 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	412	337	663	382	619	498	1,212	1,978	1,558	1,037	949
Non-direct	121	107	202	116	189	152	369	0	0	0	0
Total Cost	533	444	865	499	807	650	1,582	1,978	1,558	1,037	949
Annual change (%)	n.a.	(17)	95	(42)	62	(20)	143	25	(21)	(33)	(9)

Source: Indec (2012). Note: 2006-12 data is SunWater and Seqwater's actual data and 2012-17 data is Seqwater's forecast, including for 2012-13 (due to the timing of Seqwater's submissions). Of these, Seqwater's 2013-17 forecast renewals are direct costs only, as all non-direct costs are allocated to operating expenditure.

5.2 Opening Asset Restoration Reserve at 1 July 2013

A renewals annuity approach requires ongoing accounting of renewals expenditure and revenue. The opening ARR balance for 2013-17 (1 July 2013) was based on the opening ARR balance for the current price path (1 July 2006), less renewals expenditure, plus renewals revenue and an annual adjustment for interest over the 2006-13 period.

Previous Review

The 2006-11 price paths were based on an opening balance for the ARR in each scheme at 1 July 2006. Table 5.2 refers (reflecting Indec's estimates of opening ARR balances, using SunWater data).

These opening ARR balances relate to all sectors and priority groups. The details are provided only as a reference as they had been accepted by Government (in 2005-06) for the purposes of the 2006-11 price paths and are not subject to the Authority's review.

Table 5.2: Tier 1 Bundled Opening ARR Balances as at 1 July 2006 (Nominal \$)

WSS	<i>Whole of Scheme ARR Balances</i>
Cedar Pocket Dam	(75,428)
Central Brisbane River	n.a.
Central Lockyer Valley	137,215
Logan River	(358,552)
Lower Lockyer Valley	(148,605)
Mary Valley	(1,990,965)
Warrill Valley	(298,133)
Total	(2,734,469)

Source: Indec (2012). Note: Central Brisbane River WSS did not form part of the 2006-11 review and no ARR balance had previously been determined.

The Central Lockyer Valley WSS bundled ARR balance included the Morton Vale Pipeline tariff group. The Mary Valley WSS balance included the Pie Creek tariff group.

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 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 and maintenance activities were not included in forecast renewals expenditure (SunWater 2006a). Since, SunWater and subsequently Seqwater (from July 2008) have made changes to previously proposed expenditures as priorities changed.

Unbundling ARR Balances

For 2006-11, there was a single ARR balance for each of six Seqwater WSSs (Central Brisbane River WSS did not have an ARR balance as no charges applied). In four of these schemes, the ARR balance related only to bulk costs (as there were no distribution systems).

However, in bundled WSSs with related bulk and distribution systems (Central Lockyer Valley and Mary Valley), 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 2013-17, therefore, these two WSSs need to be unbundled into separate ARR balances, one for each tariff group.

SunWater Review 2012-17

SunWater estimated 2006-12 ARR balances for irrigation only, as all sectors costs were not available. The Authority established closing ARR balances for the 2006-12 price paths, for each SunWater service contract (including those that were unbundled), at 30 June 2012 by:

- (a) adopting the (irrigation only) opening balance at 1 July 2006 for each of the schemes [as these bundled WSS balances were endorsed by Government for the purposes of setting the 2006-11 price paths];
- (b) adding actual (irrigation only) 2006-12 renewals annuity revenue;
- (c) subtracting actual (irrigation only) 2006-12 renewals expenditure;
- (d) adjusting for interest over the period [using SunWater's recommended interest rate of 9.7% nominal, which they had adopted during that period]; and
- (e) uplifting the irrigation ARR balance to an all sectors ARR balance for each service contract as at 30 June 2012 (as all other costs were based on all sectors). The uplift factor was based on the ratio of irrigation to non-irrigation customer WAE.

Unbundling ARR Balances

SunWater submitted that actual revenues for 2000-06 could not be identified by tariff group. In the absence of this data, to establish the unbundled 1 July 2006 ARR balances the Authority recommended that:

- (a) the actual bundled irrigation-only renewals revenues be apportioned to bulk and distribution system service contracts on the basis of a ratio determined by the NPV of 2000-11 actual renewals expenditure and 2011-36 forecast expenditure for each bulk and distribution system service contract.

The rationale for this approach was that renewals revenue was based on forecast renewals expenditure over a renewals planning period (which at the time was 30 years). The 2006-11 actual expenditures were adjusted to exclude flood and inter-safe expenditure as these were not foreseen when revenues were forecast in 2000; and

- (b) once annual revenues were unbundled for 2000-06, the ARR balance was calculated by offsetting this estimated revenue with actual unbundled irrigation expenditure for this period. No interest adjustments were applied for 2000-06, consistent with SunWater's approach at that time.

Renewals Expenditure 2006-12

To establish the prudence and efficiency of SunWater's 2006-12 renewals expenditure, the Authority reviewed in detail a sample comprising some 34% of past renewals expenditure by value. Cost savings of 3.8% were identified. The Authority recommended the following cost savings be applied to past direct renewals expenditure:

- (a) exclude all past items identified as not prudent and costs identified as inefficient; and
- (b) reduce by 4% all unsampled past direct renewals expenditure for 2006-12.

SunWater's 2010-11 flood damage (net) expenditures were excluded from the assessment as these were considered to be confidential until the negotiations with the insurance company were finalised.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater engaged Indec Consulting (Indec 2012) to establish the 1 July 2013 opening ARR balances for each of the nine tariff groups. Indec carried out detailed analysis of past all sectors renewals cash flows for eight tariff groups. Central Brisbane River WSS was assumed to be zero at 1 July 2013.

Indec established opening bundled ARR balances for 1 July 2013 by:

- (a) for the period 2000-06, applying urban and industrial revenue and expenditure to the previously approved irrigation only opening 2006 ARR balance. This established a closing ARR balance on a whole of scheme (or all sectors) basis at 30 June 2006;
- (b) calculating balances for each scheme based on all sectors actual renewals expenditure and revenue from 1 July 2006 to 30 June 2011;
- (c) applying the available Seqwater actual and forecast renewals expenditure and revenue for 2011-12 and 2012-13 for all sectors; and
- (d) applying Seqwater's proposed interest rate for 2000-06 (0%) and 2006-13 (9.7%).

Unbundling ARR Balances

The above process established bundled ARR balances (that is, for the whole of the Central Lockyer Valley WSS and Mary Valley WSS, including the distribution tariff groups).

While actual renewals expenditure for 2000-13 was identifiable for each tariff group, renewals revenues were not separately identifiable for the distribution systems (that is, Morton Vale Pipeline and Pie Creek tariff groups). This is because the distribution system tariffs were bundled with bulk tariffs.

Indec proposed to allocate the relevant portion of distribution system revenues, related to bulk costs only, from a distribution system ARR to the corresponding bulk ARR.

Indec's methodology has two key steps. However, the approach varied for each period due to data limitations, especially for 2000-06. For this reason, 2006-13 is presented before 2000-06, as the 2000-06 estimates are generally derived from 2006-13 estimates.

Step 1 – Estimating total bulk revenues paid by distribution customers:

- (a) for 2006-13, total bulk revenues paid by distribution customers were estimated by multiplying the bulk Part A and Part B tariffs by distribution customer WAE and water use, respectively [achieving a retrospective unbundling of tariffs]; and
- (b) for 2000-06, Indec applied the ratio of bulk revenues (determined in (a) above) to total distribution system revenue for 2006-13 to total distribution system revenues for 2000-06 to determine the bulk revenue paid by distribution customers in 2000-06.

Step 2 – Estimating the renewals portion of the total bulk revenue paid by distribution customers for 2000-13. Indec used the ratio of the renewals annuity to total lower bound costs in each year (as determined by Government for the previous two price paths).

This allowed an approximation of the renewals bulk revenue, paid by Morton Vale Pipeline and Pie Creek customers from 2000-13, to be transferred to the associated bulk ARR accounts.

Past Renewals Expenditure 2006-13

In 2005-06, as part of the SunWater led review Government approved forecast renewals expenditure for 2006-11 in relation to Seqwater's WSSs (all sectors) of \$3.2 million (nominal). This excluded Central Brisbane River, which paid no irrigation water charges.

In contrast, Seqwater (2012a) advised that the total actual direct renewals expenditure for the same period was \$1.6 million (nominal). This reflects a variance of \$1.6 million (nominal) (or approximately 50%) less expenditure than originally forecast. [The Authority notes that actual 2006-11 expenditure excludes non-direct costs]. Table 5.3 refers.

Table 5.3: Forecast and Actual Direct Renewal Expenditure 2006-11 (Nominal \$'000)

<i>Tariff Group</i>	<i>Forecast 2006-11</i>	<i>Actual 2006-11</i>	<i>Variance</i>
<i>Bulk</i>			
Cedar Pocket Dam	130	5	(125)
Central Lockyer Valley	990	178	(812)
Logan River	288	252	(36)
Lower Lockyer Valley	572	461	(111)
Mary Valley	508	398	(110)
Warrill Valley	475	217	(258)
<i>Distribution</i>			
Morton Vale Pipeline	56	19	(37)
Pie Creek	164	84	(80)
Total	3,183	1,614	(1,569)

Source: Indec (2012)

Table 5.3 (above) excludes flood costs [on the basis of Seqwater's submission that flood related insurance revenues are likely to cover the costs].

Seqwater's forecast renewals expenditure for 2011-13 are based on a combination of actual renewals expenditure for 2011-12 and forecast expenditure for 2012-13. Table 5.4 refers.

Table 5.4: Seqwater Renewal Expenditure 2011-13 (Nominal \$'000)

<i>Tariff Group</i>	<i>Actual 2011-12</i>	<i>Forecast 2012-13</i>	<i>Total</i>
<i><u>Bulk</u></i>			
Cedar Pocket Dam	52	0	52
Central Lockyer Valley	51	502	554
Logan River	23	72	95
Lower Lockyer Valley	104	402	505
Mary Valley	171	197	367
Warrill Valley	44	150	195
<i><u>Distribution</u></i>			
Morton Vale	1	9	10
Pie Creek	198	249	447
Total	644	1,582	2,226

Source: Indec (2012)

Opening ARR Balances 1 July 2013

Opening ARR balances for unbundled WSSs proposed by Seqwater, for 1 July 2013, are based on the above methodology and presented in Table 5.5.

Table 5.5: ARR Balances (All Sectors) for 1 July 2006 and 2013 (Nominal \$)

<i>Tariff Group</i>	<i>Bundled 1 July 2006 ARR Balance (for Reference)</i>	<i>Seqwater's Proposed Opening Unbundled ARR Balances 1 July 2013</i>
<u>Bulk</u>		
Cedar Pocket Dam	(75,428)	15,579
Central Brisbane River	n.a.	0
Central Lockyer Valley*	137,215	(345,554)
Logan River	(358,552)	(707,153)
Lower Lockyer Valley	(148,605)	(533,707)
Mary Valley [#]	(1,990,965)	(3,844,424)
Warrill Valley	(298,133)	(575,422)
<u>Distribution</u>		
Morton Vale Pipeline*	n.a.	984,581
Pie Creek [#]	n.a.	129,261
Total	(2,734,469)	(4,876,839)

Source: Indec (2012). Note: In Central Brisbane WSS no ARR balance has previously been determined.

Other Stakeholders

QFF (2012) submitted that the reasons for negative opening balances must be explained. QFF submitted that the Authority should review the prudence and efficiency of renewals expenditure, including when SunWater owned the WSS. QFF also queried the total flood costs and any related insurance revenues, in the context of renewals.

Authority's Analysis

The Authority reviewed Seqwater's methodology for establishing ARR balances and the prudence and efficiency of past expenditure. The scheme-specific reasons for negative balances are described in Volume 2 reports.

Methodology

As for SunWater, the 1 July 2006 opening ARR balances for each (bundled) scheme were approved by Government and were therefore accepted by the Authority. Seqwater submitted ARR balances based on all sector data, so that the uplift factor was not required.

ARR Balances

For SunWater, to establish 2006 ARR balances for each bulk and distribution tariff group, the Authority adopted actual renewals expenditure for each tariff group and apportioned total scheme revenue (which was bundled and not available for each such tariff group) on the basis of a ratio of the NPV of 2000-36 (actual and forecast) bulk and distribution system renewal expenditures.

Consistent with the SunWater review, Seqwater also proposed to use actual 2000-06 renewals expenditure by tariff group. Seqwater has, however, sought to apportion bundled 2000-06 renewals revenue (in the absence of the required unbundled actual revenues) on the basis of actual unbundled revenue that applied during the 2006-13 period.

As part of the SunWater review, to unbundle 2000-06 revenue, the Authority preferred a longer period than the five years (2006-12) on the basis that renewals revenue, which formed the basis for pricing, was based on forecast renewals expenditure over a renewals planning period (which at the time was 30 years). The same reasoning applied to Seqwater (contrary to Seqwater's submitted methodology).

The Authority also considered that the five-year period submitted by Seqwater would be susceptible to atypical revenue conditions (that is, during flood or drought, actual revenues may have been anomalous).

Accordingly, for SunWater the Authority based its unbundling on the proportions of bulk and distribution renewals expenditure for 2000-36. The Authority's recommended approach for Seqwater does not, however, change the aggregate (bundled) scheme opening ARR balances as at 1 July 2006. It did, however, reallocate the total renewals funds differently, also resulting in changes to the 1 July 2013 opening ARR balances.

The net impact of the Authority's overall changes to opening ARR balances (including revised renewals cost savings discussed below) is presented in Chapter 7: Total Costs and Final Prices.

Table 5.6 shows the impact of the Authority's amended approach to unbundling 2000-06 revenues, on opening ARR balances for 1 July 2013.

Table 5.6: Impact of Unbundling Methodologies on 1 July 2013 Opening ARR Balances (Nominal \$) All Sectors

<i>Tariff Group</i>	<i>Seqwater Unbundled ARR Balance 2013</i>	<i>Authority Unbundled ARR Balance 2013</i>	<i>Variance*</i>
<i>Bulk</i>			
Central Lockyer Valley	(345,554)	226,978	572,533
Mary Valley	(3,844,424)	(3,678,393)	166,032
<i>Distribution</i>			
Morton Vale Pipeline (in Central Lockyer Valley WSS)	984,581	417,301	(567,279)
Pie Creek (in Mary Valley WSS)	129,261	(28,002)	(157,263)

Source: Indec (2012). Note: Only two WSSs, or four tariff groups, required unbundling. Includes some variations to the Draft Report as a result of further quality assurance.* The variance in linked tariff groups did not sum to zero due to application of the Authority's cost savings (see further below).

Renewals Expenditure 2006-13

In relation to the prudence and efficiency of past renewals, the Authority noted that for the first two years of the 2006-11 price paths SunWater managed the renewals expenditure program. Relevant WSSs were transferred to Seqwater on 1 July 2008.

For the SunWater review, the Authority excluded from prices 4% of unsampled renewals expenditure during 2006-11. This was on the basis that the Authority's reviews of a sample of past renewals items indicated cost savings of approximately 4%.

If the former SunWater WSSs had been part of the SunWater review, the 4% cost reduction would have applied, as the same (SunWater) approach applied to asset planning and expenditure in the (now) Seqwater WSS.

The Authority recommended, therefore, that 4% of past renewals expenditure, for the two years that these WSSs remained under SunWater's management (1 July 2006 to 30 June 2008), be deducted from Seqwater's ARR balances.

The question remained whether any cost reductions should also apply for 2008-13, once the WSSs were transferred to Seqwater.

Table 5.7 shows the variance between forecast and actual renewals expenditure for 2008-11.

Table 5.7: Forecast and Actual Direct Renewals Expenditure Variances 2008-11 (\$ Nominal) All Sectors

<i>Tariff Group</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>Total</i>
<i><u>Bulk</u></i>				
Cedar Pocket Dam	4,475	4,710	(60,517)	(51,332)
Central Lockyer Valley	(80,780)	(175,868)	(168,044)	(424,692)
Logan River	(34,495)	41,712	9,483	16,700
Lower Lockyer Valley	9,227	(22,189)	(53,965)	(66,927)
Mary Valley	144,289	(63,179)	188,432	269,542
Warrill Valley	18,039	(75,726)	(51,474)	(109,161)
<i><u>Distribution</u></i>				
Morton Vale Pipeline	(8,402)	(10,522)	(9,936)	(28,860)
Pie Creek	21,489	5,068	46,070	72,627
Total	73,842	(295,994)	(99,951)	(322,103)

Source: Indec (2012). Note: A negative value indicates that actual expenditure was below forecast (underspend).

The Authority noted that for five tariff groups (Cedar Pocket Dam, Central Lockyer Valley, Lower Lockyer Valley, Warrill Valley and Morton Vale Pipeline) actual renewals expenditure was less than 2008-11 forecasts. This suggested that sampling of these WSSs was not warranted.

For the remaining three tariff groups (Logan River, Mary Valley and Pie Creek) actual renewals expenditure was greater than forecast during 2008-11. The above table presents all sectors renewals expenditure. However, when this expenditure was allocated to irrigators, only Mary Valley and Pie Creek tariff groups show a material overspend. Accordingly, the

Authority engaged Sinclair Knight Merz (SKM) to review actual expenditures in these two tariff groups.

In responding to SKM's request for information, Seqwater submitted, for example, that the resurfacing of an access road for recreation purposes in Mary Valley WSS occurred in 2010-11 at a cost of \$123,000. SKM found this to be prudent and efficient.

However, in a separate Seqwater submission on past renewals, Seqwater indicated that in 2008-09 there was a corresponding \$111,000 of actual expenditure on recreation maintenance. The Authority's investigation clarified that this expenditure did not necessarily occur.

Subsequently, Seqwater submitted that costs for 2008-09 were recorded in Seqwater's previous financial system and that Seqwater did not have reliable past actual renewals expenditure data for this year as it was the first year of owning the former SunWater assets. In summary, for 2008-09 the total [renewals] costs incurred in a tariff group were recorded against a single [aggregated] cost centre for that year.

Accordingly, SKM concluded there was insufficient information and thus, deemed all expenditure (reviewed) for 2008-09 to be inefficient by default.

The Authority considered that renewals expenditure that cannot be verified as being prudent and efficient cannot, therefore, be recovered from customers. On this basis, the Authority excluded \$0.73 million of Seqwater's proposed \$0.78 million for 2008-09. That is, Seqwater substantiated \$0.05 million of past renewals costs for 2008-09.

For 2009-10 and beyond, however, Seqwater has recorded renewal expenditure in a more detailed and verifiable way. SKM's review of the sample of 2010-11 costs (for Mary Valley and Pie Creek tariff groups) found these costs to be prudent and efficient. See scheme specific reports for details. Accordingly, the Authority recommended that Seqwater's proposed renewal expenditure for 2009-10 to 2012-13 be accepted.

On the basis of these findings, the Authority recommended past renewals expenditure cost savings for 2006-13 as follows. Table 5.8 refers.

Table 5.8: Authority's Recommended Cost Savings Applied to Past Renewal Expenditure from 2006-13 (Nominal \$'000)

<i>Tariff Group</i>	<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>Total</i>
<i>Bulk</i>								
Cedar Pocket Dam	0	0	6	0	0	0	0	6
Central Lockyer Valley	1	2	74	0	0	0	0	77
Logan River	2	2	57	0	0	0	0	61
Lower Lockyer Valley	6	3	108	0	0	0	0	117
Mary Valley	4	1	341	0	0	0	0	346
Warrill Valley	2	2	89	0	0	0	0	93
<i>Distribution</i>								
Morton Vale Pipeline	0	1	4	0	0	0	0	5
Pie Creek	1	0	59	0	0	0	0	60
Total	16	11	738	0	0	0	0	765

Source: QCA (2012). Includes some variations to the Draft Report as a result of further quality assurance.

Opening ARR Balances 1 July 2013

The Authority considered that the discount rate applied in calculating the renewals annuity (including the 1 July 2013 opening ARR balances and forecast expenditure) should reflect the service provider's opportunity cost of funds, that is, the Authority's recommended WACC for Seqwater irrigation activities. **Appendix B** refers.

The Authority also noted that, consistent with the approach adopted by SunWater, no interest adjustments are made to ARR balances for the 2000-06 period, as Government accepted this (zero interest) approach at the time (only for this period).

For rolling forward ARR balances for the period 2006-13, the Authority accepted Seqwater's recommended interest rate applied (to both positive and negative ARR balances) during this period. This is consistent with SunWater where, as noted above, the Authority established closing ARR balances for 2006-12 by adjusting on the basis of SunWater's recommended interest rate for that period of approximately 9.7% (nominal).

Due to incorporating the above cost of capital, changes proposed by the Authority to the unbundling methodology (for 2000-06 renewals revenues in bundled WSSs) and the Authority's recommended cost savings for past renewals items, the recommended ARR balances as at 1 July 2013 vary from those submitted by Seqwater. Table 5.9 refers.

Table 5.9: Comparison of Opening ARR Balances for 2013-17 (Nominal \$'000)

Tariff Group	Seqwater April 2012	Seqwater November 2012	QCA Recommended	Variance (April 2012 vs QCA)	% Variance (April 2012 vs QCA)
<i>Bulk</i>					
Cedar Pocket Dam	14,269	15,579	15,593	1,324	9
Central Brisbane River	0	0	0	0	0
Central Lockyer Valley	457,940	(345,554)	226,978	(230,962)	(50)
Logan River	(932,884)	(707,153)	(700,646)	232,238	25
Lower Lockyer Valley	(434,877)	(533,707)	(518,133)	(83,256)	(19)
Mary Valley	(5,639,636)	(3,844,424)	(3,678,393)	1,961,243	35
Warrill Valley	(563,602)	(575,422)	(568,965)	(5,363)	(1)
<i>Distribution</i>					
				0	
Morton Vale Pipeline	351,462	984,581	417,301	65,839	18
Pie Creek	325,512	129,261	(28,002)	(353,514)	(109)
Total	(6,421,816)	(4,876,841)	(4,834,267)	1,587,549	25

Source: Indec (2012) and QCA (2012). Includes some variations to the Draft Report as a result of further quality assurance.

Final Report

Stakeholder Submissions

Seqwater (2013a) accepted the Authority's recommended opening ARR balances.

Authority's Analysis

The Authority has not altered the recommended ARR balances presented in the Draft Report. The net impact on prices of the changes is presented in Chapter 7: Total Costs and Final Prices.

Recommendation

Opening ARR balances for 2013-17 as per Table 5.9 should apply.

5.3 Review of Seqwater's Process for Forecasting Renewals Expenditure

To calculate a renewals annuity, it is necessary to determine if forecast renewals expenditure is prudent and efficient.

SunWater Review 2012-17

To establish the prudence and efficiency of SunWater's forecast expenditure the Authority reviewed a sample comprising some 29% of forecast renewals expenditure by value.

Potential cost savings of 23.5% were identified for forecast items. On this basis, the Authority recommended the following cost savings be applied to direct forecast renewals:

- (a) exclude all forecast items identified as not being prudent and the portion of costs identified as inefficient; and
- (b) reduce by 20% all unsampled forecast renewals expenditure within the Authority's rolling 20-year planning period.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012a) has based its renewals expenditure forecast, for the purpose of irrigation prices for the period 2013-17, on significant and predictable renewals expenditure items only. Seqwater has not attempted to include minor renewals projects (under \$10,000) or water treatment plants in recreation areas (regardless of cost) as part of its forecast costs.

Seqwater proposed that the above excluded costs be accounted for by an end-of-period adjustment, as part of a future regulatory review.

Seqwater's forecast renewals also makes no allowance for future renewals expenditure arising from damage (including floods) or changes in law. This approach was adopted to focus the renewals forecasting effort on major predictable items of renewals expenditure.

Seqwater forecast renewals expenditure using: the existing Facility Asset Management Plans (FAMPs); the existing asset maintenance program; reports from site safety and dam safety inspections; and advice from operators.

Seqwater then evaluated potential items against criticality [that is, whether or not the item is critical to maintain, for example, water supply or regulatory compliance] and other criteria. Seqwater also conducted workshops with local staff, as well as site inspections, to validate and adjust the scope and timing of forecast renewals items.

Seqwater has revised the timing of certain major renewals items, for example, where there was insufficient evidence that the asset required renewal. It was deferred where deferral represented an acceptable risk that to do so would not result in a failure to meet service standards or compliance obligations.

The forecast renewals expenditure was estimated on the following basis:

- (a) for major [above \$60,000] renewals items occurring in the regulatory period 2013-14 to 2016-17, Seqwater undertook a detailed cost estimate from first principles; and
- (b) for smaller projects (\$10,000-\$60,000 per project) or projects scheduled to occur beyond the regulatory period (2017-18 onwards), Seqwater has largely relied on cost information from previous asset owners' (e.g. SunWater or local governments) asset management plans. Seqwater engaged Cardno to update unit rates for replacement costs to 2012-13 dollars.

Seqwater's estimated costs for future renewals projects do not include any non-direct costs.

Seqwater's Proposed Metering Program

As part of its renewals program, Seqwater sought to recover the cost associated with water meters. Specifically, Seqwater's business case outlines costs for: replacing existing meters; moving meter locations to comply with Workplace Health and Safety (WHS) requirements; and modifying existing meter works to comply with the meter manufacturers' specifications (to ensure accuracy).

Seqwater's proposed costs for the metering program are shown in Table 5.10 in:

- (a) Phase 1: Complying with WHS requirements;
- (b) Phase 2: Modifying existing meters to comply with manufacturers' specifications to improve metering accuracy; and
- (c) Phase 3: Replacing meters from Phases 1 and 2 at the end of the asset life (10 years).

Table 5.10: Seqwater's Proposed Metering Costs (Real \$'000)

<i>Tariff Groups</i>	<i>Phase 1: 2012-13 to 2014-15</i>	<i>Phase 2: 2015-16 to 2021-22</i>	<i>Phase 3: 2022-23 to 2035-36</i>	<i>Total</i>
<i><u>Bulk</u></i>				
Cedar Pocket Dam	14	42	28	84
Central Lockyer Valley	264	1,176	490	1,930
Logan River	132	238	154	524
Lower Lockyer Valley	316	154	224	694
Mary Valley	198	392	252	842
Warrill Valley	290	546	336	1,172
<i><u>Distribution</u></i>				
Morton Vale Pipeline	0	119	42	161
Pie Creek	40	77	42	159
Total	1,254	2,744	1,568	5,566

Source: SKM (2012). Note: Costs in each column are the sums of costs within the indicated range of years.

Other Stakeholders

QFF (2012) questioned whether the total value of smaller renewals projects (that is, less than \$10,000) is a significant component of renewals in some schemes.

L. Brimblecombe (2012) agreed with the need for bulk renewals expenditure as long as the figures and plans were realistic.

Irrigators (QCA 2012c) indicated that more information on the proposed renewals items was needed to determine whether the costs were prudent and efficient.

Authority's Analysis

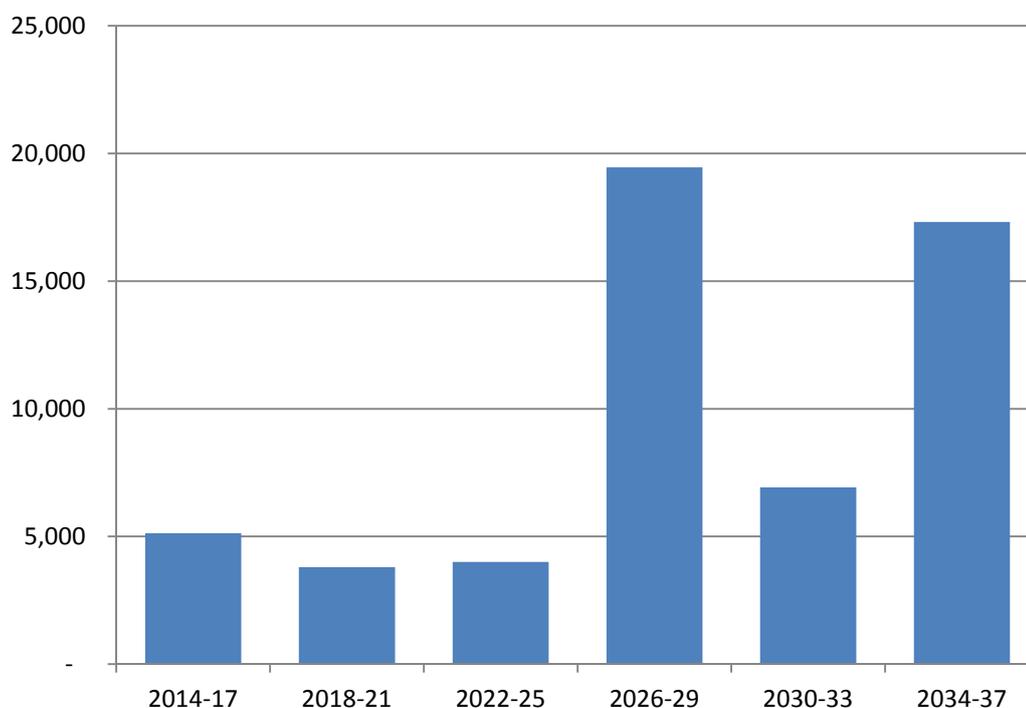
Seqwater originally forecast total renewals expenditure of approximately \$56 million, comprised of approximately 500 forecast renewals projects, over the Authority's recommended 20-year planning period. Of this, \$13.5 million was an irrigation cost.

It was not practical, nor desirable given the time and costs involved, to assess each item. A sample of forecast renewals items was therefore reviewed for prudence and efficiency.

Seqwater submitted renewals expenditures for the 20-year planning period. As an annual rolling annuity has been adopted, the data spans 23 years (2013-14 to 2035-36).

Figure 5.1 presents forecast renewals expenditure data for the nine relevant tariff groups for all sectors in aggregate real terms. The data is presented in four-year terms for comparative purposes. Accordingly, the figure includes one year (2036-37) that is outside the planning period for this review. The renewals data does not include non-direct costs, all of which are allocated to direct operating costs. Chapter 6: Operating Expenditure refers.

Figure 5.1: Seqwater's Total Forecast Renewals Expenditure (Real \$'000)



Source: Seqwater (2012bb)

To determine the prudence and efficiency of forecast renewals expenditure, the Authority engaged SKM to review Seqwater's forecast renewals expenditure.

Consultant's Review of Seqwater's Renewals Planning Process

SKM reviewed Seqwater's existing renewal planning processes and found:

- (a) operator advice - facility operators generally have a good understanding of the condition and performance of a large proportion of assets at facilities. A 'work request' system is in place where the operators can identify issues with assets, many of which are related to the need to renew an asset;

- (b) asset maintenance program - asset renewals are identified as part of the maintenance program, either when inspecting an asset and considering future renewals, or when addressing an asset failure and considering whether to repair or renew the asset;
- (c) Dam Safety Management Program - a combination of policy, procedures and activities exist to ensure that each dam remains safe. This consists of: Standing Operation Procedures and operation and maintenance manuals; ongoing dam condition monitoring (e.g. weekly); regular dam safety inspections (e.g. annually); regular dam safety reviews (e.g. five yearly); and asset renewals, are commonly included;
- (d) the FAMPs document a 10-year program of capital investment and operational maintenance required to maintain the capacity and performance of that facility; and
- (e) site safety assessments – the aim of the assessments is to allow for review of safety aspects at the site by people who do not normally work at the site. Most outcomes of the site safety review are addressed through actions undertaken by operators, changes to operational procedures or corrective maintenance. However, some assessments require works to be scheduled through the minor works and renewals program.

Following identification of asset renewal needs, potential renewal works are evaluated. The evaluation comprises the following: assessment/consideration of risk of failure; options assessment (considering options such as ‘do nothing’, defer timing of works, non-asset solutions); and scoping and cost estimation of recommended options.

Where proposed renewal works have a value of greater than \$10,000, a business case is developed. The business case confirms the need identified during the planning process and includes an options assessment to determine the most efficient method of meeting the need. The business case outlines the project scope of work and the project budget.

Seqwater commenced development of an overarching Asset Management Framework to manage its assets in 2010-11. It aims to facilitate improved integration, planning and management of assets to align with the delivery of Seqwater’s Strategic Plan by achieving: uniform organisational processes in asset management; prudent asset investment decision-making; a balanced approach to investment; standardised processes for asset management (including project delivery); and efficient outcomes / value for money.

SKM found that Seqwater has progressed in developing robust asset management for comprehensive asset information. While Seqwater may not currently have good asset condition information due to its recent formation and the lack of condition information transferred from previous owners, SKM considered that the plans and processes Seqwater has adopted to assess the condition of its assets will rectify this situation, including:

- (a) completing the development of the Asset Management Framework;
- (b) including irrigation asset details in the new Asset Register;
- (c) recording (and updating on an ongoing basis) key asset assessment data (such as condition, criticality, estimated remaining life and asset failure information);
- (d) analysing asset performance and develop preliminary renewal projections;
- (e) developing a FAMP for each WSS; and
- (f) ongoing improvements to criticality and condition assessment processes and other business processes.

SKM noted that four years have elapsed since Seqwater acquired these irrigation assets.

In SKM's opinion, whilst progress on asset knowledge is apparent, the current lack of information should be rectified and more robust asset management plans and asset information should be put in place prior to the next regulatory review.

In summary, the Authority considered, on that basis of SKM's findings, that Seqwater should implement its intended improvements to renewals plans and processes in relation (e.g. assessing asset condition prior to commencement of the next regulatory review).

Final Report

Stakeholder Submissions

Seqwater (2013a) submitted that it expects to achieve its planning process objectives along similar lines to those recommended by SKM by 30 June 2015.

Authority's Analysis

The Authority notes Seqwater's commitment to the Authority's draft recommendations and has not changed the recommendation.

Recommendation

Seqwater implement improvements to its renewals planning and processes as outlined in the SKM Final Report by 30 June 2015.

Draft Report

SKM's Review of Seqwater's (Cardno's) Past Renewals Cost Escalation Methods

In preparing its submission to the Authority for the 2013-17 Irrigation Price Review, Seqwater commissioned Cardno to update the 2008 cost escalation indices (inherited from SunWater) for the purpose of escalating capital replacement values to June 2012.

In developing its forecast of irrigation renewals costs over the renewals planning period, Seqwater employs a number of methods to determine asset replacement values. One of these methods, particularly for assets that are to be replaced a number of years hence, is to assume a like-for-like replacement and to use an as-installed cost, rebased to June 2012 terms.

SKM reviewed each aspect of this approach as follows.

Rebasing 1997 Costs to 2008 Costs

Firstly, when the assets were transferred to Seqwater, they were escalated from 1997 values (the year when assets were comprehensively valued) to 2008 on the basis of an escalation factor developed by Cardno.

SKM's key concerns over this renewal expenditure estimation approach were that:

- (a) the multipliers applied by Cardno are higher than SKM's benchmark indices for similar assets and hence the values are likely to be over stated;

- (b) the method does not capture changes in technology that may result in a lower cost of replacement when a modern equivalent asset is used to replace existing assets; and
- (c) the general [current] reduction in information, communication and technology (ICT) costs, due to technological advancements, has not been captured by Seqwater.

SKM compared Cardno's applied index with Australian Bureau of Statistics (ABS) escalation rates. SKM acknowledged that this comparison does not represent a true like for like assessment for some of the indices. For example the ABS escalators for concrete and electrical include material costs only, whereas the Cardno escalators for these items are a composite of material and labour escalators.

On the review of available information from the Cardno report and publically available information, SKM concluded that the Cardno rates for 2008 are generally overstated. However, given that a direct comparison is not possible in the time available, SKM could not quantify the difference between rates.

SKM considered the 2008 base year valuation (indexed costs) for SunWater's assets transferred to Seqwater is not necessarily a sound basis from which to derive June 2012 installed costs.

Rebasing 2008 Costs to 2012 Costs

Seqwater commissioned Cardno to develop a single composite index to enable escalation of 2008 base year installed cost valuations to June 2012 values.

SKM considered it would have been more appropriate if the brief had allowed Cardno to develop [multiple] indices for related asset class groupings based on movements in the major component cost items of each asset class.

Although SKM considers it reasonable to develop, for reasons of simplicity, a single set of indices for civil infrastructure, such indices are not likely to be applicable to mechanical and electrical equipment [evident among Seqwater's assets] and certainly not to ICT equipment – the costs of which have declined in real terms over the last 20 years.

SKM does not agree, therefore, that Seqwater's approach is appropriate for the development of replacement costs for renewal items submitted during a price review because:

- (a) dams and weirs, as an asset class, have the longest asset lives of Seqwater's irrigation asset portfolio. As such the majority of the renewal and refurbishment annuity items submitted to the Authority in a pricing review are assets other than dams and weirs for which the escalation indices developed will not necessarily be applicable;
- (b) movement in component costs for mechanical and electrical equipment, particularly ICT equipment tend to be materially different to movement in component costs for civil infrastructure, particularly dams and weirs. As such, replacement values for mechanical and electrical equipment and ICTs derived from 2008 base year costs utilising the single set of indices developed by Cardno are unlikely to reflect market based 2012 replacement values for such equipment; and
- (c) typically, a regulator will seek independent review of a sample of assets making up the overall renewals annuity value rather than adopt a portfolio review approach. As such renewals items will be viewed on their own merits, without regards to the balancing effect of a portfolio approach. As such, developing indices based on a portfolio of assets, rather than on different asset classes is not considered appropriate for development of asset renewal values for submission to a regulator.

SKM considered that the composite indexation series developed by Cardno not to be appropriate for rebasing the replacement value of the assets making up the renewals annuity value submitted to the Authority. This is partly because of the restrictions of the brief requiring the development of one indexation series only and partly because of the approach adopted by Cardno in developing a composite index more suitable for dams and weirs only (e.g. based on composite indices such as CPI and the building price index), rather than on the indices of the primary constituent components (or asset classes).

In summary, SKM considers that, if renewal values are to be developed by escalation of installed costs on a like-for-like replacement basis, it would be more appropriate for a number of escalation indices to be developed for each asset classes rather than a single composite index for all asset types. Further these indices should be derived predominantly from movement in prices of constituent components rather than from composite indices.

To take account of changes in technology, SKM considered that there could also [alternatively] be merit in Seqwater considering revaluing the assets on a modern equivalent replacement basis, using asset class modern equivalent building blocks rather than assuming like for like replacements. The Authority notes that such an approach would likely require additional expenditure and thus, may impact customer prices.

On balance, SKM considered that the escalation indices developed by Cardno are likely to overstate replacement costs rather than understate them. The quantum of overstatement depends on the asset class in question.

In summary the Authority considered, on the basis of SKM's findings, that Seqwater should implement improved methods of forecasting renewals costs. Specifically, when preparing:

- (a) detailed options analysis of material forecasts for Years 1-5 of the next regulatory period;
- (b) high-level options analysis for material items forecast for Year 6 onwards; and
- (c) for all other (non-material) forecast renewals expenditures, Seqwater should adopt SKM's recommended modern equivalent replacement approach and/or adopt more specific asset class indices suitable for Seqwater's renewals asset classes (such as for mechanical and electrical equipment, particularly for ICT equipment), as appropriate.

During the next regulatory period, the above estimating techniques would replace Seqwater's current approach of using composite indices which are more suitable to civil infrastructure (that is, dams and weirs predominantly).

Final Report

Stakeholder Submissions

Seqwater (2013a) submitted that options to improve forecasting should be explored. However, it should not be bound to a specific methodology without giving each item due consideration. No evidence was provided by SKM to support the view that the escalation indices developed by Cardno are likely to overstate replacement costs. Seqwater prefers to rely on empirical evidence and undertook to investigate all options. Seqwater submitted that it should have the right to adopt the preferred outcome, which may be the current approach.

Authority's Analysis

The Authority notes that SKM did undertake some analysis to conclude that the escalation indices developed by Cardno are likely to overstate replacement costs rather than understate them. This analysis included identifying that:

- (a) the multiplier applied by Cardno is higher than SKM's benchmark indices for similar assets and hence the values are likely to be over stated;
- (b) the valuation method does not identify or correct assets that were overstated in 1997 and overstated assets (1997 valuation) become relatively more overstated;
- (c) the Cardno method does not capture changes in technology that may result in a lower cost of replacement when a modern equivalent is used to replace existing assets; and
- (d) the general reduction in ICT costs due to technological advancements has not been captured, as a single index has been applied to all costs.

The Authority considers that Seqwater's current (single index) approach will continue to overstate future replacement costs (e.g. for future regulatory reviews). The Authority continues to recommend, therefore, that Seqwater adopt modern equivalent replacement costs and/or more specific asset class indices, as appropriate, when preparing renewal expenditure estimates for the next regulatory period.

Recommendation

Seqwater adopt modern equivalent replacement costs and/or more specific asset class indices, as appropriate, when preparing renewal expenditure estimates.

5.4 Review of Prudency and Efficiency of Forecast Renewals

The Authority engaged SKM to review 12 forecast renewal items comprising 54% or \$7.3 million by value of the total forecast \$13.5 million of irrigation renewals expenditure.

Seqwater's proposed meter-replacement costs comprised \$5.6 million of this amount and are discussed in detail further below. The balance of reviewed items (that is, \$1.7 million) reflected 21% of the \$8.1 million of other irrigation renewals items (that is, excluding meter replacement costs).

However, in reviewing 21% by value of forecast direct irrigation renewals items (excluding meter replacements), SKM was instructed to consider the application of cost savings in each reviewed asset class. The sample included asset classes comprising over 30% of total irrigation renewals (excluding meter-replacement). A 30%+ sample is typically preferred by the Authority as it provides a cost-effective and robust basis for identifying cost savings.

Seven of the 11 projects reviewed were found to be prudent and efficient. That is, the costs proposed by Seqwater were either within 30% or lower than the estimates proposed by SKM. Accordingly, the Authority accepts Seqwater's cost estimates for these seven items.

Four reviewed renewals projects are not supported as submitted by Seqwater. Of these, one item was found not to be prudent. The other three items were found to be prudent but not efficient. The implications of these findings for overall cost savings is noted further below.

Table 5.11 provides a summary of findings related to the (non-metering) renewals expenditures reviewed.

Table 5.11: SKM Review of Seqwater’s Proposed (All Sector) Renewal Items (Real \$’000)

<i>Renewal Item</i>	<i>WSS / Tariff Group</i>	<i>Seqwater Proposed</i>	<i>SKM Estimate</i>	<i>Net Variance from SKM Estimate (\$)</i>	<i>Variance from SKM Estimate (%)</i>	<i>Authority’s Finding</i>
Observation Bores	Lower Lockyer Valley	344	0	(344)	(100%)	Not Prudent
Access Road*	Warrill Valley	194	80 [69]	(114)	(143%)	Prudent but Not Efficient
Telemetry*	Logan	105	79 [70]	(26)	(33%)	Prudent but Not Efficient
Air Valve	Pie Creek	269	202	(67)	(33%)	Prudent and Not Efficient
Sub-Total (Cost Savings)		912	361 [341]	(551) [(571)]		
<i>Seqwater’s Estimate Exceeded SKM’s by less than 30% (Seqwater’s Cost Accepted)</i>						
Outlet Works	Central Brisbane River	3,251	2,922	(329)	(11%)	Prudent and Efficient
Embankment	Central Lockyer Valley	312	288	(24)	(8%)	Prudent and Efficient
Control Equipment	Central Lockyer Valley	174	164	(10)	(6%)	Prudent and Efficient
<i>SKM’s Estimate Exceeded Seqwater’s (Seqwater’s Cost Accepted)</i>						
Trash Screen	Central Lockyer Valley	50	58	8	14%	Prudent and Efficient
Telemetry	Cedar Pocket Dam	68	87	19	22%	Prudent and Efficient
Gauging Stations*	Central Lockyer Valley	120	143	23	16%	Prudent and Efficient
Access Road	Central Lockyer Valley	192	375	183	49%	Prudent and Efficient
Total		5,079	4,398	(681)*	(15%)	

Source: SKM (2012). Note: Seqwater revised their estimate of Warrill Valley Access Road from \$194,000 to \$69,300; and the estimate for Logan Telemetry from \$105,000 to \$70,000 – SKM accepted these lower revised costs were prudent and efficient. Seqwater revised their estimate of Central Lockyer Valley Gauging Stations from \$120,000 to \$143,400 – SKM concluded that \$143,000 was also prudent and efficient. Includes some variations to the Draft Report as a result of further quality assurance. * Square brackets do not indicate a negative number; however, rounded brackets do.

The overall net variance between the Seqwater costs and SKM’s proposed efficient costs for the same 11 (non-metering) sampled items was \$0.68 million. That is, Seqwater’s costs were 15% higher overall than SKM’s efficient costs.

An alternative way of expressing the same finding is that Seqwater’s sampled cost base (\$5.08 million) would need to be reduced by 13% to achieve SKM’s view of efficiency.

Review of Seqwater’s Proposed Metering Program

The twelfth item reviewed by SKM was Seqwater’s meter replacement program (for all irrigation tariff groups). SKM reviewed the business case provided by Seqwater and

sampled (visited) the meters to be replaced within the Central Lockyer Valley and Mary Valley WSSs and the Pie Creek tariff group.

Since 2000, it has been the past practice of Seqwater (and SunWater) to require the customer to pay for the installation of each first-time (new) water meter (i.e. as distinct from the replacement of existing meters that have been included in the renewals annuity). Ownership of the meter installation then transfers to Seqwater for ongoing maintenance and renewal.

Most of Seqwater's irrigation meters were installed when the irrigation schemes were first developed and accuracy requirements at that time were different (lower than is currently the case). Subsequently, best practice metering standards have improved and most of the original meters no longer comply with current standards.

Further, the original meters were installed prior to the *Work Health and Safety Act 2011* which requires elimination of risks to health and safety (for example, in accessing meters for maintenance and reading), so far as is reasonably practical.

Metering is required for management of water supplies, reporting and billing. Seqwater has advised that it has two types of meters: river meters and groundwater meters. Most meters are river meters with groundwater meters only in the Central Lockyer Valley WSS.

In line with Seqwater's procedures, a number of business cases have been developed for the replacement of non-compliant meters. SKM considered the documentation developed to be in line with good industry practice and adequate to conduct an assessment of this project.

Prudency

The water meters are required to operate the relevant WSSs, as outlined in the relevant ROP, ROL or IROL. For example, the Mary Basin ROP requires Seqwater to record the total volume of water taken by each water user. Chapter 13, Part 3 Sect 212 of the ROP states:

The resource operations licence holder must record the total volume of water taken by each water user for each zone as follows:

- (a) the total volume of water taken each quarter;*
- (b) the total volume of water entitled to be taken at any time; and*
- (c) the basis for determining the total volume of water entitled to be taken any time.*

Therefore in order to comply with these monitoring requirements Seqwater must install a working water meter for each active water user (customer).

In addition, Seqwater has identified health and safety as a driver, as per the following extract from the metering business case:

The Work Health and Safety Act 2011 requires elimination of risks to health and safety, so far as is reasonably practicable; and if it is not reasonably practicable to eliminate risks to health and safety, to minimise those risks so far as is reasonably practicable. The location and arrangement of Seqwater's irrigation water meters are such that reading and maintaining those meters is a risk to the health and safety of Seqwater employees and contractors.

Seqwater has identified the health and safety risks associated with the location of the meters on steep and uneven slopes. Many of the meters are installed low on stream banks. There is a high risk of slips, trips and falls as the ground is uneven, steep and often concealed by tall grass. There is also a heightened risk of snake bite as the stream banks are snake habitats and the snakes are concealed by the long grass.

In summary, operational water meters are required to operate Seqwater's WSSs and therefore renewal of these meters is prudent. SKM agrees that the minimisation of health and safety risks is another legitimate driver for the project.

Timing – Meter Replacement Driven by Health and Safety

Seqwater has undertaken a condition audit of meters in the Central Lockyer Valley, Lower Lockyer Valley and Warrill Valley WSS. As the audit did not specifically capture the number of meters to be replaced from a health and safety perspective, this number has been estimated by Seqwater based on the inspection and advice from scheme operators.

SKM considered that it is good industry practice to mitigate health and safety risks as a priority. It is recommended that the extreme risk sites are prioritised first, and then the high risk sites are prioritised based on the age and condition of the meter. SKM considered the three-year program to replace meters representing health and safety risks, 95 meters per year, to be reasonable and achievable, given the business as usual program of replacing 5% of meters (that is, 35 meters) per year.

Timing – Meter Replacement Driven by Need to Meet Manufacturer's Guidelines

Meters required to be replaced to modify installation to meet with manufacturer's [measurement accuracy] recommendations are given a lower priority. Seqwater's business case states that, of the meters that are in use, less than 10% are installed in accordance with the manufacturer's current recommendations. SKM's site visits and photographic evidence support this view as no meters visited met the standard [although 10% is not verifiable].

The result of meters not being installed according to manufacturer's guidelines is that the accuracy of the meter is likely to be lower than could otherwise be achieved. Due to the nature of reporting meter faults, an under reading is unlikely to be reported by the customer. In addition, if an irrigator challenges the accuracy of a new meter, Seqwater will have limited grounds to enforce the reading if it is demonstrably installed incorrectly.

The business case states that the meter fleet is old. No information was provided to SKM on the age profile of the existing meters. SKM recommended that Seqwater records the date of installation, and hence the age, of the meters (where possible for existing meters and certainly for new installations) and uses this information, in conjunction with the condition assessments of the meter and the meter installation, to prioritise future replacement works.

The business case states that the low number of active water licences is partially due to the low water availability during the dry period pre-2008. It is likely that some of these inactive licenses will become active now that there is improved water availability. For planning purposes 700 active water meters have been assumed by Seqwater across all schemes.

SKM only had partial information on the total number of meters and number of meters in use. For the Central Lockyer Valley WSS currently 56% are noted as used. This supports Seqwater's assumption that of the approximately 1,400 water entitlements, approximately 700 entitlements are in active use.

Seqwater plans to replace 70 meters per year, to modify installation, to meet manufacturer recommendations over the following seven years of the program. Table 5.12 refers.

Table 5.12: Number of Meters Proposed for Replacement in Phase 1 and 2

<i>Replacement Driver</i>	<i>Replacement of Meters per Annum</i>	<i>Number of Years</i>	<i>Total Number of Meters Replaced</i>
Health and Safety	95	3	285
Meet Manufacturer Specifications	70	7	490
Total			775

Source: SKM (2012).

Table 5.12 shows that the total number of meters to be replaced exceeds the current estimate of 700 active water meters. This increase is not specifically justified by Seqwater.

In summary, SKM found the first six years of the program to be prudent, but no supporting information is provided for the renewal of meters in addition to the estimated active fleet, hence the final 75 meters are found not to be prudent.

Timing – Meter Replacement Driven by Ongoing Renewal

Whilst it was noted that the business case provides recommendations for the 2012-13 year only, it provides a strategy for ongoing meter replacement on the basis of the ongoing renewal of 10% of existing meters per annum.

As at least 700 active water meters will have been replaced during the first 10 years of the program, and the useful asset life of the meters is 15 to 20 years, there should be no planned replacements until after these assets have passed their useful lives. As such, SKM also found the renewal of meters from 2022-23 to 2027-28 not to be prudent.

In addition, if after this date, meters are renewed within a similar program (70 meters per year, for 10 years from 2027-28 to 2037-38) meter replacement costs will not be required from 2038-39 onwards until the second set of replacement meters start to reach the end of their serviceable life.

Scope of Works

Seqwater intends to replace the existing meters with a meter arrangement that meets both health and safety and manufacturer's guidelines. SKM supported this high level scope of works as the best means of achieving the desired outcome of providing a flow measurement to meet the requirements of the relevant ROPs. SKM also supported Seqwater's decision to replace the existing meters with relatively low cost mechanical meters.

Seqwater provided the following simplified analysis of the annual usage in 2010-11 in the Central Lockyer Valley WSS. It is noted that a recorded usage of 0 ML may indicate the meter does not work rather than no water is provided. Table 5.13 refers.

Table 5.13: Central Lockyer Valley WSS- Estimated 2010-11 Water Use Revenues

<i>Usage</i>	<i>0 ML</i>	<i>0-10 ML</i>	<i>10-50 ML</i>	<i>50-100 ML</i>	<i>> 100 ML</i>
Number of Customers	277	78	93	17	3
Volumetric Revenue per Customer	\$0	\$160 (5 ML)	\$960 (30 ML)	\$2,400 (75 ML)	\$6,400 (200 ML)

Source: SKM (2012).

To 30 June 2013, customers in Central Lockyer Valley WSS paid a \$258 per annum minimum charge (equal to 8ML use). Therefore customers owning approximately 350 of the 468 meters in the scheme paid a bill based on minimum charges rather than water usage.

Seqwater stated that reliable data about high-use meters is not available. Usage varies over time depending on water availability and individual operational decisions by the irrigators. Usage is not necessarily linked to licence volumes as the irrigator can trade water with other licence holders. A meter that has high usage now may not be a high-use meter in the future.

SKM understood that meters that are linked to high volume water use, and are in poor condition, will be given a high priority. SKM agreed that this is good industry practice.

Seqwater stated that every renewed meter installation will be considered individually prior to renewal to ensure the most appropriate installation is provided. This is because there is significant variability in each installation and the customer's needs must also be considered.

SKM agreed that this is necessary and recommended that whilst standard designs should be used where possible (to achieve efficiency of design and consistency in operations) these will need to be adapted for individual sites.

Conclusion

Regarding timing of the works, the project has been assessed as partially prudent. The need to replace meters and modify installations to comply with manufacturer's current recommendations and for ongoing renewal has been found to be only prudent for certain years. Table 5.14 refers.

Table 5.14: Summary of Prudency

<i>Years</i>	<i>Activity</i>	<i>No. Meters pa</i>	<i>Prudency</i>
2012-15	Address WHS Issues	95	Prudent
2015-22	Replace meters to comply with manufacturer	70	Partially prudent - No justification of increase to fleet, so 70 replacement meters not prudent in year seven.
2022-23+	Ongoing renewal (10% pa)	70	Partially prudent – Not all replacements are needed.

Source: SKM (2012).

Efficiency

SKM considered the scope of works as the best means of achieving the desired outcome of providing a flow measurement to meet the requirements of the relevant ROPs.

SKM understood that five meters were renewed in the Lower Lockyer Valley WSS during 2011-12. The cost per meter was approximately \$8,000 excluding procurement and project management costs. SKM understood that these meters were particularly problematic and were Seqwater's highest priority to rectify. This work was procured through a competitive tender process.

Seqwater anticipated that not all meters would be as difficult to rectify and that increased meter numbers will improve the efficiency of the work, therefore the estimate of \$6,600 per meter [installed] was considered adequate. Seqwater provided a breakdown of the replacement cost estimates.

SKM estimated the costs of a single meter installation based on Seqwater's proposed standard installation. The cost for the flow meter is based on a range of market quotes, and the other cost components were estimated by SKM from historic costs for similar projects.

Seqwater proposed to purchase all meters from a single supplier and to engage a single contractor to install all meters. Seqwater should be able to negotiate a lower cost than SKM's estimate for flow meters and their installation when purchasing these in bulk. The summary of the cost comparison is shown in Table 5.15.

Table 5.15: Unit Cost Estimation Comparison (2012-13 Real \$'000)

<i>Items</i>	<i>Seqwater</i>	<i>SKM</i>	<i>Difference</i>
New Flow Meter	\$600	\$875	46%
Installation and Materials	\$4,000	\$5,700	43%
Management Costs	\$2,000	\$1,600	-20%
Total	\$6,600	\$8,175	24%

Source: SKM (2012).

Seqwater's lower estimate may have been caused by its intent to purchase meters in bulk. However, meter costs form only a small part of the overall meter installation costs. In addition, each meter installation will be tailored to meet site specific conditions, so there will be minor variations in the costs incurred at some sites.

SKM considered that the cost difference between bulk and single purchasing of meters, and the cost savings arising from appointing a single contractor on the overall project costs, account for the difference between SKM's estimate and Seqwater's estimate. As a result, Seqwater's estimated unit costs were accepted as efficient.

SKM estimated the prudent and efficient level of expenditure based on the reduced number of meters. Table 5.16 refers.

Table 5.16: SKM's Revised Metering Capital Expenditure (Real \$'000)

<i>Tariff Groups</i>	<i>Phase 1: 2012-13 to 2014-15</i>	<i>Phase 2: 2015-16 to 2021-22</i>	<i>Phase 3: 2022-23 to 2035-36</i>	<i>Total</i>
<i>Bulk</i>				
Cedar Pocket Dam	14	34	14	61
Central Lockyer Valley	264	997	317	1,578
Logan River	132	196	101	429
Lower Lockyer Valley	317	134	144	595
Mary Valley	198	330	158	687
Warrill Valley	290	465	216	971
<i>Distribution</i>				
Morton Vale Pipeline	0	101	29	130
Pie Creek	40	67	29	136
Total	1,254	2,324	1,008	4,587

Source: SKM (2012). Note: Costs above are the sums of costs within the indicated range of years.

Table 5.17 presents the variance, by tariff group and phase, between Seqwater's submitted costs and SKM's recommended capital expenditure on meter replacements.

Table 5.17: Variance between Seqwater and SKM Metering Capital Costs (Real \$'000)

<i>Tariff Groups</i>	<i>Phase 1: 2012-13 to 2014-15</i>	<i>Phase 2: 2015-16 to 2021-22</i>	<i>Phase 3: 2022-23 to 2035-36</i>	<i>Total</i>
<i>Bulk</i>				
Cedar Pocket Dam	0	(8)	(14)	(23)
Central Lockyer Valley	0	(179)	(173)	(352)
Logan River	0	(42)	(53)	(95)
Lower Lockyer Valley	0	(20)	(80)	(99)
Mary Valley	0	(62)	(94)	(155)
Warrill Valley	0	(81)	(120)	(201)
<i>Distribution</i>				
Morton Vale Pipeline	0	(18)	(13)	(31)
Pie Creek	0	(10)	(13)	(23)
Total	0	(420)	(560)	(979)

Source: SKM (2012).

The Authority noted that no cost savings were proposed by SKM for Phase 1 (first three years). During Phase 2 (next seven years), SKM proposed \$0.42 million cost savings as Seqwater did not provide an explicit justification for year seven meter replacements (i.e. up to 70 meters are not prudent). About 700 meters only are to be replaced in Phases 1 and 2.

In Phase 3 (2023 onwards), SKM proposed cost savings of \$0.56 million on the basis that meter replacements are not necessary in every year as proposed. Combined with cost savings from Phase 2, SKM identified total meter-replacement cost savings of \$0.98 million. The Authority supported this finding and removed these costs from irrigation prices.

Findings on Prudence and Efficiency of Seqwater's Reviewed Forecast Renewals

The Authority accepted SKM's estimate (or the lower revised cost provided by Seqwater) for the four forecast (non-metering) renewal items found to be imprudent or inefficient. The Authority also accepted Seqwater's costs estimates for the remaining seven reviewed (non-metering) renewal items as SKM found these to be prudent and efficient. The cost savings implied by these 11 (non-metering) reviewed items are summarised in Table 5.18.

Table 5.18: Summary of Reviewed Forecast (Non-Metering) Renewals (Real \$'000)

<i>Sampled Item</i>	<i>Tariff Group</i>	<i>Year</i>	<i>Seqwater</i>	<i>Authority</i>	<i>Saving</i>
Access Road	Central Lockyer Valley	2023	192	192	0
Access Road	Warrill Valley	2029	194	69	125
Air Valve	Pie Creek	2033	269	202	67
Control Equipment	Central Lockyer	2029	174	174	0
Embankment	Central Lockyer	2013-19	312	312	0
Gauging Station#	Central Lockyer	2023, 2033	120 [143]*	143	0 [(23)]*
Observation Bores	Lower Lockyer	2019,2024, 2029,2034	344	0	344
Outlet Works	Central Brisbane	2026	3,251	3,251	0
Telemetry	Cedar Pocket	2021, 2031	68	68	0
Telemetry	Logan River	2014,2024, 2034	105	70	35
Trash Screen	Central Lockyer	2015,2020, 2025,2030, 2035	50	50	0
Total			5,079	4,531	548 [571]*

Source: SKM (2012). Note#: Seqwater revised the Central Lockyer Valley Gauging Station cost from \$120,000 to \$143,000, which SKM and the Authority accepted. .* Square brackets do not indicate a negative number; however, rounded brackets denote negative numbers.

The Authority reduced the reviewed sampled items by \$0.57 million. By comparison, the direct cost saving identified by SKM was \$0.55 million (refer SKM's findings above). SKM had estimated the efficient costs of two reduced items to be \$20,000 higher than revised

estimates provided by Seqwater (i.e. Warrill Valley access road and Logan River telemetry). The Authority accepted Seqwater's lower revised costs for these two items.

In response to L. Brimblecombe, the Authority only allowed Seqwater to recover renewals expenditures that are considered prudent and efficient.

In response to Logan River WSS irrigators, the information made available to the Authority's consultant was appropriate to determine that Seqwater's forecast renewals expenditure is prudent and efficient (cost savings have been applied based on reviews of that information). Where insufficient information is available, the Authority applied a cost saving to forecast renewals expenditure (refer to discussion of unsampled items below).

In response to QFF, the Authority noted that Seqwater has not included minor items (less than \$10,000 in value per project) in the proposed forecast renewals expenditure. The Authority asked Seqwater to outline the likely costs of these minor items. In response, Seqwater submitted that these items tend to arise in an ad hoc manner and, accordingly, were not included in the renewals forecasting process.

By not forecasting items under \$10,000 Seqwater has under-forecast future renewals expenditure. Consequently, the renewals annuity will be insufficient to recover all renewals expenditure. This may have a material consequence if many minor items are needed. The risk presented by this approach, to some extent, is that ARR balances will be lower than they would be if small items were included in current forecasts.

In essence, this is a risk that Seqwater carries (but can justify as part of any ex-post adjustment at the end of the current regulatory period).

The Authority noted QFF's (implied) concern that prices from 1 July 2017 (the next regulatory period) may, as a result, increase unexpectedly at this future time. The Authority noted, however, that due to a planning period of (say) 20 years at that time (subject to further consideration) and the price-smoothing effect of the renewals annuity, the impact of any such increase will (most likely) be moderate.

In a subsequent regulatory review, Seqwater's proposed ARR balances (including all recent minor expenditures) will be subject to prudence and efficiency reviews. That is, there will be no automatic acceptance of these costs or any future (deteriorated) ARR balances.

Conclusion

The Authority generally accepted the findings of the consultant on prudence and efficiency (or the lower revised costs provided by Seqwater). In summary, the Authority reduced four of the 11 directly sampled forecast (non-metering) items by \$0.57 million. The extrapolation of this cost saving to unsampled items is addressed further below.

In addition, in relation to the forecast meter-replacement program, the Authority accepted SKM's proposed cost savings of \$0.98 million over the life of the program. The Authority also accepted the cost saving of \$0.18 million of metering costs withdrawn by Seqwater in November 2012. Seqwater withdrew these costs from Central Brisbane River WSS as it had previously made allowance for metering costs in this scheme, prior to resolving its policy.

The findings of all assessments are detailed in the Volume 2 scheme-specific reports.

In relation to projects valued at less than \$10,000 and water treatment plants in recreation areas, the Authority proposes to exclude these from forecast renewals (as they have not been

identified by Seqwater). In essence, this is a risk that Seqwater carries (but which Seqwater can justify as part of any ex-post adjustment at the end of the 2013-17 regulatory period).

The Authority also accepted Seqwater's exclusion of any allowance (or contingency) for future renewals expenditure arising from flood related costs or changes in law, on the basis that these are unable to be predicted and can instead be addressed via within or end-of-period adjustments, subject to the Authority's consideration.

Final Report

Stakeholder Submissions

Seqwater

Seqwater (2013e) submitted that it is undertaking meter replacements due to safety considerations and to ensure meters meet manufacturer specifications. Seqwater will repair or replace meters depending on the condition of the meter at the time of inspection. In certain circumstances Seqwater will replace meters that are five years old if they are non-compliant for safety, accuracy or other reasons.

Seqwater noted that SKM disagreed with the shorter (10 year) meter lives Seqwater ascribed to meters. The longer (15 year) lives recommended by SKM are consistent with meters operating in reticulated water systems where the quality of the water is higher than the quality of raw water pumped from rivers and streams for irrigation purposes.

Seqwater would agree with SKM's meter lives under potable water conditions, but Seqwater's operational experience has shown that mechanical irrigation meters subjected to raw, unfiltered water that has a content high in sand and organic matter dramatically shortens meter lives. After five to six years operating under these conditions, the accuracy of irrigation meters deteriorates. The replace/repair decision is driven by cost and the circumstances.

Seqwater's meter replacement program focuses on the installations of which the meter is one component. Seqwater will replace any mal-functioning meter, regardless of age, if repair is not economically viable. Seqwater will replace meter installations where the current location is unsafe or when the installation does not meet manufacturer specifications. When a new installation occurs, the meter will be replaced where this is the lowest cost option. The used meter will be repaired if viable and used elsewhere or may be stored for spare parts.

Other Stakeholders

QFF (2013b) accepted the Authority's recommended reductions to renewals expenditure.

In relation to water meters, other stakeholders submitted that:

- (a) Seqwater replacing water meters that are in perfectly good working condition is [inappropriate] as growers cannot afford them (Sippel 2013);
- (b) certain water meters were replaced about five years ago and do not need to be replaced again. Seqwater contractors recently have been on farms proposing to replace these meters, which appears to be inefficient (Rozynski 2013);
- (c) the costs to make access to water meters safe for Seqwater employees should not be paid for by irrigators. Irrigators have to go down the banks to access water pumps in the same conditions (Warrill Valley Irrigators (QCA 2013));

- (d) metering is not the only system available to Seqwater to monitor usage. MBRI has initiated a logbook system that provides data that could be used (MBRI 2013d);
- (e) Seqwater has failed to make the business case for first-time meters. The cost of [first time] compliant meters could be \$10,000, representing about \$100/ML per year for about half of MBRI irrigators (MBRI 2013d). Seqwater should install meters at no additional cost to irrigators, on the basis that this could drive efficiencies in the system. For small irrigators, MBRI suggested logbooks or restricted pump capacity.

Authority's Analysis

The Authority notes QFF's support of the Authority's reductions to renewals expenditure.

In response to stakeholder submissions, the Authority:

- (a) notes Seqwater's responses and that some such meters may be replaced within SKM's recommended 15-year life, which is reasonable where justified by condition assessment or a least-cost approach. Some meters, however, may not need replacing every 15 years, but can be maintained for a longer period where it is cost-effective and compliant to do so (that is, meters remain accurate and safe). The Authority continues to support an average 15-year life and notes that Seqwater must continue to demonstrate that costs are prudent and efficient, for such costs to be included in future prices;
- (b) notes Seqwater's metering business case does not aim to replace meters in perfectly good working order. In certain circumstances (referred to Seqwater's submission), Seqwater will repair or replace these meters for reasons including non-compliance with WHS legislation and/or manufacturers guidelines and will take a least-cost approach. Half of the irrigation meters will be replaced under the program;
- (c) considers that Seqwater should comply with relevant WHS legislation and the prudent and efficient cost of doing so should be borne by customers. The Authority supports reconditioning of meters or their use for spare parts, to reduce overall costs;
- (d) considers that logbooks appear in the Central Brisbane River WSS to be generally unreliable, as only a minority of irrigators complete them and there is no means for verifying the accuracy of the data, which can compromise water available to customers; and
- (e) notes that while Seqwater's business case has marginally overestimated the number of meter replacements needed in other schemes, SKM considered that Seqwater's cost estimates were efficient. In the Central Brisbane River WSS, however, Seqwater has not submitted cost estimates for first-time meters and accordingly, the Authority has excluded all metering costs from the calculation of the renewals annuity for this WSS.

The Authority has not identified any grounds to alter its approach. Accordingly, the Authority maintains the conclusions and recommendations of the Draft Report.

5.5 Treatment of Unsampled Forecast Renewal Expenditure

SunWater Review 2012-17

For SunWater, the Authority recommended the following direct cost savings also apply to unsampled past and forecast renewal items:

- (a) reduce by 4% all unsampled (direct) past renewals expenditure for 2006-12. These totalled about \$1.0 million; and
- (b) reduce by 20% all unsampled (direct) forecast renewals expenditure within the planning period. These totalled about \$73 million.

Should there be material differences between efficient actual expenditures and allowed costs, SunWater can apply for a within- or end-of-period adjustment to prices.

Draft Report

Authority's Analysis

Because of time limitations, the Authority was unable to comprehensively review all past or forecast renewals expenditure for prudence and efficiency. This raised the issue of how best to address forecast and past items that were not able to be reviewed in appropriate detail. To address this, the Authority drew on the results of consultant reviews, as detailed below.

The meter replacement program (and the identified cost savings) was excluded from consideration in this context, on the basis that meter-replacements refers to a discrete asset class not represented in the remaining unsampled renewals items.

As already noted, the Authority engaged a consultant to review Seqwater's forecast renewals expenditures for prudence and efficiency. The items sampled from each scheme were generally selected on the basis of materiality. Table 5.19 shows direct (non-metering) forecast renewals cost savings identified by SKM.

Table 5.19: Summary of SKM's Findings on Forecast (Non-Metering) Renewals

<i>Number of Items sampled</i>	<i>Value Sampled (Real, \$'000)</i>	<i>Variance to SKM Estimate (Real, \$'000)</i>	<i>Average saving identified (%)</i>
11	5,079	(681)	13

Source: SKM (2012). Note: Number of items sampled excludes sampled items for which insufficient information was available to reach a conclusion.

The 11 (non-metering) forecast items reviewed account for an average across the schemes of some 20% of the total forecast irrigation renewals expenditure. SKM's findings for application to similar (not reviewed) assets, take the sample size to approximately 30%.

The reviews of Seqwater's 11 forecast (non-metering) renewals items and its forecasting approach identified (as earlier noted) some evidence of imprudence and inefficiency and the use of a single index to escalate costs, which is likely to overstate the cost of non-civil-engineering items (e.g. telemetry). Hence, the Authority considered it likely that the unsampled renewals expenditure proposed by Seqwater was similarly overstated.

Specifically, as noted above, the net variance between Seqwater's initially submitted (non-metering) forecast renewals costs and the efficient SKM cost estimate of \$0.68 million is the appropriate basis for the Authority's cost savings to be applied to unsampled items.

The net variance of \$0.68 million, expressed as a portion of Seqwater's initially submitted sampled forecast irrigation renewal expenditure of \$5.08 million, resulted in about a 13% implied cost saving that the Authority applied to unsampled items.

On this basis, the Authority therefore proposed that a saving of 13% be applied to all unsampled forecast renewals expenditure proposed by Seqwater.

In forming this recommendation, the Authority also considered the relative weighting of the sample in terms of item size. A breakdown of reviewed items by size indicates that, as a proportion of reviewed forecast renewals:

- (a) two small items (under \$100,000) make up 2% of sampled items by value and Seqwater's average estimate is 22% lower than SKM's;
- (b) eight medium items (\$100,000 - \$1 million) make up 34% of sampled items by value and Seqwater's average estimate is 20% higher than SKM's; and
- (c) one large item (\$1+ million) makes up 64% of sampled items by value and Seqwater's estimate is 10% higher than SKM's.

The Authority acknowledged, therefore, that Seqwater's estimates are weighted to the single large renewal item (outlet works), which is mostly allocated to non-irrigation customers.

Accordingly, the Authority re-weighted these findings according to the proportion that relates to irrigation customers only. Once re-weighted, the implied cost saving is again about 13%. This further supported the Authority's recommendation of a 13% generic cost saving to be applied to unsampled forecast renewals items.

Should there be material differences during 2013-17 between (efficient) actual expenditures and those allowed under this approach, Seqwater can apply to the Authority for an end-of-period adjustment. A within-period adjustment is unlikely given the immateriality of irrigation revenues to Seqwater's business. Thus, the price stability provided by 2013-17 prices is likely to be retained throughout the regulatory period under most circumstances.

Extrapolation within Asset Classes and Exclusions

The findings of SKM's direct sampling were, in some cases, applicable to other similar unsampled items. For example, SKM considered that findings for the Pie Creek air valves could be applied to similar unsampled air valve costs in the Lower Lockyer Valley and Warrill Valley WSSs (that is, \$56,000 combined). Accordingly, the Authority applied a 25% or \$14,000 reduction to the unsampled air valve costs in these WSSs. Unsampled items, to which SKM findings applied, were not subject to the Authority's 13% cost reduction.

Conclusions

When considered in conjunction with the Authority's decisions on the consultant's specific prudence and efficiency findings for forecast renewals items (including meter-replacements) and in calculating forecast renewals expenditure, the Authority:

- (a) excluded from meter-replacement renewals expenditure the \$0.98 million identified by SKM as not prudent and \$0.136 million of metering costs withdrawn by Seqwater in November 2012. This totals approximately \$1.116 million (2012-13 Real);
- (b) excluded from (non-metering) renewals expenditure the item identified by SKM as not prudent. This totals approximately \$0.34 million (2012-13 Real);
- (c) incorporated all identified specific efficiency savings. This totals approximately \$0.23 million (2012-13 Real);

- (d) incorporated the extrapolated asset class specific efficiency saving of 25% to other air valve replacements. This totals \$14,000 (2012-13 Real); and
- (e) reduced by 13% all unsampled direct forecast renewals expenditure within the planning period. These savings total approximately \$5.6 million (2012-13 Real).

Summary of Past and Forecast Renewals Cost Savings

The Authority, therefore, recommended a reduction of \$7.3 million of Seqwater's submitted all sectors forecast renewals expenditure of \$55.8 million (real values), that is, 13.1%.

The Authority also recommended a reduction of \$0.84 million of Seqwater's submitted all sectors past renewals expenditure of \$4.6 million (real values), that is, about 18.2%.

Thus, for 2006-36, the Authority recommended a reduction of \$8.14 million of Seqwater's submitted total all sectors past and forecast renewals expenditure of \$60.4 million (Real \$2012-13), that is, about 13.5%. This represents the cost saving identified by the Authority when reviewing Seqwater's initially submitted past and forecast renewals expenditure.

Should there be material differences between efficient actual expenditures and the Authority's approved costs, Seqwater can apply for an end-of-period adjustment to prices.

Final Report

Stakeholder Submissions

Seqwater

Seqwater (2013a) submitted that derivation of the 13% cost saving applied to unsampled renewals items should exclude an amount of \$344,000 for the refurbishment of observation bores in Lower Lockyer Valley WSS as the circumstances surrounding this [erroneous] inclusion in Seqwater's renewals forecasts are unique to Lower Lockyer Valley WSS.

Seqwater submitted that the resulting 13% average saving should not be applied elsewhere as there is no link between the observation bores and forecast items in other schemes. It results in lower annuities generally, due to Authority's reduction of likely prudent and efficient expenditure. This disadvantages customers as the annuity will be less than needed, resulting in lower ARR balances and a transfer of costs to the next price path.

Other Stakeholders

MBRI (2013a) submitted that:

- (a) the renewals sampling methodology adopted by the Authority does not provide a reasonable basis upon which to make assessments for Central Brisbane River WSS, given the scale and features of that scheme relative to other schemes (MBRI 2013d);
- (b) the cost savings are too low as a significant proportion of renewals do not relate to water storage but to hydro, flood mitigation and other expenditure. A complete review of renewals costs for this scheme needs to be undertaken to remove renewal costs not associated with water storage (MBRI 2013d); and
- (c) SKM is a long-standing consultant for Seqwater (MBRI 2013a).

Authority's Analysis

In response to Seqwater, the Authority sampled 12 renewal items, out of 500 originally submitted, and focused on the largest items in each scheme. This sample accounted for approximately 50% of irrigation renewal expenditure.

However, of the 12 items, one was found to be imprudent and four (including metering) were found to be inefficient. Given this, it is reasonable to assume that some of the remaining (approximately 488) unsampled items are likely to be imprudent or inefficient if all were sampled. The Authority applied the average sampled reduction of 13% to unsampled items.

In response to Seqwater's view that unique items should be excluded, many renewals items are unique to schemes. Given the sample size, it is not practical nor is it likely to be a robust approach to remove every unique item from consideration when determining the cost saving to apply to unsampled items.

The observation bores were the largest item in the Lower Lockyer Valley WSS. Seqwater is obliged to ensure that such items are relevant to irrigators. This oversight would have gone unnoticed and the cost been included in irrigation prices had the Authority not undertaken this review. To ensure an allowance is made for such occurrences in other non-sampled items, the Authority considers it appropriate to reduce all unsampled renewal items by the average identified cost saving (including the contested item from Lower Lockyer Valley WSS).

In response to MBRI's submission:

- (a) the Authority considers that its sample, which reflects over 50% of irrigation renewal costs by value, is significant and can be relied upon to reduce unsampled expenditure;
- (b) the reduction of renewal costs in the Central Brisbane River WSS including the exclusion of hydro, flood mitigation and other non-irrigation costs are detailed in Volume 2; and
- (c) SKM has written to the Authority confirming that in SKM's view it is not conflicted in any of the areas assessed under SKM's irrigation reviews and notes that this is a contractual requirement of working for the Authority. SKM's view is that its advice to the Authority is impartial and independent, based on objective criteria and independent information, analysis and resources.

As the Authority has not identified any grounds to alter its approach, the conclusions and recommendations outlined in Draft Report are maintained.

Recommendations

- (a) **Cost savings identified by the Authority (see Volume 2) be incorporated in cost-reflective prices.**
 - (b) **For unsampled forecast renewals expenditure items, a cost saving of 13% be applied to Seqwater's proposed costs.**
 - (c) **Should there be material differences between efficient actual expenditures and the Authority's approved costs, Seqwater can apply for an end-of-period adjustment to prices.**
-

5.6 Asset Management Planning Methodology

SunWater Review 2012-17

The Authority recommended that for forecasting renewals costs SunWater undertakes:

- (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 and provide a copy of the review to Government and the Authority by 30 June 2014.

The Authority further recommended that the estimate of the costs of consultation provided by SunWater (\$445,000 per annum) be incorporated in non-direct costs to cover consultation regarding both renewals and scheme-specific operating costs (and that these then be allocated to irrigators and non-irrigators on the same basis as are other non-direct costs).

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012a) had regard to the Authority's recommendations in its SunWater Final Report about the need for options analysis when forecasting renewals projects. In response, Seqwater undertook an options analysis for major projects that were scheduled to occur in the regulatory period.

Seqwater also examined major projects over the 20-year forecast period and identified projects that comprise more than 10% of the total renewals program in NPV terms.

Seqwater conducted a high-level review of such projects to determine if other options existed and whether those options would achieve the required service outcomes at lower cost.

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. comm. 8 March 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. comm. 29 November 2010; G. Coburn, pers. comm. 3 December 2010).

Asset life 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

The Authority considered that Seqwater should undertake high-level options analysis on material forecast renewals expenditures, throughout the recommended planning period, due to the potential magnitude of the impact of such expenditures on prices. Expenditure is considered 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 tariff group, 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. This is consistent with Seqwater's submitted approach.

The Authority further considered that, when forecasting renewals expenditures, Seqwater should undertake a detailed options analysis for all material items. Such analysis should include consideration of the impacts (including trade-offs) of renewals project options on operating expenditures and as noted further below, customer considerations.

For forecasting renewals expenditure over the next five-year regulatory period, the Authority considered the expenditure to be material when its forecast cost exceeds 10% of the total forecast renewals expenditure for that period, for each tariff group, in present value terms. The Authority recognised that Seqwater has undertaken much of this analysis for the purpose of preparing its NSPs, but considered that this analysis should be ongoing.

Final Report

Stakeholder Submissions

Seqwater

Method to Assess Forecast Renewal Expenditure

Seqwater (2013d) submitted that if the cost estimates for a 20-year planning period were to be assessed as reasonable instead of prudent and efficient, then the additional costs of undertaking options analyses could be avoided. Seqwater defined reasonable as the amount that reasonably reflects efficient and prudent costs based on realistic estimates and the relevant expenditure objectives. Whilst SKM allowed a 30% margin to establish prudent and efficient costs, there was no recognition of the relevant expenditure objectives.

The purpose of the renewals forecasts, along with ARR balances, is to establish the renewal annuity which is a funding mechanism for past, present and future renewals expenditure. The renewal annuity is reset each price path based on the renewals forecast for the 20-year planning period. The renewal annuity is a continuous, self-adjusting mechanism.

Given that renewals forecasts are made up to 23 years into the future, Seqwater also noted the views expressed by the Expert Panel on Energy Access Pricing in their report to the Ministerial Council on Energy (April 2006) that many of the inputs required to derive access prices, or that pertain to future outcomes, cannot be forecast with precision.

Seqwater submits there is a wide range within which a reasonable person may consider that the relevant costs and resulting prices may reside. It is Seqwater's view, therefore, that for forecasts over 20 years or so, a reasonableness test should apply. Relevant considerations include the need for the proposed renewal project (in light of available engineering evidence and risk analyses), the nature of the work proposed, and the method of forecasting costs. This requires professional judgement rather than the establishment of a quantitative measure.

This view is submitted in the context of Seqwater's whole-of-entity planning. The renewal annuity applies to irrigation only and the renewals forecasting processes are undertaken for irrigation pricing purposes only. Consequently, there are limited opportunities to take advantage of economies of scale. Seqwater's concern is that the greater the level of precision required (that is, $\pm 30\%$) rather than the potentially wider range allowed by a reasonableness test will result in higher planning costs that are not offset by the findings of the more accurate and costly approach – leading to higher irrigation costs.

Options Analysis

Seqwater (2013a, 2013b and 2013c), commissioned Cardno to provide an estimate of the costs of undertaking both the high-level options analysis and the detailed options analysis. Applying the Authority's materiality threshold of 10% or more in present value terms of total forecast renewals expenditure per tariff group, Cardno identified the material items and estimated the cost to be \$217,481 – incurred once per regulatory period (e.g. in 2015-16).

Savings equal to this cost must be produced by the options analyses, before customers benefit from Seqwater incurring the additional costs. It is not clear that the options analysis (for items up to 20 years out) will produce such savings and be cost effective for customers. For example, in Morton Vale Pipeline, when the materiality threshold was applied, four material renewal items were identified. Each item was forecast to cost less than \$20,000 but the cost of the options analysis is about \$67,000 – this is not cost effective for customers.

Other Stakeholders

QFF (2013b) submitted that Seqwater's cost forecasts to undertake options analysis are significant for the Cedar Pocket Dam, Central Brisbane River and Morton Vale Pipeline tariff groups and will significantly increase renewals costs. As renewals are around 10% of costs for most schemes it is questionable whether this analysis is necessary particularly if Seqwater reports adequately on renewals as part of the annual NSP updates. Customers and scheme advisory committees would have the opportunity to respond to the NSPs.

Authority's Analysis

Method to Assess Forecast Renewal Expenditure

In response to Seqwater's submission that forecast renewal expenditure should be assessed on the basis of reasonableness, rather than quantitative measures of prudence and efficiency, the Authority considers that the 30% range accepted by SKM is very wide and takes into account the significant uncertainty that exists in forecasting expenditure over 20 years. Moreover, reliance upon the judgement of independent external consultants does provide for the professional judgement being suggested.

The annuity may be adjusted in the future to account for changes in estimates of costs. It should, however, be forecast at least as accurately as SKM suggest. To accept a wider range would potentially require irrigators to bear the burden of greater inaccuracies.

Options Analysis

The Authority notes Seqwater's estimated cost of the options analysis for material renewal items and has compared these to the renewals annuity in each tariff group (see Table 5.20).

Table 5.20: Comparison of Options Analysis Costs and Irrigation Renewal Annuities

<i>Tariff Group</i>	<i>Annual Cost of Options Analysis</i>	<i>Irrigation Renewals Annuity</i>	<i>Cost of Analysis as a % of Renewals Annuity</i>
<u>Bulk</u>			
Cedar Pocket Dam	12,546	12,448	101
Central Brisbane River	12,546	17,037	74
Central Lockyer Valley	4,182	208,981	2
Logan River	0	38,509	0
Lower Lockyer Valley	0	167,552	0
Mary Valley	4,182	117,937	4
Warrill Valley	0	66,920	0
<u>Distribution</u>			
Morton Vale Pipeline	16,730	(20,085)	(83)
Pie Creek	4,182	65,769	6
Total	54,368	660,195	8

Source: QCA (2013).

While the Authority considers that high level options analysis and more detailed options analysis should be undertaken where the proposed renewals represent more than 10% of the NPV of total forecast renewals expenditures, the relative benefit and cost of doing so are also relevant.

The Authority notes that the annual cost of the options analysis would exceed the annuity for Cedar Pocket Dam and Morton Vale Pipeline and would add 74% to the annuity in Central Brisbane River. In these instances, a detailed options analysis is not justified, as the costs likely outweigh the benefits.

In the other three tariff groups, Central Lockyer Valley, Mary Valley and Pie Creek, where Seqwater identified a single material renewal item to review, the Authority notes that (as part of this review) it has generally reviewed the largest renewal item in each tariff group. It would seem unnecessary for Seqwater to duplicate this process by reviewing the same material item.

The Authority considers that irrigation customers – in consultation with Seqwater through advisory committees – are best placed to assist Seqwater decide whether options analysis of particular items should occur and the nature of the analysis. Less complex analysis (tailored to reflect the benefits and costs of the analysis) may suffice for smaller projects. In some circumstances, none may be required [for example, where the Authority has previously reviewed a proposed expenditure].

Accordingly, the nature of the recommended high-level and detailed options analysis must be tailored to take into account the benefits and costs associated with the proposed project. That is a decision best made by Seqwater, but in consultation with irrigation advisory committees.

The Authority would consider an application for an end-of-period adjustment to prices, to allow Seqwater to recover associated costs.

Recommendations

In forecasting renewals expenditure, Seqwater should consult with irrigators to establish whether there is a need for, and the nature of:

- (a) high-level options analysis for 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); and**
- (b) detailed options analysis for all material renewals expenditures expected to occur within the subsequent five-year regulatory period.**

The cost of any item-specific options analysis, if material, may be recovered in future prices via an application for an end-of-period adjustment.

As a result, it is not proposed to incorporate Seqwater's estimated cost for the options analysis (\$217,000) in irrigation prices for 2013-17.

5.7 Planning Period

To calculate a renewals annuity, it is necessary to determine the length of the planning period (i.e. the period from which forecast renewals expenditures are to be drawn). In setting the 2006-11 price paths, SunWater adopted a 30-year planning period.

SunWater Review 2006-11

The Authority recommended a 20-year planning period and 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 expenditure proposals.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012a) prepared renewals forecasts for 30 years to enable an informed assessment of the appropriate timeframe. Seqwater noted that a number of major projects are forecast to occur at or around 20 years in a number of schemes, and in many cases Seqwater does not have sufficient confidence that these projects will need to occur within the 20-year planning period. The probability is greater that such projects will be required in a 30 year timeframe.

On balance, Seqwater proposes a 20-year planning period (using a rolling annuity) on the basis that forecasts beyond this time become increasingly difficult and the scope for error increases substantially.

Other Stakeholders

QFF (2012) accepted Seqwater's proposed 20-year annuity period.

Other Jurisdictions

The SCARM Guidelines considered 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 refurbishments, past 30 years, can occur. In such cases, the planning period should be longer than 30 years (up to 100 years).

Victoria

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 regulatory asset base (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 intergenerational 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.

New South Wales

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 was directed to adopt a renewals approach, which intrinsically incorporates proposed forecast capital expenditure. However, the Government did not provide guidance on the appropriate length of planning period. A forward-looking approach conforms to general pricing principles. 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.

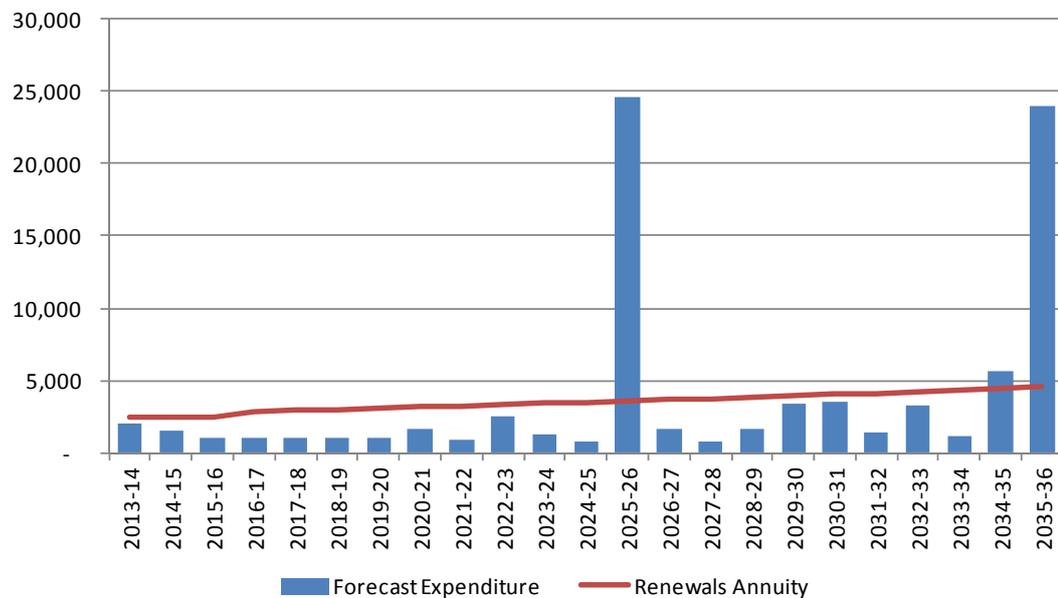
According to the SCARM Guidelines, a typical renewals annuity should include all works required to sustain existing infrastructure services, maintaining their current service potential in accordance with the requirements of customers.

Several factors are relevant to determining the appropriate length of the planning period.

Price (Renewals Annuity) Volatility

Figure 5.2 below outlines how a 23-year renewals annuity tends to smooth the effects of lumpy capital expenditure over a particular planning period.

Figure 5.2: Seqwater 23 Year Total Forecast Renewals Expenditure (Nominal \$)



Source: QCA (2012).

Price smoothing is a fundamental benefit of adopting a renewals annuity approach. 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 increases where renewals expenditures are lumpy and a relatively short planning period is adopted. While smaller assets have lives of 5-20 years, the majority of large expenditure relate to assets with 30-100 year lives (e.g. concrete channel linings, pipes, and storages).

The Authority noted, 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. The Authority was concerned that if the planning period was shortened, price volatility may become unacceptable. Such concerns have been expressed in other jurisdictions.

The Authority's analysis indicated that an unacceptable 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.

The price volatility associated with a 20-year planning period is dampened by adopting an annual rolling annuity (discussed below). Notwithstanding this, there may be a case for extending the planning period to 30 years for smoothing purposes (that is, 30 rather than 20 years 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 (2011) 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.

A rolling renewals annuity, calculated with a 20-year planning period, will recover 79% of the cost incurred during that period depending on a WSSs capital expenditure. By way of comparison, a rolling renewals annuity, calculated with a 30-year planning period, will recover 85% of the cost incurred during that period depending on the WSS.

While the difference between the 20- and 30-year periods is not material under the above scenario, the 30-year period would capture more of 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, even less of the revenue required will be recovered after 20 years. In such circumstances, 30 years is preferred based on this criterion.

Seqwater's proposed renewals expenditure profile varies significantly from scheme to scheme and over time. However, recommending different planning periods, to accommodate variable expenditure patterns, would overly increase administrative costs.

If a single period is to be chosen, it was noted that in the different expenditure profiles above, either the planning period makes no material difference to the percentage of revenue recovered over the planning period or a 20-year period may result in a portion of the required revenue not being recovered. On balance a 30-year period was 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. In this regard, the Authority noted 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.

Seqwater proposed that all renewals expenditure be recovered over the 20-year period in which it is incurred. Seqwater did 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.

Seqwater's proposed annual recalculation of the annuity or annual rolling annuity methodology mitigates this impost to some (relatively minor) extent. Nevertheless, the apparent inequity remains and is accentuated the later the expenditure is incurred. 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, Seqwater's proposed methodology means that customers in future periods receive the benefit of these long-life assets without contributing substantially to their costs in

subsequent periods. 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 (2011) advocated that a 30-year rolling annuity be retained as it would provide farmers with more information and assurance when undertaking intergenerational planning of family operations, and provide additional cost data to assess scheme and asset viability.

The Authority 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 forecast 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 Seqwater's irrigation WSSs, which incorporate a large number of 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-rata 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) adopting a 20-year planning period as proposed by Seqwater. 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 was considered more appropriate to address intergenerational equity and was therefore considered defensible on this criterion in the current circumstances.

Uncertainty

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, unit rates and their relative values can be expected to change over this period;

- (b) timing considerations – asset condition assessments are based on probabilities which require monitoring and consideration closer to the time of replacement. Consequently, Seqwater's forecasts of renewals expenditures were an indicative rather than a definitive estimate of project expenditure.

The timing of expenditures can materially impact ARR balances – and a commercial trade-off between engineering and financial considerations is required; 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 Seqwater 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 noted, however, that Seqwater 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 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 concluded that it 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.

The Authority was 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 was 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 noted 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).

Final Report

Stakeholder Submissions

Seqwater (2013a), QFF (2013b) and MBRI (2013d) agree with the Authority's recommended 20-year planning period.

Authority's Analysis

The Authority notes Seqwater's and QFF's support for the 10-year planning period and that no other submissions have been received (on this matter) in response to the Draft Report.

As the Authority has not identified any grounds to alter its approach, the conclusions and recommendations outlined in Draft Report are maintained.

Recommendations

A 20-year planning period be adopted for renewals expenditure.

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.

5.8 Consultation with Customers and Reporting

SunWater Review 2012-17

The Authority recommended that SunWater's Statement of Corporate Intent (and relevant legislation) be amended to require SunWater to consult with customers in relation to, and publish annually on its website, updated NSPs commencing prior to 30 June 2013.

The Authority also recommended that NSPs should be enhanced to present:

- (a) high level options analysis for all material renewals expenditures expected to occur over the Authority's recommended planning period;
- (b) detailed options analysis for all material renewals expenditures expected to occur within the subsequent five-year regulatory period; and
- (c) 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.

Further, the Authority recommended that SunWater should consult with irrigators on proposed renewals (and scheme specific operating costs) but should not be obliged to gain

agreement with irrigation customers as Seqwater bears the legal responsibilities and other risks associated with the renewals program.

However, within or end-of-period adjustments by the Authority would take into account whether consultation has occurred, the nature of customer comments and the quality of the consultation process undertaken.

The Authority considered that increased customer consultation and improved reporting (as proposed) will lead to improved decision making (including transparency).

The consultation process should be tailored to allow effective engagement (and reporting) wherever particular concerns are raised by stakeholders with SunWater's scheme-specific expenditure proposals. It was not possible to prescribe the nature of the process for every scheme or circumstance other than to note that it should be distinguished by transparency (including public reporting), effective communication, cost-effectiveness (including consideration of the materiality of the amounts involved) and the nature and level of stakeholder concerns.

Draft Report

Stakeholder Submissions

QFF (2012) noted that although Seqwater has evaluated potential projects against criticality and other criteria, conducted workshops with local staff and site, and inspected sites, it [Seqwater] has yet to consult with irrigators about forecast renewals expenditures.

QFF (2012) submitted that irrigators are concerned about the lack of consultation that has occurred since schemes were transferred to Seqwater in 2008-09 and consider that structured consultation will achieve scheme efficiencies. Irrigators support cost-effective consultation. To inform this decision, irrigators seek to be advised of the cost of:

- (a) Seqwater's current approach to consultation which involves operational staff informing customers of issues as they arise and responding to requests, but not formal customer committees;
- (b) annual reporting of costs to irrigators only if there are significant variations between (operating and renewals) actual expenditure and forecast expenditure; and
- (c) establishing formal advisory committees (similar to SunWater's previous approach) with quarterly meetings.

Irrigators (QCA 2012c) indicated that there was no current consultation with irrigators regarding Seqwater's expenditures on renewals. They were not sure whether further consultation would be required and were reluctant to incur further costs for that purpose in Logan River WSS. They indicated, however, that until the costs and draft prices were presented in the Authority's Draft Report it would be difficult to assess whether further consultation was justified.

Further, irrigators (QCA 2012c) submitted that communication with customers needs to be improved by Seqwater via a customer council or similar.

Warrill Valley Irrigators (QCA 2012c) suggested that instead of a full consultation program, as recommended for SunWater, a brief summary of actual costs against budget may be sufficient.

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 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

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 including:

- (a) customer service performance (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) environmental performance of utilities (e.g. water losses, greenhouse gas emissions and consumption efficiency).

The report also 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.

Authority's Analysis

The Authority recognised that Seqwater, like SunWater, has substantial data and a wealth of experience on which to plan its activities. Seqwater also has a statutory responsibility to deliver WAE and thus, as a minimum, maintain the capacity of its bulk assets.

While Seqwater has final statutory responsibility for WSSs, the Authority valued the inputs of customers to asset management planning as an indicator of its prudence and efficiency.

The Authority also noted 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.

In response to QFF and others, the Authority recommended that Seqwater strengthen its direct consultation with irrigators on actual (past) and proposed renewals expenditure.

In response to QFF's submission that further consultation (including its costs) should be considered, the Authority noted that support (by irrigators for consultation with Seqwater regarding expenditure) varies between WSS, with cost implications being the major concern.

Accordingly, the Authority considered that Seqwater, in response to the Authority's Draft Report, should submit cost estimates regarding the options identified (above) by QFF and any other options Seqwater considers to be appropriate.

The Authority did not propose to prescribe a particular form of customer consultation (for example, quarterly meetings) to be adopted in each scheme or for all schemes. Instead, consistent with its recommendations for SunWater, the Authority considered the recommended information requirements are a minimum.

This minimum may be exceeded if, on a tariff group basis, irrigators seek increased consultation (and are willing to pay the additional associated costs), however, this would need to be agreed by Seqwater as ultimately the Authority recognised Seqwater's right to make operational business decisions in this context.

To ensure adequate information and transparency for future consultation, however, the Authority did not propose to allow irrigators to negotiate a standard of consultation that is lower than the recommended minimum annual information requirements, as these are also relevant to Government policy making and economic and technical regulation.

Consistent with the initiatives in other states, the Authority recommended that Seqwater 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, as part of the Authority's (minimum) consultation requirements, Seqwater 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 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 regulatory period; and
- (b) annual updates to its NSPs detailing Seqwater'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 Seqwater's response to those comments, and its related decisions, should also be published on Seqwater's website.

While the Authority is not required under the QCA Act to directly monitor Seqwater's compliance with the conditions of its license, the Authority considered that, as a minimum, the above requirements should be incorporated into Seqwater's Strategic and Operational Plans (SOPs) and relevant legislation should be amended to enshrine such requirements.

Final Report

Stakeholder Submissions

Consultation Costs

In relation to the enhancement of NSPs, Seqwater submitted that it will enhance the NSPs to present more fulsome renewals information as per the Authority's draft recommendation. It is estimated this will cost in the order of \$24,000 annually to undertake this task for all WSS. The annual NSP reporting cost of \$24,000 should be treated as 100% irrigation cost and be allocated to each scheme on an equal share basis.

Upon consideration of Cardno's estimated costs by tariff group, Seqwater submitted that a more cost-effective approach would be to establish scheme advisory committees and for appropriate Seqwater staff to present its annually updated renewals estimates to the advisory committees for discussion.

Seqwater submitted that the cost of establishing formal advisory committees is \$25,000 annually shared by all seven WSS. This cost should be allocated to irrigators only. This cost involves the establishment, support and co-ordination of seven scheme advisory committees.

QFF (2013b) submitted that Seqwater should prepare NSPs annually and consult with customers annually. Seqwater should prepare these plans for release on the website from 1 July 2014 and update annually including customer submissions and Seqwater responses.

MBRI (2013d) submitted that asset management planning undertaken by Seqwater relates to Water Storage and Flood Mitigation primarily for the cities of Ipswich and Brisbane.

MBRI also submitted that as consultation costs money, as for other expenditure, there should be a cost-value consideration. Any consultation requirement should not become a cost burden to MBRI, irrigators or Seqwater out-of-proportion to its value. This is the first price review for Central Brisbane River WSS, so it is important to start with the right base. The Authority's recommendations may cost more than the benefit to MBRI.

Requirement to Consult

Seqwater (2013a, 2013b and 2013c) submitted that the *South East Queensland Water (Restructuring) Act 2007* provides, in section 51A, for the responsible Ministers to issue a "Statement of Obligations" to Seqwater. Section 51C provides for the inclusion of provisions about customer consultation.

A finalised Statement of Obligations, containing an explicit requirement to consult with irrigation (and other) customers, has now been issued to Seqwater. The Statement of Obligations contains a provision requiring it to be made publicly available on Seqwater's website. Seqwater therefore submits that the outcomes of this recommendation are already substantially in place. Accordingly, Seqwater will update and publish the NSPs and has advised that it will amend its Strategic and Operational Plans to achieve certainty that, at least, annual consultation with irrigators will take place throughout 2013-17.

Authority's Analysis

Consultation Costs

The Authority has considered the submitted costs for Seqwater to enhance the NSPs and establish and support irrigation advisory committees, and considers them to be reasonable. NSPs are to contain annual updates detailing Seqwater's proposed renewals (and operating)

expenditure items and accounting for significant variances between previously forecast and actual material renewals expenditures.

It is expected that the annually updated NSPs will decrease the effort required to review costs and prices during future regulatory reviews. Further, the publication of information may result in cost savings, as has been the case during this review.

In response to QFF, customer consultation is considered the most cost-effective way of ensuring that forecast costs are prudent and efficient.

The total annual cost of NSP preparation and consultation committees is about \$49,000 to be shared across all seven WSSs. This cost should be allocated only to irrigators and shared equally between each scheme. The information, transparency and face-to-face contact with Seqwater will primarily (and most likely exclusively) benefit irrigators only, as urban and industrial prices are subject to a long-term price path set by Government that is not subject to amendment via scheme consultation.

The equal allocation of the proposed direct irrigation costs, between WSSs, reflects that the efforts to prepare this information are not expected to vary materially between WSS. In WSSs where there is a distribution system, Seqwater will prepare a single NSP that covers both bulk and distribution system costs. On this basis, an annual cost of \$7,000 will be allocated to each WSS as a fixed direct bulk (operating) cost. Distribution system customers will be allocated a portion of this cost through the bulk fixed charge (Part A).

In response to MBRI, the Authority considers that the above portion of expenditure (\$7,000 per scheme per annum) relates to irrigators in each scheme and this cost is likely to be outweighed by the benefits.

Requirement to Consult

As noted above for SunWater, the Authority recommended that relevant legislation and SunWater's Statement of Corporate Intent be amended to require consultation with irrigators. In response, the Government has issued SunWater with a Section 999 direction under the *Water Act 2000*, which includes this requirement. The Authority understands that Government's view is that a requirement to consult has been imposed on SunWater under existing legislation (without amendment).

Seqwater should be treated in a manner consistent with SunWater.

The Government has now issued a Statement of Obligations to Seqwater. The Statement of Obligations explicitly requires Seqwater to consult with irrigation customers. It does not, however, specify that such consultation should occur (at least) annually. The Statement of Obligations also includes a provision that requires it to be made public.

Seqwater has advised, however, that to achieve certainty that (at least) annual consultation with irrigators will take place throughout 2013-17 [and beyond], Seqwater's Strategic and Operational Plans will be amended to make this a requirement. The Authority supports this proposal by Seqwater.

Recommendations

- (a) **Seqwater annually publish enhanced NSPs on its website by 30 September each year (starting in 2013) for each WSS comparing actual renewals (and operating) costs against forecast and account for significant variances.**
 - (b) **Seqwater establish and support irrigation advisory committees.**
 - (c) **Seqwater recover the proposed annual costs (\$49,000), associated with the NSPs and irrigation advisory committees, from irrigators only – shared equally across the seven WSSs (i.e. \$7,000 per WSS annually).**
 - (d) **After consulting on the basis of these NSPs and through the irrigation advisory committees, Seqwater should annually publish on its website any stakeholder submissions and Seqwater’s responses and decisions.**
 - (e) **As Seqwater’s Statement of Obligations now explicitly requires Seqwater to consult with irrigation customers, but does not specify that this should occur (at least) annually, Seqwater should alter its Strategic and Operational Plans immediately to achieve certainty that (at least) annual consultation with irrigators will take place in each year of the 2013-17 regulatory period.**
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5.9 Allocation of Headworks Renewals Costs

Background

Seqwater customers hold WAE specifying the reliability (or priority) of the entitlement, for example, medium or high priority WAE. The term priority group is defined under the *Water Act 2000* 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 2006b). It is therefore necessary to establish a methodology to allocate costs to these differing priority groups of WAE.

Previous Review

For the 2006-11 price paths, renewals (and all other) costs were apportioned between medium and high priority customers according to 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 2006 SunWater 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 DNRM'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.

In those schemes without ROP conversion factors, DERM's planning framework did 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 account for 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 2013-17 regulatory period).

SunWater Review 2012-17

The Authority recommended that fixed headwork renewals costs be allocated using the HUF methodology.

The 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 each ML of high priority WAE, are greater than the storage costs for each ML of medium priority WAE.

The Authority accepted 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.

The derivation and application of HUFs methodology was 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 HPA and MPA respectively. If more than two priority groups exist, water sharing rules are used to determine whether the subsequent group(s) should be classified as HPA, MPA 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:

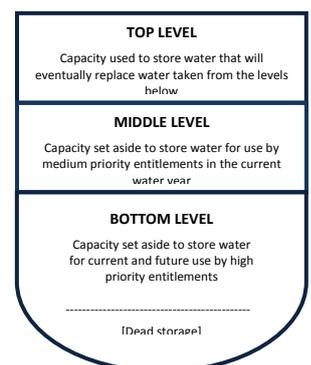
- the maximum volume of high priority water entitlements that can exist under the ROP rules (denoted HPA_{max}); and
- the volume of medium priority water entitlements corresponding to the maximum volume of high priority water entitlements (as determined in (a), denoted MPA_{min}).

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.

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:

- the capacity volume of the bottom horizontal storage layer reserved for exclusively supplying high priority water entitlements (HP_1) – the ‘bottom’ level;
- the capacity volume of the middle horizontal storage layer available for exclusive use by medium priority water entitlements (MP_1) – the ‘middle’ level; and
- the capacity volume of the top horizontal storage layer to be shared between medium and high priority entitlements – the ‘top’ level. The ‘top’ level is apportioned between medium priority (MP_2) and high priority (HP_2) entitlements according to the ratio of high and medium priority nominal volumes.



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.

Step 4 – Assess the hydrologic performance of each component of headworks storage

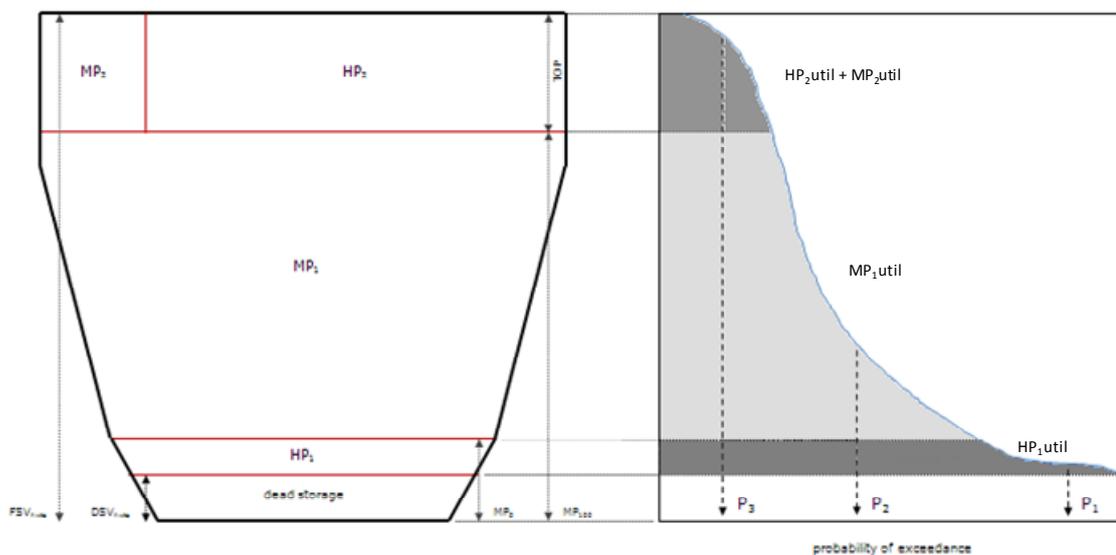
Using hydrologic models based on IQQM simulations, and, where available, recent recorded daily storage data, extract 15-year sequences of combined daily storage volumes to assess the probability of being in the bottom, middle and top horizontal layers of the dam (Figure 5.3).

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. 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 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 5.3: Assessment of Hydrologic Performance of Storage Headworks Components



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:

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

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.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater commissioned Parsons Brinckerhoff (PB) to calculate HUFs for four of Seqwater's WSSs where (material) quantities of medium and high priority (customer) WAEs exist. That is, Central Brisbane River, Logan River, Warrill Valley and Mary Valley WSSs. PB replicated the methodology approved by the Authority for SunWater.

Logan River, Warrill Valley and Mary Valley WSSs

PB found (and Seqwater submitted) that the HUF methodology was generally applicable in Logan River, Warrill Valley and Mary Valley WSSs as it reflected the general characteristics of the SunWater schemes (two priorities of customers, a storage facility and majority of medium priority WAE).

In these WSSs, however, irrigators are also largely dependent on inflows from tributaries downstream of the major storage. The ROPs allow such inflows to be included in the volumes able to be taken under medium priority WAE and require that such inflows be considered in calculating announced allocation.

PB reported, however, that including these downstream tributary inflows (in HUFs) would distort the HUF calculation, as the HUF is meant to represent the proportion of storage infrastructure dedicated to high and medium priority WAE. Inflows that occur downstream of the dam are not relevant as they are not captured by the dam. Accordingly, PB calculated HUFs by removing downstream inflows. [This reduced costs that would otherwise have been attributed to medium priority WAE who receive water from the stream inflows.]

Central Brisbane River WSS

While the application of a HUF was investigated (by PB) for the Central Brisbane River WSS, an alternative cost allocation methodology (adjusted nominal WAE) was proposed by Seqwater for this scheme.

Specifically, in Central Brisbane River WSS, the application of the HUF (by PB) resulted in an anomalous allocation of 69% of fixed bulk renewals costs to approximately 7,041 ML of medium priority (irrigation) WAE. By contrast the 279,000 ML of high priority (urban and industrial) WAEs in this WSS, were allocated some 29% of fixed bulk renewals costs. [This anomaly is most likely due to the absence in HUF, as currently defined, to account for flood mitigation capacity].

Seqwater submitted (PB's) alternative approach, which was based on the adjusted proportion of medium to high priority nominal WAE, which allocated approximately 2% of fixed bulk renewals costs to medium priority WAE.

Cedar Pocket Dam, Central Lockyer Valley and Lower Lockyer Valley WSSs

Seqwater submitted that the three remaining WSSs (Cedar Pocket Dam, Central Lockyer Valley and Lower Lockyer Valley WSSs) have only medium priority (or in effect one type of) WAE, so there is no need to assign costs between priority groups as they do not effectively exist.

More specifically, while Cedar Pocket Dam and Lower Lockyer Valley have 100% medium priority WAE, Central Lockyer Valley has 98.9% (effectively) medium priority WAE and 1.1% of high priority WAE held by Seqwater. Seqwater considers this amount of high priority WAE to be immaterial as it represents 1.1% of total WSS WAE.

Seqwater does not believe, therefore, that a HUF for Central Lockyer Valley WSS is justified on the grounds that it would not change any pricing outcomes and because the underlying water planning arrangements are yet to be set by DNRM and codified in a ROP.

Accordingly, Seqwater proposed to allocate to irrigation customers 98.9% of fixed bulk renewals costs, consistent with the portion of customer held WAE. The balance of costs (1.1%) will be allocated to the holders of the high priority WAE on the basis of WAE.

Table 5.21 outlines Seqwater's proposed bulk renewal cost allocation method and results.

Table 5.21: Seqwater's Proposed Bulk Renewal Cost Allocation

<i>Tariff Group</i>	<i>Method</i>	<i>Proposed Allocation to Medium Priority (%)</i>
Cedar Pocket Dam	None required – MP only	100
Central Brisbane River	Adjusted Ratio of MP to HP	2.1
Central Lockyer Valley	Nominal WAE %	98.9
Logan River	HUF	16
Lower Lockyer Valley	None required – MP only	100
Mary Valley	HUF	26
Warrill Valley	HUF	11

Source: Seqwater (2012aj)

Other Stakeholders

Principles of Cost Allocation

QFF (2012) sought to confirm whether particular infrastructure (Wyaralong Dam, Cedar Grove Weir and Bromelton Off-stream Storage) had been excluded from Seqwater's HUF assessment, acknowledging that they (and the additional WAE arising from them) have been excluded from Seqwater's lower bound pricing. QFF highlighted that such infrastructure are to improve the reliability of urban supply, and do not increase the nominal volume or reliability of irrigation supply.

Riverside Farming Pty Ltd (RFPL 2012) submitted that planned maintenance and renewal expenditure for the dams identified in the Seqwater submission do not relate to irrigation water supply but instead relate to safety of operations for flood control and domestic supply [and should therefore be excluded from the renewal expenditure assigned to irrigation customers in Central Brisbane River WSS].

Headworks Utilisation Factors

More broadly, QFF (2012) considered that further discussion [between customers and Seqwater] is required regarding the HUF calculations for Central Lockyer Valley, Central Brisbane River and the other schemes subject to a HUF [cost allocation] assessment, as there has been limited opportunity to scrutinise Seqwater's analysis. In particular, QFF identified the need for peer review of the HUF assessment for Central Brisbane River WSS.

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 (2010) 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 ROP conversion factors].

The new approach for setting charges was driven by State Water's view that conversion factors no longer reflect 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

Principles of Cost Allocation

Seqwater'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.

As water meters are not storage assets the HUF is not the appropriate cost allocation method for such assets. This matter is discussed below.

As a general principle, like most stakeholders, the Authority accepted 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.

The Authority also considered HUFs to be more suitable in a headworks context than ROP conversion factors which represented 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 schemes⁵.

In response to RFPL and QFF, the Authority agreed that expenditure on assets that do not confer an irrigation benefit (e.g. urban domestic supply) should not be allocated to irrigators. Consequently, the Authority examined Seqwater's renewals costs and ensured that only costs relevant to irrigation are included. Refer section 5.2 and 5.3.

Review Methodology and Findings

For the purpose of the SunWater review, the Authority commissioned Gilbert & Sutherland Pty Ltd (G&S) to conduct an independent review of the HUF methodology.

G&S (2011) assessed the HUF methodology against the following criteria: appropriateness of quantitative input data and assumptions; calculation accuracy; rigour of methodology; robustness of methodology; appropriateness of methodology; and cost-recovery performance.

G&S noted that the methodology apportions "slices" of storage to 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.

⁵ 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 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 methodology exhibits rigour in the inclusion of significant physical and WSS operational factors within the overall approach;
- (c) 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;
- (e) however, the apportionment of the ‘top layer’ of storage between medium (MP₂) and high priority (HP₂) using the ratio HP₁:MP₁ (i.e. the ratio of capacity in the bottom and middle storage layers) does not provide a robust outcome. Improved conditions for medium priority users is reflected by an increase in the utilised volume in the middle storage layer (MP₁(utilised)). Yet, due to the nature of the HUF_{mp} formula

$$HUF_{mp} = \frac{MP_{1(utilised)} + MP_{2(utilised)}}{MP_{1(utilised)} + HP_{1(utilised)} + MP_{2(utilised)} + HP_{2(utilised)}} (\%)$$

- (f) an increase in MP₁(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;
- (g) the HUF_{mp} calculation methodology 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 where 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 HP₁ and MP₁ values) leads to lower HUF_{mp} values than if minimum inflows were included; and
 - (iii) selection of the lowest calculated HUF_{mp} skews the implied measure of probability of access and does not provide an objective measure of benefit;
- (h) 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; and
- (i) 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 priorities 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 existing high and medium priority WAE 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.

Implications

The Authority accepted G&S recommendation that the top layer of storage between medium and high priority be modified to reflect the ratio of nominal volumes rather than ratio of $MP_1:HP_1$. Seqwater has calculated the HUF on this basis.

Table 5.22 below presents a comparison of the relative share of capital costs for different priority groups under the previously adopted WPCFs, Seqwater's proposed HUFs (or adjusted WAE where HUFs do not apply) and the Authority's recommended approach.

Table 5.22: Comparison of Proportions of Allocated Fixed Renewals Costs

<i>Scheme</i>	<i>Priority Group</i>	<i>SunWater 2005-06 (%)</i>	<i>Seqwater 2013-17 (%)</i>	<i>Authority 2013-17 (%)</i>
Cedar Pocket Dam WSS	Medium	100.00	100.0	100.0
Central Brisbane River WSS*	Medium	2.5	2.1	1.6
	High	97.5	97.9	98.4
Central Lockyer Valley WSS	Medium	96.5	98.9	98.9
	High	3.5	1.1	1.1
Logan River WSS	Medium	39.6	16.0	16.0
	High	60.4	84.0	84.0
Lower Lockyer Valley WSS	Medium	100.0	100.0	100.0
Mary Valley WSS	Medium	47.1	26.0	26.0
	High	52.9	74.0	74.0
Warrill Valley WSS	Medium	56.6	11.0	11.0
	High	43.4	89.0	89.0

Source: Seqwater (2012a) and PB (2012). * Note: Central Brisbane River WSS did not form part of the 2006-11 SunWater Review so nominal WAE has been substituted in the WPCF column.

Critical Water Sharing Arrangements (CWSAs)

The Authority noted 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 considered 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, 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 the 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. Accordingly, the Authority did not propose to further investigate this issue for the 2013-17 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 Chapter 7: Total Costs and Final Prices.

Water Meters

Seqwater's submitted meter replacement program is to replace irrigation meters only (that is, medium priority WAE holders). No costs associated with non-irrigation meters have been submitted by Seqwater. As the metering program is for the exclusive benefit of irrigation customers, irrigators should be allocated the full cost of irrigation meters. Conversely, no costs associated with non-irrigation meters should be recovered through irrigation prices.

The Authority considered that, in general, costs should be allocated to the party that causes the expenditure to be incurred. For water meters, each customer individually causes the

expenditure to be incurred when installing a customer's meter. To the greatest extent possible, therefore, each customer should ideally pay for their own meter-replacement, and no other customers' meters.

On this basis, the Authority considered (but does not recommend) a new charge based on each customer paying a separate, per meter, annual metering charge, designed to recover the prudent and efficient costs of Seqwater's proposed meter-replacement program (over the renewals planning period). Under such a proposal, Seqwater may have experienced additional administrative costs in establishing the number of meters per customer and introducing a new line item on irrigation water bills.

As an alternative, the Authority therefore recommended that metering costs are to be recovered in a manner consistent with other fixed costs. That is, via fixed water charges (payable on the basis of nominal irrigation customer WAE). For administrative simplicity, and to avoid price shocks, the full cost of all meters in each tariff group will be recovered over the renewals planning period. As the number of meters requiring replacement varies by tariff group, the metering costs and price impacts vary between tariff groups.

Table 5.23 (below) compares the annual per meter charges (not recommended) with the annual price impact on fixed water charges per ML of customer WAE resulting from the Authority's recommended approach.

Table 5.23: Comparison of Metering Charge Options (2012-13 Real \$)

<i>Tariff Group</i>	<i>Not Recommended Per Meter Charge (\$/annum)</i>	<i>Authority's Recommendation Annual Metering Cost (\$/ ML of irrigation WAE)</i>
<u>Bulk</u>		
Cedar Pocket Dam	312	6.92
Central Lockyer Valley	265	5.23
Logan River	155	1.70
Lower Lockyer Valley	191	2.94
Mary Valley	172	2.01
Warrill Valley	132	2.56
<u>Distribution</u>		
Morton Vale Pipeline	133	1.95
Pie Creek	144	8.80

Source: QCA (2013).

Under the recommended approach, customers with large holdings of WAE will be allocated more metering costs and customers with small holdings of WAE will be allocated less costs. This cost allocation method does not perfectly reflect the forecast per meter replacement costs to be incurred by Seqwater, which vary per meter installation but is administratively simpler than an annual per meter charge.

Conclusion

In general, the Authority proposes to accept Seqwater's proposed HUF and other methodologies (as noted below) for the allocation of bulk fixed renewals expenditure (including meters).

Logan River, Warrill Valley and Mary Valley WSSs

PB (2012) found (and Seqwater submitted) that the HUF methodology was applicable in Logan River, Warrill Valley and Mary Valley WSSs, if downstream inflows are excluded from the HUF calculation. It is noted that the modification accords with the purpose of the HUF methodology (to allocate headworks/capital costs according to benefit). In this case, Seqwater's approach also reduces costs that would otherwise have been attributed (inappropriately) to medium priority WAE.

Accordingly, the Authority recommends that Seqwater's proposed HUF methodology be adopted for Logan River, Mary Valley and Warrill Valley WSSs.

Central Brisbane River WSS

The Authority notes that PB's application of the HUF in the Central Brisbane River WSS would have resulted in a perverse outcome (that is, the allocation of 69% of costs to medium priority WAE). An alternative cost allocation method (adjusted WAE) was proposed by Seqwater, based on the 'adjusted' proportion of medium to high priority nominal WAE. This approach allocated about 2.1% of fixed bulk renewals costs to medium priority WAE.

The Authority's review of Seqwater's alternative adjusted HUF methodology found that the proposed method has taken into account only the point when MP allocations are reduced to zero. The Authority notes, however, that the Moreton ROP prescribes a range of triggers which represent a progressive reduction in MP allocations once the useable volumes in Somerset and Wivenhoe dams reach less than 50%.

Accordingly, the Authority considers that if the more detailed water sharing rules outlined in the Moreton ROP are taken into account, the allocation to irrigators would be 1.6%. Therefore, the Authority recommends that 1.6% of bulk fixed renewals expenditure be recovered from medium priority WAE in the Central Brisbane River WSS. Volume 2 refers.

Cedar Pocket Dam, Central Lockyer Valley and Lower Lockyer Valley WSSs

As the three remaining WSSs (Cedar Pocket Dam, Central Lockyer Valley and Lower Lockyer Valley WSSs) materially only have medium priority WAE, the Authority accepts there is no need to assign costs between priority groups as they do not effectively exist. A HUF is, therefore, not required for these schemes.

The Authority recommends that total efficient fixed bulk renewals costs be recovered from the medium priority WAE issued for these WSSs (as the WAE represents the share of capacity allocated to these customers). Accordingly, the Authority recommends the adoption of Seqwater's proposed allocations of costs, including 100% to medium priority WAE in Cedar Pocket Dam and Lower Lockyer Valley WSSs, and 98.9% to irrigation customers in Central Lockyer Valley WSS).

Final Report

Stakeholder Submissions

Seqwater (2013a) and QFF (2013b) agree with the Authority's draft recommendations on renewals cost allocation for each of the nine tariff groups.

MBRI (2013a) and other irrigators from Central Brisbane River WSS have raised a number of scheme specific issues which are addressed in Volume 2.

Authority's Analysis

The Authority notes that Seqwater (2013a) and QFF (2013b) support its draft recommendations on the allocation of renewals costs.

As the Authority has not identified any grounds to alter its approach, the conclusions and recommendations outlined in Draft Report are maintained. Further details on the Central Brisbane River WSS are provided in the Volume 2 scheme-specific report.

Summary

Table 5.24 outlines the Authority's recommended (non-metering) bulk renewal cost allocation method and results for each of the bulk WSSs.

Table 5.24: Recommended (non-metering) Bulk Renewal Cost Allocation

<i>Tariff Group</i>	<i>Method</i>	<i>Proposed Allocation to Medium Priority (%)</i>
Cedar Pocket Dam	None required – MP only	100
Central Brisbane River	Adjusted Ratio of MP to HP	1.6
Central Lockyer Valley	Nominal WAE %	98.9
Logan River	HUF	16
Lower Lockyer Valley	None required – MP only	100
Mary Valley	HUF	26
Warrill Valley	HUF	11

Source: Seqwater (2012a).

Recommendations

Consistent with Table 5.24, fixed bulk (non-metering) renewals costs be allocated using:

- (a) the HUFs as submitted by Seqwater for Logan River, Mary Valley and Warrill Valley WSSs;**
- (b) the Authority’s adjusted medium priority WAE in Central Brisbane River WSS; and**
- (c) medium priority WAE for Cedar Pocket Dam, Central Lockyer Valley and Lower Lockyer Valley WSSs.**

The prudent and efficient irrigation metering costs forecast for each tariff group (over the Authority’s recommended renewals planning period) be recovered exclusively from irrigation customers in that tariff group via the renewals annuity. Such costs should be allocated on the basis of irrigation customer nominal WAE.

5.10 Allocation of Distribution System Renewals Costs

The Authority noted above that, during the previous price setting process, there was agreement, that high priority WAEs be converted to medium priority equivalent volumes of WAEs for the allocation of all bulk and distribution system costs.

Tier 1 (SunWater 2006a) agreed that WPCFs used for this purpose should be reviewed. The result of this review was the proposed HUF methodology for application to the bulk schemes.

SunWater Review 2012-17

The Authority recommended the adoption of nominal WAE to allocate fixed distribution system renewals costs between priority groups. Further, the Authority recommended that, after the Authority’s review, SunWater should commence a review of the most appropriate

means for allocating fixed renewals costs in distribution systems for consideration by the Authority prior to 30 June 2014.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater submitted that renewal costs be allocated based on nominal WAEs in distribution systems. However, in the Morton Vale Pipeline, Seqwater submitted that tariffs are to be based on contracted volumes (3,470 ML) rather than the maximum WAE indicated in the IROL (3,507 ML), on the basis that Seqwater holds the additional 37 WAEs.

Table 5.25 below presents a comparison of the relative share of renewals costs for different priority groups under the previously adopted WPCF and the recommended WAEs.

Table 5.25: Comparison of 2006-11 Conversion Factors and Seqwater’s Recommended Allocation of Fixed Distribution Renewals Expenditure by WAE

<i>Scheme</i>	<i>Priority Group</i>	<i>WPCF (%)</i>	<i>Proposed allocation for medium priority WAE (%)</i>
Morton Vale Pipeline	Medium	100	100.0
Pie Creek	Medium	100	100.0

Source: Seqwater (2012a) and PB (2012).

Authority’s Analysis

In response to Seqwater’s submission to allocate Morton Vale Pipeline costs on the basis of contracted volumes, not the volume specified in the relevant water planning instrument, the Authority proposed to remain consistent with the findings of the SunWater Review to allocate costs to each ML of WAE.

As Seqwater own the WAE, and could (subject to the ROP amendment occurring – recommended in Chapter 3) sell the WAE, Seqwater should be allocated the costs of holding it. Alternatively, Seqwater could sell the WAE to an existing customer on the Morton Vale Pipeline. Seqwater should be provided with incentives to make this water available to customers, and customers should not be allocated these costs without receiving the benefit of increased reliability that additional WAE would derive. That is, costs were allocated on the basis of total WAE (not contracted WAE) to ensure that Seqwater bears the holding costs of its WAE. Seqwater will be responsible for the cost of its 37 ML of nominal WAE.

Consistent with the Authority’s approach to allocating headworks renewal expenditure (above), and with the Authority’s SunWater recommendations, the Authority considered that distribution system costs should be allocated according to their relevant cost drivers.

In principle, the Authority considered 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 DNRM’s regulatory framework nor Seqwater’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 noted 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 current WAE (in the absence of original WAE) to be the most appropriate cost allocator.

The Authority considered three options below, each of which is based on current WAE.

Options

WAE

This approach allocates renewals on the basis of 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.

Although high priority WAE has greater reliability, this is derived from a greater share of storage capacity rather than distribution capacity.

ROP Conversion Factors

ROP conversion factors represent the ratio at which DNRM 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 developed conversion rates where there was demand for conversions, using appropriate hydrological data. These factors do not exist in either the Central Lockyer Valley (Morton Vale Pipeline) or Mary Valley (Pie Creek).

Therefore, the Authority considered that using ROP conversion factors is not practicable for Seqwater.

Water Pricing Conversion Factors

Where ROP conversion factors are not available, WPCFs may serve. 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 and do not accurately reflect customers' share of distribution capacity. Moreover, they are confidential.

Conclusion

The Authority recognises that Seqwater's distribution systems only have medium priority customers. Therefore, costs do not need to be allocated between customer priority groups.

In principle, the Authority considers that WAE is the only currently available estimate of customers' share of distribution system capacity. Establishing the most appropriate means for allocating such costs would require substantial analysis and can be expected to require considerable resourcing and consultation if it is to be effective. The Authority recommended that SunWater conduct such a review by 30 June 2014, for its distribution systems.

The Authority considers that fixed distribution system charges should remain with customers if they convert to high priority. To remove a potentially perverse incentive for such conversions, the Authority recommends that the quantum of fixed costs (allocated on the basis of current WAEs) 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.

However, the Authority recommends that, at the conclusion of the review recommended for SunWater, Seqwater should, for subsequent regulatory periods, adopt any relevant outcomes.

Final Report

Stakeholder Submissions

Seqwater (2013a) concurs with the draft recommendation that nominal WAE be used for the allocation of fixed distribution system costs between priority groups.

Seqwater will review the outcome of the SunWater review with a view to applying the findings to the extent that they are relevant and practicable.

Authority's Analysis

The Authority notes Seqwater's support for the draft recommendation and that no other submissions on this matter were received in response to the Draft Report.

As the Authority has not identified any grounds to alter its approach, the conclusions and recommendations outlined in Draft Report are maintained.

Recommendations

Nominal WAE be used for the allocation of fixed distribution system costs between priority groups. Fixed distribution system charges should remain with customers if they convert between priority groups.

At the conclusion of the review into the allocation of fixed renewals costs in distribution systems recommended by the Authority for SunWater, Seqwater should, for subsequent regulatory periods, adopt the relevant outcomes.

5.11 Calculating the Renewals Annuity

5.11.1 Indexed or constant (non-indexed) Annuity

SunWater Review 2012-17

The Authority recommended that an indexed annuity be calculated (rather than a non-indexed annuity) as these are typically preferred for reasons of intergenerational equity and economic efficiency.

The Authority recommended 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.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater has proposed to escalate direct labour, materials and contractors costs at 4% per annum for 2013-17 and forecast inflation (2.5%) thereafter for the rest of the planning period.

Seqwater has calculated renewals annuities in accordance with the approach accepted by the Authority in its SunWater Final Report.

Other Stakeholders

QFF (2012) questioned whether it is appropriate to adopt the escalation rates adopted for SunWater (that is, 4% on direct labour, materials and contractors) for 2013-17 and 2.5% thereafter).

Authority's Analysis

An annuity converts a series of future uneven annual expenditures into either a constant annual charge or an indexed annual charge.

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 forecast 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 noted that:

- (a) a 20-year constant 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 annuity would generate, on average, 16.8% more revenue during the same period.

In principle, the Authority recommended the use of 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.

For this purpose, the Authority assumed a renewals cost escalation rate of 4% for 2013-17. This rate was consistent with the Authority's Draft Report 4% escalation rate for materials; however, for the labour and contractors, it exceeds the Authority's estimate of 3.6%.

For the Draft Report, however, the Authority did not have a precise breakdown of the renewals cost components (e.g. materials, labour, contractors and other) and therefore adopted 4% for all renewals costs. The Authority noted also that on average, renewals costs comprise approximately 11% of total irrigation costs, making this decision relatively immaterial (compared with operating costs, which account for approximately 89% of costs).

The Authority concluded that, for the purpose of estimating future renewals costs, that the cost escalation factor for renewals costs, beyond 2017, should be the general inflation rate of 2.5% per annum (i.e. applied to the balance of the Authority's recommended 20-year planning period).

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.

The Authority recommended that renewal annuities be calculated in real terms using a real discount rate that is then indexed over the price path by the inflation rate. This is equivalent to generating a constant growth-rate annuity in nominal terms where the growth rate is the general rate of inflation.

Final Report

Stakeholder Submissions

Seqwater (2013a) and MBRI (2013d) agree with the Authority's approach outlined in the Draft Report.

Authority's Analysis

Chapter 6: Operating Expenditures of this report addresses cost escalation. The Authority recommends that labour be escalated by 3.6% for the 2013-17 regulatory period, consistent with the Draft Report approach.

The Authority notes Seqwater and MBRI support for the draft recommendation and that no other submissions on this matter were received in response to the Draft Report.

As the Authority has not identified any grounds to alter its approach, the conclusions and recommendations outlined in Draft Report are maintained.

Recommendations

Seqwater calculates its renewals annuities indexed annually by the general rate of inflation.

For the purpose of calculating renewals annuities, prudent and efficient renewals expenditure be escalated by:

- (a) 4% per annum over the regulatory period (2013-17); and**
 - (b) 2.5% per annum thereafter for the recommended renewals planning period.**
-

5.11.2 Frequency of Recalculation

SunWater Review 2012-17

The Authority recommended renewals annuities be calculated using an indexed, annual rolling approach.

Draft Report

Stakeholder Submissions

Seqwater (2012a) proposed an annual rolling annuity, that is, the renewals annuity for each WSS would be recalculated each year of the price path.

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:

- (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 noted that Seqwater proposed a rolling annuity that is recalculated each year of the 2013-17 regulatory period, rather than being recalculated every three or five years.

Adoption of a four-year rolling annuity (that is, recalculate the annuity only every four years) would be administratively simpler and more transparent to customers and hence easier to review.

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 recommended that Seqwater's proposed approach be adopted.

Final Report

Stakeholder Submissions

Seqwater (2013a) concurs with the draft recommendations.

MBRI (2013d) does not accept the annual rolling annuity calculations. On its own admission the Authority indicates a four-year rolling annuity is more transparent. A small, voluntary, community-based irrigation association does not have the resources to review the annuities and would prefer a more transparent approach.

Authority's Analysis

The Authority notes Seqwater's support for the draft recommendation.

In response to MBRI, the Authority has recommended an annuity for each year of the regulatory period. There will be no review of the annuity during the regulatory period. The Authority sets out the annuity for each year transparently, which does not require annual revisions by stakeholders. Irrigators can (by their own choosing) remain informed through the recommended annual NSPs and advisory committees.

As the Authority has not identified any grounds to alter its approach, the conclusions and recommendations outlined in Draft Report are maintained.

Recommendation

Seqwater's annual rolling annuity calculation be applied.

5.11.3 Recommended Renewals Annuities for 2013-17

Draft Report

Based on the findings in this chapter, the Authority calculated recommended renewals annuities for each of the WSSs, as summarised in Table 5.26.

Table 5.26: Authority's Draft Recommended Renewals Annuities for 2013-17 (Nominal \$) – All Sectors

<i>Tariff Group</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
<u>Bulk</u>				
Cedar Pocket Dam	12,448	12,298	12,149	12,003
Central Brisbane River	1,064,840	1,052,713	1,140,142	1,590,977
Central Lockyer Valley	210,327	213,059	213,312	213,007
Logan River	113,309	115,203	114,274	113,367
Lower Lockyer Valley	167,552	168,030	166,661	165,693
Mary Valley	342,990	339,556	340,186	339,255
Warrill Valley	161,065	166,241	167,487	166,480
<u>Distribution</u>				
Morton Vale Pipeline	(20,085)	(19,714)	(19,344)	(18,975)
Pie Creek	65,769	65,805	65,142	64,490

Source: QCA (2012).

The portion of the all sectors renewal annuities allocated to medium priority (irrigation) WAE is presented below. Refer Table 5.27.

Table 5.27: Authority's Draft Recommended Renewals Annuities for 2013-17 (Nominal \$) – Irrigation Only

<i>Tariff Group</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
<u>Bulk</u>				
Cedar Pocket Dam	12,448	12,298	12,149	12,003
Central Brisbane River	17,037	16,843	18,242	25,456
Central Lockyer Valley	208,981	211,687	211,941	211,644
Logan River	38,509	38,944	38,936	38,940
Lower Lockyer Valley	167,552	168,030	166,661	165,693
Mary Valley	117,937	117,221	117,573	117,530
Warrill Valley	66,920	67,755	68,176	68,369
<u>Distribution</u>				
Morton Vale Pipeline	(20,085)	(19,714)	(19,344)	(18,975)
Pie Creek	65,769	65,805	65,142	64,490

Source: QCA (2012).

Final Report

Stakeholder Submissions

Seqwater (2013a) does not support the recommended annuities, on the basis that the Authority did not apply the correct reduction to unsampled renewal expenditures. [This refers to the inclusion of the ground water observation bores finding in the average 13% cost saving applied to unsampled forecast renewals expenditures.]

Authority's Analysis

The Authority has earlier responded to Seqwater's submission on this matter and has not recommended a change to the unsampled cost reduction.

The Authority has updated the discount rate (refer WACC Appendix) applied to calculate the renewal annuities based on updated parameters that have led to minor changes in the annuities. Tables 5.28 and 5.29 refer.

Based on the findings in this chapter, the Authority calculated recommended renewals annuities for each of the WSSs, as summarised in Table 5.28 and 5.29.

Recommendation

The proposed all sectors and irrigation renewals annuities be adopted as presented in Table 5.28 and 5.29, respectively.

Table 5.28: Final Recommended Renewals Annuities for 2013-17 (Nominal \$) – All Sectors

<i>Tariff Group</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
<u>Bulk</u>				
Cedar Pocket Dam	12,446	12,311	12,178	12,046
Central Brisbane River	1,051,766	1,041,078	1,126,587	1,563,433
Central Lockyer Valley	211,440	214,498	214,905	214,772
Logan River	117,143	119,026	118,183	117,361
Lower Lockyer Valley	169,043	169,629	168,429	167,614
Mary Valley	352,031	348,901	349,693	348,975
Warrill Valley	162,986	168,103	169,426	168,572
<u>Distribution</u>				
Morton Vale Pipeline	(21,011)	(20,659)	(20,307)	(19,956)
Pie Creek	65,859	65,947	65,360	64,783

Source: QCA (2013).

The portion of the all sectors annuities allocated to medium priority irrigation WAE is presented below in Table 5.29 and in Chapter 7: Total Costs and Final Prices.

Table 5.29: Final Recommended Renewals Annuities for 2013-17 (Nominal \$) – Irrigation Only

<i>Tariff Group</i>	<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
<u>Bulk</u>				
Cedar Pocket Dam	12,446	12,311	12,178	12,046
Central Brisbane River	7,404	7,329	7,931	11,007
Central Lockyer Valley	210,094	213,122	213,530	213,403
Logan River	39,391	39,835	39,850	39,877
Lower Lockyer Valley	169,043	169,629	168,429	167,614
Mary Valley	120,660	120,037	120,445	120,471
Warrill Valley	66,179	66,961	67,401	67,652
<u>Distribution</u>				
Morton Vale Pipeline	(21,011)	(20,659)	(20,307)	(19,956)
Pie Creek	65,859	65,947	65,360	64,873

Source: QCA (2013).

6. OPERATING EXPENDITURES

The Authority was directed to recommend a revenue stream to recover efficient operational, maintenance and administrative costs to ensure the continuing delivery of water services.

The Authority sampled \$6.6 million (or 55%) of Seqwater's (April 2012) \$12.06 million of all sectors forecast direct operating expenditure. The Authority's Draft Report reduced these total operating costs by \$0.9 million (or 7.5%). Subsequently, the Authority has further reduced direct operating costs by \$74,000.

For 2013-14, regulated electricity costs now reflect the Authority's Draft Determination for Regulated Retail Electricity Prices; and for unregulated electricity costs, either 2.5% or contracted increases apply. In Central Brisbane River WSS, Seqwater reduced electricity costs by \$0.1 million (or 40%) by obtaining an unregulated contract, resulting in a net reduction in all sectors electricity costs of about \$0.1 million since the Draft Report.

Therefore, Seqwater's annual total direct operating costs (2012-13) are to be reduced to \$11.1 million (8% less than originally submitted). This is below Seqwater's revised November total direct operating costs of \$11.7 million.

In November 2012, Seqwater resubmitted all sectors non-direct costs of \$9.5 million for 2012-13 (down 14.4% from \$11.1 million submitted in April 2012). As this reduction reflects a Government decision, the Authority accepts Seqwater's lower amount, but has excluded costs that do not relate to irrigation (\$2.4 million). In addition, non-direct costs allocated to irrigation schemes are further reduced to reflect the lower recommended direct operating costs (above) – further reducing all sectors non-direct costs by \$0.4 million.

Therefore, Seqwater's annual total non-direct operating costs (2012-13) are to be reduced to \$6.7 million (40% less than originally submitted). This is below Seqwater's revised November total non-direct operating costs of \$9.5 million.

The Authority has also applied a general productivity gain of 1.5% annually for 2013-17 to direct and non-direct costs, applied cumulatively to reflect expected, achievable, ongoing savings.

In summary, the Authority recommends total operating costs of \$17.8 million, compared with the \$23.2 million originally submitted for 2012-13 (a 23% overall reduction).

The Authority recommends that non-direct costs be allocated to irrigation tariff groups using total direct operating costs (TDC) (excluding variable electricity costs) as the cost allocation base (CAB). The Authority also recommends that for bulk WSSs (except Central Brisbane River WSS), all fixed repairs and maintenance costs and 50% of fixed operations costs should be allocated between priority groups using HUFs (or adjusted WAE where HUFs do not apply) and the other 50% of operations costs be allocated using current nominal WAE.

The Authority recommends that for the regulatory period: total labour and contractors be escalated at 3.6% per annum, materials at 4% per annum, and electricity (generally) and other non-direct and direct costs should be escalated at 2.5% per annum. If costs increase materially above forecast, consideration may be given to an end-of-period adjustment only.

Consultation with irrigators should also be required in relation to forecast operating costs with explanations of significant variations between actual and forecast items.

6.1 Background

Draft Report

Ministerial Direction

The Ministerial Direction requires the Authority to recommend a revenue stream that allows Seqwater to recover efficient operational, maintenance and administrative (non-direct) costs to ensure the continuing delivery of water services.

The Authority must have regard to the level of service [standard of service] provided by Seqwater and for Seqwater's legitimate commercial interests.

Seqwater's Total Operating Costs

In 2012, as part of the Authority's review of bulk water GSCs, Seqwater identified total 2012-13 operating costs of \$285.5 million, including \$235.6 million of fixed operating costs and \$39.3 million of variable operating costs. These related to all services provided by Seqwater (including the seven WSSs currently under review). Table 6.1 refers.

Table 6.1: Seqwater's Total Operating Costs 2012-13 (Nominal \$)

<i>GSC Costs Component</i>	<i>Seqwater Submission Bulk Review 2012-13</i>	<i>QCA Bulk Final Report 2012-13</i>	<i>Bulk Costs Approved by Minister</i>	<i>Seqwater's Total Operating Costs Submitted in November 2012</i>
Operating Costs				
– Fixed Operating Costs	235,573,063	232,990,919	226,483,696	219,159,878
– Efficiency Target	n.a.	(5,889,327)	(6,794,511)	n.a.
– Variable Operating Costs	39,344.628	39,414,648	39,414,648	35,150,466
– QWC Levy	10,587,225	10,726,962	3,839,737	5,066,000
– Flood Legal Costs	n.a.	n.a.	n.a.	2,771,371
Sub-Total	285,504,916	277,243,202	262,943,570	262,147,715
Capital Costs	n.a.	428,039,794	427,522,812	n.a.
Revenue Offset	(4,497,590)	(4,692,590)	(4,887,000)	n.a.
Total Costs	n.a.	700,590,406	685,579,382	n.a.

Source: QCA (2012).

In July 2012, as part of its bulk GSC review for 2012-13 costs, the Authority recommended total operating costs of \$277.2 million (a \$8.3 million reduction to Seqwater's submission).

In August 2012, Government reduced this by a further \$14.3 million to \$262.9 million by:

- (a) reducing the QWC Levy by \$6.9 million (from \$10.7 million to \$3.8 million);
- (b) removing 62.5 FTE employees, saving \$6.5 million; and
- (c) increasing the Authority's efficiency target by \$0.9 million (from 2.5% to 3.0%).

Since the Draft Report, on 1 January 2013, Seqwater, LinkWater and the SEQ WGM merged. No further adjustments to the Authority's estimates of costs have resulted, largely as the major cost savings (above) were reflected in Seqwater's November 2012 revised costs (see the section further below on non-direct operating costs).

Issues for 2013-17 Review

Operating expenditure issues for consideration in the 2013-17 review include:

- (a) reconciliation with Seqwater's bulk urban and industrial costs;
- (b) consideration of 2006-11 operating costs;
- (c) Seqwater's direct operating expenditure forecasting methodology;
- (d) the prudence and efficiency of Seqwater's proposed operating expenditures;
- (e) appropriate allocation of non-direct operating costs to irrigation tariff groups;
- (f) the appropriate method/s of cost allocation;
- (g) the most suitable cost escalation rates; and
- (h) opportunities to improve Seqwater's budgeting and consultation with irrigators.

Previous Review 2006-11

The 2006-11 price paths were recommended by SunWater after consultation with irrigators during 2005-06. The Queensland Government subsequently approved those prices.

SunWater operated the schemes to 30 June 2008, when Seqwater assumed responsibility. Available forecast and actual total operating costs (all sectors) is presented in Table 6.2.

Table 6.2: Actual and Forecast Total Operating Expenditure 2006-11 (Nominal \$)

	2006-07	2007-08	2008-09	2009-10	2010-11
Forecast	4,386,688	4,518,465	5,001,936	4,564,307	4,321,916
Actual	5,002,028	6,747,825	n.a.	n.a.	n.a.

Source: SunWater (2006b, Seqwater (2012s) and Seqwater (2012ba).

Seqwater did not provide actual total operating costs for 2008-11. The Authority notes that 2006-11 data excludes the Central Brisbane River WSS as irrigation charges did not apply.

Irrigation Water Supply Scheme Review 2013-17

2012-13

In November, Seqwater's proposed \$262.1 million total operating costs (2012-13), of which \$167.3 million (64%) were direct and \$94.9 million (36%) were non-direct operating costs.

Direct Operating Costs

Of Seqwater's proposed total direct operating costs of \$167.3 million for all services, \$11.7 million were allocated to all customers in the seven schemes relevant to the current

review. The Central Brisbane River WSS accounts for 69% of these costs, however, irrigators in this scheme pay approximately 1.6% (refer to Volume 2 scheme report).

Non-Direct Operating Costs

Of Seqwater's total non-direct operating costs of \$86.0 million, \$9.5 million was attributed to the seven schemes. Central Brisbane River WSS accounted for 74% of the non-direct operating costs allocated to these schemes; however, irrigators in this scheme will pay approximately 1.6% (refer to Volume 2 scheme report).

Total Operating Costs

In summary, of Seqwater's proposed total operating costs of \$262.1 million, \$21.2 million (about 8%) was allocated to all customers (all sectors) in the seven schemes under review.

In April 2012, Seqwater estimated that up to \$5.2 million of total operating costs could be recouped from irrigators in 2012-13 if cost-reflective charges applied. In November 2012, Seqwater revised this figure to \$4.2 million, which would be paid by irrigators, if cost-reflective irrigation charges applied. Price paths will lower the amount.

2013-2017

Seqwater's total forecast operating costs for 2013-17 appear in Figure 6.1 below.

For comparative purposes forecast costs are typically contrasted with past forecasts and actual (not all currently available).

However, Seqwater (2012a) submitted that the 2006-11 total forecast operating costs are not relevant to determine the prudence and efficiency of Seqwater's forecast operating costs for 2013-17, as they were developed more than six years ago under different operating conditions by SunWater (in a manner suitable for SunWater and the regulatory regime at the time).

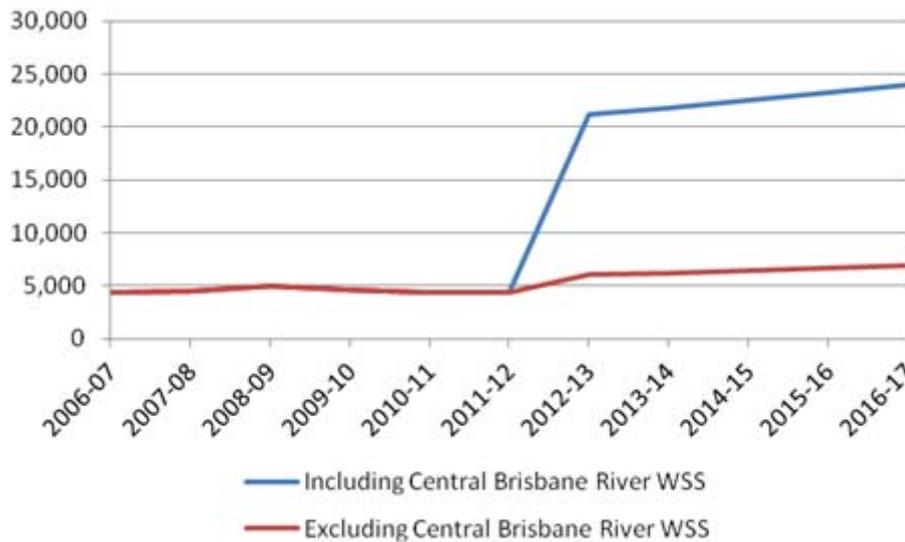
Seqwater argued that, while comparisons with 2006-11 costs may be of interest where data is disaggregated, there is little value in attempting to explain departures from the 2006-11 data, as Seqwater provided no input to these forecasts and did not have the financial systems to gather and report against them due to its acquisition of the WSSs in July 2008.

Moreover, Seqwater considered that 2006-11 forecast operating costs are not directly comparable to Seqwater's 2008-11 actual or 2013-17 forecasts costs, because they:

- (a) apply a 2005-06 productivity adjustment to proposed lower bound costs, but do not identify the adjustment applicable to operating expenditure; and
- (b) do not reflect the current tariff groups (e.g. Cedar Pocket Dam and Pie Creek forecast costs for 2006-11 were bundled with Mary Valley WSS costs).

The Authority also noted that forecasts for 2006-11 do not include revenues from Central Brisbane River WSS.

A portion of the costs were adjusted by the Authority to reflect the division, in 2008, of the former Mary Valley WSS into SunWater's current Lower Mary Valley WSS and Seqwater's current [Upper] Mary Valley WSS.

Figure 6.1: Forecast Total Operating Expenditures (\$'000 Nominal)

Source: SunWater (2006b, Seqwater (2012s) and Seqwater (2012ba).

The Authority accepted that comparisons between past (2006-11) and forecast total operating costs were inappropriate in these circumstances. The basis for the Authority's assessment of the prudence and efficiency of Seqwater's operating costs is addressed further below.

Operating Cost Characteristics

Operating activities

Seqwater (2012a) advised that its operating activities include:

- (a) scheduling and releasing bulk water from storages, surveillance of water levels and flow rates in water courses and quarterly meter reading;
- (b) customer service and account management;
- (c) operating and maintaining recreational facilities; and
- (d) complying with requirements of relevant IROLs, ROLs and ROPs; dam safety obligations including under the *Water Act 2000*; the *Environmental Protection Act 1994*; and land management, WHS and other reporting obligations.

Operating cost classifications

Seqwater defined its operating costs as either direct or non-direct. Direct costs are those directly attributed to particular schemes, whereas non-direct costs are those common to a number of schemes, which need to be allocated using an appropriate cost allocator.

Direct costs by activity

The direct costs by activity include:

- (a) operations relating to the day-to-day costs of delivering water and meeting compliance obligations. Operations activities include:

- (i) dam operations – managing dams and weirs. It is the largest direct cost category and activities include providing information and services to customers, monitoring water flows, meeting regulatory requirements for compliance, safety, and flood management, and developing system operating plans for infrastructure. These costs primarily reflect dam size, with the Central Brisbane River WSS being the most significant; and
 - (ii) group support and catchment management – delivering catchment maintenance services (including recreation areas) for operational assets. Activities include implementation of asset management plans and meeting compliance obligations (recreation services, public safety, catchment conservation);
- (b) repairs and maintenance – maintaining assets that support irrigation water supply including: scheduled maintenance generated by the CIS, planned maintenance comprising scheduled inspections and strategic maintenance, and reactive maintenance resulting from unplanned breakdowns.

Seqwater has set a target ratio of 71:29 planned to unplanned maintenance in 2012-13, and this ratio has been applied for the forecast period. In this context, ‘planned’ maintenance includes scheduled and planned maintenance activities.

Contractors deliver most maintenance activities and are generally selected from Seqwater’s panel of providers and supervised by Seqwater staff. Seqwater currently employs 49 full-time contractors plus ad-hoc contractors depending on workload; and

- (c) other direct costs including local government rates payable on Seqwater’s land including storages, and detailed dam safety inspections conducted five-yearly, plus annual dam safety inspections (included in operations expenditure).

Direct costs by type

Seqwater also disaggregated its direct operations costs into the following cost types: labour, contractors and materials, and other, as follows:

- (a) labour costs are the direct labour costs arising from budgeted operations activities for 2012-13 (base year). Total irrigation direct labour (for Seqwater employees) has been submitted under the category ‘direct operations costs’. However, in practice a small proportion of this ‘operations’ labour will be used for maintenance activities;
- (b) contractors and materials costs are based on the quantities required in the work instructions for 2012-13; and
- (c) other direct operations costs include plant and fleet hire, water quality monitoring and fixed energy costs.

Non-direct costs

Non-direct costs are common costs associated with the provision of corporate and other business services which are not directly attributable to the operations and management of a specific scheme or tariff group.

Seqwater categorised its non-direct operations costs as follows:

- (a) water delivery costs include a non-direct portion of costs associated with dam operations, infrastructure maintenance, environmental management and recreation and catchment maintenance services. A portion of these costs relate to central administration and coordination which are not directly allocated to tariff groups;

- (b) asset delivery costs associated with project planning and managing the delivery of projects [where not capitalised into renewals expenditure];
- (c) corporate costs included business services, organisational development and the office of the CEO. These include costs associated with the provision of ICT, finance, procurement, legal and risk, governance and compliance activities; and
- (d) other costs which included the Creek Street facilities and flood control centres.

Seqwater categorised its other non-direct operating costs as follows:

- (a) non-infrastructure assets costs are the non-direct costs associated with the use of non-infrastructure assets such as buildings, plant and equipment. Seqwater uses aggregate depreciation costs as a proxy for the costs associated with the use of these assets;
- (b) insurance premium costs are associated with machinery breakdown, public liability, professional indemnity, contract works and directors and officers insurance; and
- (c) working capital is an allowance to provide for the economic cost arising from the timing difference between accounts receivable and accounts payable.

Forecast Operating Costs 2012-17

Seqwater's forecast operating costs were developed based on a zero-based budgeting approach, which focussed on the 2012-13 (base year). While Seqwater had limited regard for 2006-11 expenditures in preparing its forecasts, it did conduct some variance analysis on more recent years. That is, Seqwater compared its zero-based 2012-13 budget with available direct operating cost data for the period 2010-12.

Seqwater's estimate of total forecast operating costs for all sectors (urban, industrial and irrigation), for the nine Seqwater irrigation tariff groups, for the base year 2012-13, is presented in Table 6.3. Seqwater used these costs as the basis for 2013-17 forecast costs.

Table 6.3: Seqwater's Forecast Operating Costs for the 2012-13 Base Year (Nominal \$)

<i>Cost</i>	<i>April 2012 NSP</i>	<i>November NSP</i>	<i>Variance</i>
Direct Operating Costs			
<i>Operations</i>			
Labour	4,629,632	4,402,311	(227,321)
Contractors	794,400	763,357	(31,043)
Materials	562,400	550,424	(11,976)
Electricity	450,967	462,614	11,647
Other	1,530,738	1,445,955	(84,783)
Sub-Total	7,968,136	7,624,659	(343,477)
<i>Repairs and Maintenance</i>			
Planned	2,310,716	2,271,037	(39,679)
Unplanned	943,814	927,607	(16,207)
Sub-Total	3,254,530	3,198,643	(55,886)
Dam Safety	0	0	0
Rates	836,066	836,066	0
Total Direct Operating Costs	12,058,731	11,659,368	(399,363)
Non Direct Operating Costs			
Water Delivery	1,202,079	1,113,755	(88,324)
Asset Delivery	536,663	548,611	11,948
Corporate	4,294,796	3,439,130	(855,666)
Flood Control Centres/Other	2,997,069	2,475,195	(521,874)
Sub-Total	9,030,607	7,576,692	(1,453,915)
Non-Infrastructure Asset	534,751	533,269	(1,483)
Insurance	1,377,043	1,218,711	(158,332)
Working Capital	194,839	194,839	0
Total Non-Direct Operating Costs	11,137,240	9,523,511	(1,613,729)
Total Operating Costs	23,195,971	21,182,879	(2,013,092)

Source: Seqwater (2012a), Seqwater (2012aj) and Seqwater (2012bb).

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Stakeholder Submissions

Seqwater

Budget Process 2012-13

Seqwater (2012s) advised that the basis for Seqwater's aggregate operating cost forecasts was a zero-based budget for 2012-13 as the base year.

Seqwater submitted that there is limited value in attempting to explain forecast 2013-17 cost variances from 2006-11 data, as the costs developed in 2005-06 are out of date. Seqwater provided no input to the 2006-11 forecasts. SunWater was responsible for actual costs from 2006-08 and Seqwater did not have the systems to record and report actual irrigation expenditure against forecast from the time it acquired the irrigation schemes.

For 2012-13, having developed a whole of business budget, Seqwater then identified the costs relevant to its irrigation WSS, as opposed to urban water supply, and projected those

estimates forward using escalation factors for individual cost components to obtain its irrigation sector forecasts for the 2013-17 regulatory period.

Seqwater adopted 2012-13 as the base year as it provided the best and most current representation of the costs required to deliver Seqwater's service standards and obligations during the regulatory period. Seqwater made forward-looking adjustments to align with its expectations of scheme needs during 2013-17.

Initially, team budgets were prepared for the 2012-13 base year from a whole-of-asset portfolio perspective. There is no dedicated team within Seqwater responsible for irrigation. Rather, irrigation assets are managed by all relevant teams as part of Seqwater's portfolio of assets (for example, irrigation storages are operated by the Dam Operations team along with the water storages used for urban water supply, and irrigation assets are maintained by the Infrastructure Maintenance team alongside all other assets). Costs associated with irrigation scheme assets were not considered separately to other assets.

No single cost estimation methodology was mandated for universal use by budget team managers in building Seqwater's 2012-13 budget, nor for any functional activity. A number of cost estimation methodologies were permissible under Seqwater's budget parameters, such as the use of quantity and rate estimates, using past projects as a basis for costs, industry benchmarks, market quotes, past consultant reports and previous studies. For example, different methodologies were applied in the forecasting of energy, fleet & fuel and water quality monitoring in forecasting materials and consumables.

Moreover, labour costs were forecast differently depending on the team's focus. Dam Operations labour was calculated mostly on a site by site basis with some fixed dam operator positions at sites. Catchment Management labour was calculated to achieve an efficient spread of labour resources across locations on a regional basis and across various activities (such as weed management, fire management and pest control).

Seqwater's budget is approved annually by the Executive Leadership Team (ELT) and the Board. Quarterly forecasts are also prepared and approved by the ELT and the Board.

Seqwater's organisation-wide 2012-13 operating cost budget was documented as its *Operational Cost Report*, which itemised all operating expenditure categorised according to work group and then by functional activity. Functional activities align with natural account codes used in Seqwater's CIS (for example, Labour, Fixed Energy, Materials & Consumables, Repairs & Maintenance).

The Operational Cost Report included all operating costs forecast for 2012-13. It also detailed direct costs on an asset-specific basis according to asset use (e.g. whether for urban water supply only or jointly for irrigation and urban water supply).

Seqwater also pointed out that the build up of its 2012-13 budget did not involve allocating non-direct costs (such as corporate costs, overheads or centralised technical and operational functions) in the *Operational Cost Report* to specific assets or activities, as its accounting system captured only direct operating costs for each responsibility centre.

Cost Control

Seqwater Team Leaders and the management accountants in the Finance Team develop monthly expense reports that monitor performance against key performance indicators specified in Seqwater's SOPs.

Total company results (Income Statement, Balance Sheet, Cash flow, Capital Expenditure and Aged Debtors) are also reported monthly for review by the ELT and the Board, and are reported to Queensland Treasury.

Other Stakeholders

QFF (2012) submitted that:

- (a) Seqwater has highlighted significant data limitations with operating costs, which are a major component of costs in all schemes (e.g. non-direct costs cannot be separately attributed to schemes, and SunWater's lower bound cost benchmarks for 2006 are not directly comparable with Seqwater historic costs and forecasts in some schemes);
- (b) given these data limitations, it is unlikely that Seqwater's approach of basing forecasts of irrigation costs on a representative base year 2012-13 (with the removal of abnormal items) and then escalating costs forward for the four-year regulatory period will provide accurate assessment of the efficient operations of irrigation services; and
- (c) some operating costs may not be for irrigation schemes (e.g. regionally significant recreational facilities; compliance costs for the Government's Greenspace Strategy as well as managing water quality, health and public risk; rates on land which may not be relevant to irrigation activities; and costs of largely urban-dam-safety inspections).

Other stakeholders submitted as follows:

- (a) irrigators provide benefit to riparian areas through spraying noxious weeds, cleaning river banks and general maintenance of waterways. This improves and maintains the quality of water and therefore reduces Seqwater's costs (B.M. Bernitt and C.D. Summerville 2012, J. Harris 2012, GRASSCO 2012);
- (b) Seqwater cannot identify costs of irrigation services and irrigators have no need for the infrastructure or higher water quality. Seqwater cannot measure irrigation use as it is lost in environmental flows (S. Sinclair and H. Sinclair 2012b, J.B. Keller and B.L. Keller 2012, GRASSCO 2012, RFPL 2012, MBRI 2012);
- (c) Irrigation costs should be limited to provision, maintenance and monitoring of water meters and administering water accounts. Irrigators could reduce costs by reading meters and reporting volumes quarterly (J.B. Keller and B.L. Keller 2012a, S. Sinclair & H. Sinclair 2012b, Rivermead Pty Ltd (RPL) 2012a). Meters that conform to proposed new national standards are not warranted due to the cost difference involved (Lowood Golf Club 2012, L. Brimblecombe 2012). In fact, if only a fixed charge is applied meters would not need to be read or upgraded (QCA 2012c);
- (d) Seqwater must be more cost efficient (M. Jendra 2012, R.J. Thefs and E.R. Thefs 2012);
- (e) Seqwater has provided insufficient data on water use and costs for the Authority to conduct adequate analysis, and a benchmarking analysis against other rural schemes should be carried out (J.B. Keller and B.L. Keller 2012a and 2012b, L. Brimblecombe 2012);
- (f) Seqwater indicated that some on-ground/local staff are still operating under the assumption that they cannot talk to customers about service delivery issues, and that DEWS will manage consultation with irrigators. QFF clarified that this was a legacy issue relating to ROP matters, that DEWS is not involved with customer service and

pricing issues. Seqwater should be the contact for such consultation (QCA 2012c); and

- (g) there needs to be a standard consultation and communication process, which includes a recognised, agreed group of irrigator representatives. It is not acceptable for decisions to be made just by consulting with whoever shows up on the day. It may not be necessary to have frequent consultation, but when there are things to be decided, the process and people should be consistent and established (QCA 2012c).

Authority's Analysis

Given the changes that have occurred in recent years, it is reasonable for Seqwater to adopt zero-based budgeting for 2012-13 as the base year for 2013-17 forecast costs. Moreover, SKM in reviewing the prudence and efficiency of certain costs found that Seqwater's budgetary process largely aligned with good industry practice.

Nevertheless, the Authority considered that there are opportunities for improving the process followed by Seqwater to derive its irrigation sector operating cost forecasts from its organisation-wide budgets, for the following reasons:

- (a) the Authority acknowledged Seqwater's view that the cost benchmarks developed for the 2006 price review are not directly comparable to Seqwater's forecasts for the current 2013-17 regulated price review. Nevertheless, the relationship between the operating costs incurred by Seqwater in its irrigation schemes in 2010-12 and the derivation of its 2012-13 budgets could have been analysed in more detail; and
- (b) non-direct costs for irrigation schemes were derived by using a top-down process of allocating organisation-wide cost pools after exclusion of those non-direct costs considered not relevant to irrigation services (below). The aggregate nature of these adjustments made the accurate assignment of costs to different sectors (grid versus irrigation) problematic in some instances.

Accordingly, for future reviews a separate bottom-up check of the reasonableness of non-direct costs allocations should be undertaken as part of the budgeting process. To address these concerns and carry out this reasonableness test, it is appropriate for Seqwater to:

- (a) upgrade its policies, procedures, and information systems to better focus on the incurrence and management of costs in its irrigation sector; and
- (b) ensure that the cost estimation methodology is appropriate for each of the schemes (inconsistent approaches can allocate resources inappropriately between schemes).

For future irrigation reviews Seqwater needs to improve its irrigation relevant data and documentation. However, it was noted that as irrigation comprises a very small portion of Seqwater's total revenue (and costs), costly system changes are not warranted. The Authority recommended, however, that the information presented for future irrigation reviews be enhanced to allow better establishment of prudent and efficient irrigation costs.

The Authority specifically proposed that for future reviews, Seqwater document and access relevant information necessary to attain greater operating efficiency, achieve greater transparency and promote more meaningful engagement with irrigation customers.

As for renewals costs, there is a case to improve consultation with customers at the scheme level to ensure that customer needs and perspectives are taken into account in assessing the prudence and efficiency of operational initiatives and proposed costs.

Further, as for renewals costs, Seqwater should be required to consult with irrigation customers and provide detailed operating cost information to allow an informed discussion between Seqwater and customers.

Specifically, the Authority also recommended that Seqwater's SOPs (and relevant legislation) be amended to require Seqwater to consult with customers in relation to forecast and actual operating expenditure.

The Authority recommended that Seqwater should publish on its website annually updated NSPs containing operating (and renewals) information along with stakeholder submissions and Seqwater's responses. This should commence prior to 30 June 2015.

The NSPs should also be enhanced to present details of Seqwater's proposed operating expenditure for the next year, and to account for significant variances between previously forecast and actual operating expenditure.

In response to QFF (2012), the Authority:

- (a) agreed that a number of data issues have arisen during the investigation and these are addressed in the sections on non-direct and direct costs that follow. However, by definition, non-direct costs are not able to be directly attributed to irrigation schemes but need to be allocated using an appropriate cost allocator. Moreover, the Authority agreed with Seqwater that it is not appropriate to use SunWater's lower bound cost benchmarks for 2006 as the basis for estimating costs for the 2013-17 period due to the substantial changes that have since taken place in cost definitions, organisational structure and operational conditions;
- (b) accepted that Seqwater's current approach of deriving irrigation operating expenditure forecasts from aggregate budgets requires further refinement to make it more pertinent to irrigation schemes. The Authority expects that Seqwater's financial systems will need to be improved to better gather and report the relevant data to fulfil this need; and
- (c) considered that irrigators should share in most of the operating costs identified by Seqwater, as these are required to be included in costs by the Ministerial Direction.

In response to concerns raised by other irrigators, the Authority:

- (a) recognised the contribution of irrigators in reducing some operating costs and that these contributions reduce costs incurred in operating and maintaining irrigation schemes (to the benefit of irrigators);
- (b) did not agree that the infrastructure provided by Seqwater is of no benefit to irrigators. The cost to irrigators is related to the priority of supply which results in a relatively lower share of total costs per ML of medium priority WAE;
- (c) noted that Seqwater is required to carry out meter reading, but that costs associated with the national metering standard are excluded under the Ministerial Direction;
- (d) noted an objective of this review is to establish the efficient cost base for pricing;
- (e) recognised a number of data issues have arisen during the review; however, since its initial submissions, Seqwater has provided more detailed data for the review; and
- (f) agreed that a more effective consultation process between Seqwater and irrigators should be established, and has recommended accordingly.

Final Report

Stakeholder Submissions

Seqwater

Seqwater (2013a) submitted that:

- (a) it is now upgrading its policies, procedures, and information systems for the budgeting, incurrence and management of operating costs in its irrigation sector;
- (b) it will update and publish annual NSPs to present Seqwater's proposed operating expenditure annually, and to account for significant variances between previously forecast and actual operating expenditure;
- (c) the estimated cost to prepare and publish NSPs is \$24,000 annually, to be recovered from irrigators only. [This includes the cost of presenting renewals cost information. Refer Chapter 5: Renewals Annuity];
- (d) the *South East Queensland Water (Restructuring) Act 2007* provides for the Ministers to issue a "Statement of Obligations" to Seqwater, including provisions about customer consultation. A Statement of Obligations, with a requirement for Seqwater to consult with irrigation customers, has now been issued to Seqwater. The Statement of Obligations is required to be made publicly available; and
- (e) the estimated cost of Seqwater establishing and supporting advisory committees for consultation is \$25,000 annually. [Consultation would include discussion of renewals cost data. Refer Chapter 5: Renewals Annuity.]

Other Stakeholders

QFF (2013b) supports the formation of advisory committees in each scheme as a means of providing a focus for the review of NSPs each year and for the dissemination of scheme management issues. These advisory committees could also play a key role in some schemes where measures are needed to implement reforms.

MBRI (2013d) agrees with the recommendations in the Draft Report as they will significantly aid transparency.

Authority's Analysis

In response to Seqwater, the Authority welcomes Seqwater's progress to improve its financial systems for irrigation reporting purposes and recommends that:

- (a) the enhanced NSPs should be published annually from 2013-14, at the end of Quarter 1 (e.g. 30 September 2013). The NSPs (as for renewals expenditure) should annually present Seqwater's proposed operating expenditure and account for significant variances between previously forecast and actual operating expenditure;
- (b) the annual cost of \$24,000 for preparing/publishing NSPs should be recovered from irrigators only and shared equally by the seven WSSs (i.e. \$3,430 per scheme);
- (c) Seqwater be required to consult and accept the proposed approach, consistent with the revised (2013) Statement of Obligations issued to Seqwater, which requires consultation with irrigation customers. As required by the Statement of Obligations, it should be made publicly available on Seqwater's website prior to 30 September 2013;

- (d) to ensure (at least) annual consultation occurs between Seqwater and irrigators throughout 2013-17, Seqwater should amend its Strategic and Operational Plans to specify the establishment of the recommended irrigation advisory committees and that face-to-face meetings occur at least annually in response to (draft) enhanced NSPs. If this does not occur, the Authority would recommend that relevant legislation be amended to require Seqwater to consult at least annually with irrigators (consistent with the intent of the Seqwater Draft Report and SunWater Final Report); and
- (e) the annual cost of \$25,000 for establishing and supporting irrigation advisory committees be recovered from irrigators only and shared equally by the seven WSSs (i.e. \$3,570 per scheme).

The Authority notes QFF's and MBRI's support for Seqwater consulting with customers.

Recommendations

- (a) **Seqwater continue to upgrade its policies, procedures, and information for the budgeting, incurrence and management of costs for irrigation tariff groups.**
 - (b) **Seqwater annually publish enhanced NSPs on its website by 30 September each year (starting in 2013) for each WSS comparing actual operating (and renewals) costs against forecast and account for significant variances.**
 - (c) **Seqwater establish and support irrigation advisory committees.**
 - (d) **Seqwater recover the proposed annual costs (\$49,000), associated with the NSPs and irrigation advisory committees, from irrigators only – shared equally across the seven WSSs (i.e. \$7,000 per WSS annually).**
 - (e) **After consulting on the basis of these NSPs and through the irrigation advisory committees, Seqwater should annually publish on its website any stakeholder submissions and Seqwater's responses and decisions.**
 - (f) **Whilst Seqwater's Statement of Obligations now requires Seqwater to consult with irrigation customers, as it does not specify (at least) annual consultation, Seqwater should amend its Strategic and Operational Plans to this effect.**
-

6.2 Prudency and Efficiency of Direct Operating Expenditure

Seqwater forecast its direct operating costs for 2013-17 by extrapolating 2012-13 (base year) budgeted expenditure across the 2013-17 regulatory period.

Accordingly, the Authority has focused its review on 2012-13 budgeted operating expenditure and the method of extrapolation. This section reviews Seqwater's 2012-13 direct operating expenditure, and examines in detail 11 operating expenditure items (comprising 55% of proposed operating expenditure).

SunWater Review 2012-17

The Authority recommended that SunWater's direct operating expenditure (excluding electricity) be reduced by at least 4.5% in the first year of the regulatory period. Where additional scheme-specific efficiencies were found, the reductions were larger (up to 13.7%).

Draft Report

Stakeholder Submissions

Seqwater

Seqwater initially (April 2012) forecast total direct operating expenditure of \$12.06 million.

Subsequently, as a result of the Authority's reviews, Seqwater (November 2012) resubmitted forecast direct operating expenditure of \$11.66 million. That is, \$0.4 million or 3.3% less than the original forecast. Table 6.4 refers.

Table 6.4: Seqwater's Forecast Direct Operating Expenditure for 2012-13 (Nominal \$)

<i>Direct Operating Costs</i>	<i>April 2012 NSPs</i>	<i>November NSPs</i>	<i>Variance (\$)</i>	<i>Variance (%)</i>
Labour and Contractors	5,424,032	5,165,668	(258,364)	(4.8%)
Repairs and Maintenance	3,254,530	3,198,643	(55,886)	(1.7%)
Materials and Other	2,093,137	1,996,378	(96,759)	(4.6%)
Electricity	450,967	462,613	11,646	2.6%
Rates	836,066	836,066	0	0.0%
Dam Safety	0	0	0	0.0%
Total	12,058,731	11,659,368	(399,363)	(3.3%)

Source: Seqwater (2012a) and Seqwater (2012aj).

As noted above, Seqwater forecast its 2012-13 direct operating expenditure by:

- (a) justifying any new expenditure through a description of cost drivers and an options assessment and developing a zero-based budget for 2012-13;
- (b) comparing this with 2010-11 and 2011-12 expenditures as a common sense check; and
- (c) allocating non-direct costs to individual irrigation WSS (rather than to corporate overheads) only when such a non-direct cost directly relates to that WSS.

Five of the nine tariff groups jointly service irrigators and urban/industrial customers. From these, Seqwater removed from its submitted forecasts any expenditure relating exclusively to urban or industrial water supply. Seqwater removed, for example, catchment management and water quality activities conducted for the sole benefit of urban water supply.

Labour Costs

Seqwater forecasts its labour costs based on salaries specified in the applicable industrial agreement. Seqwater then forecast the staff time required in each operational area across its locations. Labour costs associated with irrigation assets are sometimes only part of the salaries associated with whole FTE positions. Seqwater's direct labour costs include a cost allowance for managing external contractors that undertake repairs and maintenance.

Repairs and Maintenance Costs

In preparing its 2012-13 budget, Seqwater separated its maintenance costs into three types:

- (a) scheduled maintenance, which is periodic maintenance scheduled in advance;

- (b) planned maintenance, which is maintenance undertaken to improve the condition (to a desired level of condition) of an asset that is operational in the immediate term or work arising from safety audits, environmental audits or process improvements; and
- (c) reactive maintenance, which is maintenance undertaken to reinstate the operation or performance of an asset that has ceased to operate or perform as designed, and needs to be repaired or replaced immediately.

Scheduled and planned maintenance incorporate the “planned” aspects of repairs and maintenance because this work can be scheduled with some degree of flexibility. Reactive maintenance incorporates the “unplanned” aspects of repairs and maintenance because this work is usually urgent and cannot be scheduled with any flexibility.

Seqwater estimated that 38.5% of total maintenance costs are scheduled maintenance, 32.5% is planned maintenance and 29% is reactive maintenance. These portions are based on industry standards, and are targeted by Seqwater in its pursuit of best practice.

Materials and Other Costs

Materials and Other is forecast through the compilation of several components with separate forecasting methods. The significant components are forecast as follows:

- (a) Plant and Fleet Hire: The fleet allocation budget is determined by calculating a representative annual lease charge, which is calculated on whole of life costs excluding fuel, oil and tyres, assuming an average vehicle life of 120,000 km or five years. The budget for fuel is calculated based on historical expenditure;
- (b) Water Quality Monitoring: These values are comprised of a number of different cost types including energy, fleet and fuel, and water quality monitoring. They are based on either escalated past actual expenditure or scheduled testing programmes based on unit costs set by contracts; and
- (c) Materials, Consumables and Equipment Hire: future costs have been calculated by escalating past expenditure.

Electricity

Increases in regulated electricity tariffs generally represent risks that are beyond Seqwater’s control (except to the extent that Seqwater can negotiate non-regulated or contestable electricity contracts in some areas).

Electricity costs for irrigation relate primarily to pumping into off-stream storages. The duration and frequency of these events and consequently the cost is very difficult to forecast as they are driven by variable streamflow events and storage levels. Indeed in some years no pumping may occur, while in others there may be significant pumping costs.

Given the difficulties associated with forecasting electricity costs, Seqwater proposed that electricity costs be escalated by CPI (2.5%) for 2013-17, with adjustment to account for the actual pumping and electricity costs at the end of the period. Seqwater proposed to maintain a running balance and apply revenue neutral ‘unders and overs’ adjustments for the next price path to account for the difference between forecast and actual electricity costs. [The Authority accepted this approach in Chapter 3 - Regulatory Framework.]

Other Stakeholders

Submissions by other stakeholders on general direct operating expenditure are included in the previous section, which presented the background and forecasting methodologies relating

to total operating costs. Scheme-specific submissions on direct operational expenditure are discussed in the relevant Volume 2 reports.

Other Jurisdictions

In Victoria, the WIRO requires the ESC to ensure that the prices levied on customers of all 20 Victorian water businesses (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.

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 has considered both Seqwater's general approach to forecasting its operating expenditure and reviewed a sample of operating expenditure items to establish prudent and efficient operating costs. SKM found Seqwater's methodology for forecasting direct operating costs, in general, to align with good industry practice.

Labour Costs

Based on April 2012 Seqwater data, SKM noted 2012-13 budgeted direct operating expenditure was significantly higher than historical actual expenditure. No satisfactory explanation was provided at that time. Further, SKM noted that dam operations staff were underutilised.

Subsequently, in response to SKM's initial findings, Seqwater revised its direct labour forecasts in five tariff groups on the basis of more detailed data derived from its financial system. Seqwater noted that there was significant misallocation of direct labour costs in the Mary Valley and Central Lockyer Valley WSSs between tariff groups.

SKM reviewed the resubmitted labour and reduced them in four of the five tariff groups.

Further details of SKM's findings relating to each tariff group are provided in the scheme specific reports (Volume 2). The implications of these findings are summarised further below as part of the Authority's overall assessment of total sampled operating cost items.

Repairs and Maintenance Costs

SKM found that operating Seqwater's WSSs, and achieving compliance in practice with legislation, requires Seqwater to repair and maintain the assets that it owns and operates in a manner that maintains the function and safety of the assets. The relevant regulatory instruments (for example, ROPs and ROLs/IROLs) do not specify the manner in which compliance is to be achieved. Accordingly, like-for-like and/or modern approaches and technology can be used.

The repairs and maintenance required to operate the WSSs predominantly relate to ensuring the ongoing operation and reliability of assets, including the catchments and the recreation areas associated with Seqwater's water storages.

Planned maintenance is delivered through a panel of providers. Each of Seqwater's operational regions has a panel of four contractors, who have been selected through an expression of interest process for each work classification including electrical, mechanical, instrumentation, control system pipeline and civil.

Contractors were appointed in accordance with the State Procurement Policy. The previous panel agreement ran from 2009 until 2012, while the new panel runs from 2012 for a period of two years, with an option for extending the panel for a further one- or two-year period. SKM considered that the use of panel contractors to complete maintenance, in particular with consideration of the new panel agreement, is efficient.

SKM noted for some WSSs, unplanned maintenance significantly outweighs planned maintenance suggesting that management procedures for those assets are in need of review.

Where detailed reviews were undertaken, SKM determined that Seqwater's revised estimates, of planned and unplanned repairs and maintenance costs, are prudent and efficient (that is, in the Central Lockyer WSS and Pie Creek tariff group). SKM's findings relating to each scheme are detailed in Volume 2.

Material and Other Costs

SKM reviewed Seqwater's method of forecasting materials and other costs as follows:

- (a) Plant and Fleet Hire: SKM compared the number of vehicles with the number of operational staff and found the vehicle numbers to be appropriate. SKM also considered plant hire and found the forecasts appropriate (with the exception of two tractors/mowers and one watercraft in Warrill Valley WSS).

The fleet allocation budget is determined by calculating a representative annual lease charge, which is calculated on whole-of-life costs excluding fuel, oil and tyres, assuming an average vehicle life of 120,000 km or five years. This adopted life is similar to that utilised by the SEQ Distribution Retailer Entities which SKM considered to be reasonable (i.e. it falls within the range assessed as being prudent and efficient by the Authority as part of the SEQ Interim Price Monitoring Review 2011-12). The Seqwater budget for fuel is calculated based on historical expenditure;

- (b) Water Quality Monitoring: The contract for completing water quality sampling and analysis was awarded following a public tender process that was conducted in accordance with the State Procurement Policy. SKM concluded that the rates for water quality sampling and analysis is efficient as it represent market rates; and
- (c) Materials, Consumables and Equipment Hire: future costs have been calculated by escalating past expenditure. SKM considered this method likely to be efficient.

Electricity

The Authority notes that electricity is a relatively small cost for Seqwater. SKM's review of electricity costs found electricity costs to be efficient. In the context of the GSC review, Seqwater received advice from the Queensland Government to discontinue existing state-based carbon reduction schemes to ensure agencies were not subject to [the perception of] overlapping with the Federal carbon tax, which was introduced on 1 July 2012.

Accordingly, for the irrigation review, Seqwater excluded from forecast operating expenditure any costs associated with the purchase of green energy. Accordingly, the Authority concluded that Seqwater's [Draft Report] proposed electricity expenditure was prudent and efficient and did not apply a reduction to Seqwater's proposed costs.

In the event that electricity costs vary from those forecast, the Authority recommended that any material variations to forecasts will only be considered as part of an end-of-period adjustment. Refer Chapter 3: Regulatory Framework.

General Procurement Procedure

Executive General Managers may sign procurement contracts up to \$100,000, while the CEO can sign contracts up to \$500,000. Contracts over \$500,000 must have Board approval.

To ensure that Seqwater is receiving good service and value for money through its contracts, the project manager is responsible for monitoring and inspecting the work undertaken or goods delivered for conformity with the contract.

The flexibility to use various approaches allows Seqwater to accommodate a range of project types, and is consistent with industry practices. Seqwater is developing a formal process to determine optimal procurement strategies for major projects or those for which efficiencies of scale may be leveraged.

Overall, SKM considered Seqwater's procurement policies and procedures to be reasonable. However, SKM considered that the relatively high limit of up to \$100,000 of such single source purchases with limited required review from supervisory managers could allow misuse. It may be prudent for further limits to be placed on such an arrangement.

Review of Sampled Operating Expenditure

Seqwater's original NSPs forecast total direct operating expenditure of approximately \$12.1 million. It is not practicable within the time available for the review, nor desirable given the potential costs involved, to assess the prudence and efficiency of each planned expenditure item. A sample of \$6.6 million of forecast operating costs (55%) was therefore reviewed for prudence and efficiency. A 30%+ sample is typically preferred by the Authority as it provides a cost-effective and robust basis for identifying cost savings.

The Authority engaged SKM to review this sample of Seqwater's major proposed direct operating expenditure relevant to irrigation. For this purpose, SKM reviewed the three key operating cost categories: direct labour, repairs and maintenance, materials and other. SKM did not review contractor, local government rates or dam safety inspection costs as they account for only 13.5% of costs in 2012-13.

For the review of the operational expenditure, SKM:

- (a) reviewed Seqwater's NSPs and detailed supporting spreadsheets of operating costs;
- (b) undertook a series of interviews with Seqwater staff and site visits to obtain further guidance and more detailed information in relation to Seqwater's operating environment and cost incurrence; and
- (c) assessed the forecast operating expenditure against its cost benchmark database.

Table 6.5 shows Seqwater's original forecasts and SKM's recommended estimates.

Table 6.5: SKM's Review of Seqwater's Direct Operating Expenditure (2012-13 \$'000)

<i>Operating Cost Component</i>	<i>Tariff Group</i>	<i>Seqwater April 2012 NSPs</i>	<i>SKM Final Estimate</i>	<i>Variance (%)</i>
Direct Labour	Cedar Pocket Dam	44	44	0%
	Central Brisbane River	3,022	2,967	(2%)
	Logan River	393	306	(22%)
	Lower Lockyer Valley	217	248	14%
	Mary Valley	404	224	(44%)
	Morton Vale Pipeline	24	36	50%
Sub Total		4,105	3,825	(7%)
Repairs and Maintenance	Central Lockyer Valley	435	170	(61%)
	Pie Creek	66	71	8%
Sub Total		501	241	(52%)
Materials and Other (including electricity)	Central Brisbane River	1,486	1,486	0%
	Lower Lockyer Valley	230	230	0%
	Warrill Valley	306	276	(10%)
Sub Total		2,022	1,992	(1%)
Total Sampled		6,626	6,058	(9%)

Source: Seqwater (2012a), Seqwater (2012aj) and SKM (2012).

On the basis of SKM's assessment, the Authority recommended that SKMs estimate for sampled operating expenditure be adopted except where Seqwater subsequently submitted costs lower than SKMs estimate. This occurred in Central Lockyer Valley WSS and Warrill Valley WSS. Refer to Volume 2 report for further details.

Total energy costs account for approximately 3% of the total direct operating costs of the irrigation WSSs. These costs were included in SKM's sample of materials and other costs.

Final Report

Stakeholder Submissions

Seqwater

Seqwater (2013a) submitted that the Authority's forecast of direct costs is understated where it claims underutilisation of operations staff at Cedar Pocket, Logan River, Lower Lockyer Valley and Mary Valley WSSs, based on anecdotal evidence provided to SKM.

These claims resulted from misunderstandings by Seqwater staff, which Seqwater subsequently clarified with SKM. In its final report, SKM retreated from these claims:

- (a) increasing its estimate of labour needed at Cedar Pocket from 0.35 FTE to 0.6 FTE and recommended that the Authority accept Seqwater's estimate of 0.65 FTE;
- (b) making only minimal changes to Seqwater's revised labour costs for operations staff in the Logan River and Lower Lockyer Valley WSSs; and
- (c) accepting Seqwater's revised labour cost estimates for the Mary Valley WSS.

Seqwater submits that SKM:

- (a) accepted Seqwater's explanations of the utilisation of operations staff;
- (b) accepted Seqwater's revised labour cost estimates with minimal changes; and
- (c) made final recommendations evidencing no underutilisation of operations staff.

Therefore, Seqwater believes all references to the misunderstanding that operations staff were underutilised should be removed from the Authority's Final Report.

Other Stakeholders

QFF (2013b) accepts the Authority's recommended direct operating cost adjustments.

MBRI (2013d) submitted that:

- (a) the Authority's sampling process for operating costs is not representative as it is not based on a stratified random sample. The sampling was across only three operating cost categories – direct labour, repairs and maintenance and materials and other – and electricity, rates and dam safety costs were not reviewed;
- (b) a portion of costs in the Central Brisbane River WSS relate to flood mitigation and should not be recovered from irrigators. Specifically, council land rates are high as Seqwater owns land required for the flood compartment of the dam. MBRI considered that rates relating to lands above full supply level should be excluded, and dam operations costs include costs associated with flood mitigation for both dams;
- (c) irrigators pump from the river at their own expense, including electricity. Seqwater's electricity costs are not directly or indirectly attributable to or beneficial for MBRI irrigators. It is non-irrigation customers that benefit from electricity usage; and
- (d) Seqwater is to achieve further productivity improvements from amalgamations by 30 June 2013. The Draft Report specified that these savings would be taken into consideration in its Final Report.

Authority's Analysis

The Authority has responded in detail to Seqwater's scheme specific submissions, and addressed the matter of labour utilisation in the Volume 2. The Authority recognises that Seqwater established a case for certain revised labour costs, however, as outlined in Volume 2, certain cost savings still apply where SKM maintains costs are inefficient to some extent.

The Authority notes QFF's general endorsement of the Draft Report recommendations.

In response to MBRI, the Authority:

- (a) adopted a cost-effective sampling approach, reviewing approximately 55% of total direct operating costs based on materiality. The Authority notes that electricity, rates and dam safety comprise 11% of total direct operating cost, however, electricity costs were reviewed where material (e.g. Pie Creek);
- (b) has reviewed the flood mitigation function of the Wivenhoe and Somerset Dam infrastructure. The Authority acknowledges that a portion of costs likely relate to the flood compartments. Refer Chapter 5: Renewals Annuity and the Central Brisbane River WSS Volume 2 Final Report. The Authority has excluded from 2013-17 irrigation prices its estimate of the portion of costs relating to flood mitigation in this scheme. The Authority's estimate was, however, based on the limited available information;
- (c) considers that where electricity costs are incurred as part of the general operation of the dam, such costs should be allocated to all customer WAE (e.g. Central Brisbane River irrigators are allocated 1.6% of such fixed electricity costs); and
- (d) requested that Seqwater provide an estimate of any cost changes arising from the merger. Seqwater advised that the cost impacts could not be reliably quantified (although Seqwater's preliminary estimate is detailed further below) prior to the Final Report. Seqwater noted that the November 2012 costs (incorporated in the Authority's Draft Report) included material cost savings in anticipation of the merger.

6.3 Unsourced Forecast Direct Operational Expenditure

SunWater Review 2012-17

In circumstances where direct operating costs were not reviewed, the Authority extrapolated estimated cost savings (of approximately 4.5%) across all unsourced service contracts.

Draft Report

Authority's Analysis

The Authority reviewed approximately 55% of proposed direct operating costs for prudence and efficiency. SKM's estimate of prudent and efficient costs was 9% lower than Seqwater's initial forecast for reviewed items. This estimate represents the average of reductions for Direct Labour (7%), Repairs and Maintenance (52%) and Materials and Other (1%).

The Authority could either, apply a general reduction to all unsourced operating expenditure, or apply the specific findings to each operating expenditure sub-component.

The Authority proposed to apply a single reduction to all unsourced direct operating expenditure as this allows Seqwater the opportunity to best manage its overall operating

expenditure across all sub components and tariff groups to determine the best approach to achieving the cost savings.

Nevertheless, in determining a reduction to apply to unsampled operating expenditure, the Authority did not propose to include the large reduction in repair and maintenance costs in Central Lockyer Valley that arose due to a recording error in relation to the Mt Crosby WTP.

As SKM reviewed the largest operating expenditure items in each tariff group, it is not considered likely for an error of this type or magnitude to be repeated. With this item excluded, the average reduction identified by SKM is about 5%. This saving is considered applicable to unsampled items in the three reviewed categories (excluding electricity as noted above – as such costs were found to be prudent and efficient). Table 6.6 refers.

Table 6.6: Direct Operating Cost Sample Applicable to Unsampled Costs (2012-13 \$'000)

<i>Expenditure Type</i>	<i>Tariff Group</i>	<i>Seqwater (April 2012)</i>	<i>SKM Recommended</i>	<i>Variance</i>
	Cedar Pocket Dam	44	44	0%
	Central Brisbane River	3,022	2,967	(2%)
Direct Labour and Contractors	Logan River	393	306	(22%)
	Lower Lockyer	216	248	14%
	Mary Valley	404	224	(44%)
	Morton Vale Pipeline	24	36	50%
Repairs and Maintenance*	Pie Creek	66	71	8%
	Central Brisbane River	1,486	1,486	0%
Materials and Other	Lower Lockyer Valley	230	230	0%
	Warrill Valley	306	272	(11%)
TOTAL		6,191	5,884	(5%)

Source: Seqwater (2012a) and SKM (2012). Note* SKM reviewed \$51,000 of planned repairs and maintenance, but also reviewed total costs of \$71,000. Seqwater's April 2012 forecast planned repairs and maintenance was \$47,000, but its total cost was \$66,000.

The Authority recommended that unsampled Seqwater's (April 2012 NSP) operating costs be reduced by 5% (except for rates, insurance and fixed electricity). The Authority has made adjustments in five tariff groups where Seqwater re-allocated costs (see Volume 2).

6.4 Total Sampled and Unsampled Cost Savings

Draft Report

The Authority's total recommended direct cost savings, by cost category, resulting from reductions to sampled and unsampled costs, are summarised in Table 6.7. These figures are for all sectors (urban, industrial and irrigation) costs, where applicable.

Table 6.7: Draft Direct Operating Expenditure for 2012-13 (\$ Nominal)

<i>Direct Operating Costs</i>	<i>Seqwater Initial (April 2012)</i>	<i>QCA Draft Recommendation</i>	<i>Variance (\$)</i>	<i>Variance (%)</i>
Labour and Contractors	5,424,032	5,075,489	(348,543)	(6.4%)
Repairs and Maintenance	3,254,530	2,845,212	(409,318)	(12.6%)
Materials and Other	2,093,137	1,974,808	(118,329)	(5.7%)
Sub Total	10,771,699	9,895,509	(876,189)	(8.1%)
Electricity	450,967	457,737	6,770	1.5%
Rates	836,066	836,066	0	0.0%
Dam Safety	0	0	0	0.0%
Total	12,058,731	11,189,312	(869,419)	(7.2%)

Source: Seqwater (2012a) Note: Seqwater has not proposed Dam Safety expenditure for 2012-13 but proposes \$243,000 during 2013-17, which the Authority recommends reducing to \$220,000. Includes some variations to the Draft Report as a result of further quality assurance.

The impact of the Authority's cost savings applied to direct operating costs, for each of the nine irrigation tariff groups, is presented in Table 6.8.

Table 6.8: Draft Total Direct Operating Expenditure (All Sectors \$ 2012-13)

<i>Tariff Group</i>	<i>Seqwater Initial (April 2012)</i>	<i>Seqwater Final (November)</i>	<i>QCA Recommendation</i>	<i>Variance (April 2012 vs. QCA) \$</i>	<i>Variance (April 2012 vs. QCA) %</i>
<i><u>Bulk</u></i>					
Cedar Pocket Dam	63,278	76,051	62,328	(950)	(1.5%)
Central Brisbane River	7,865,996	8,024,320	7,677,397	(188,600)	(2.4%)
Central Lockyer Valley	746,672	397,244	390,853	(355,820)	(47.7%)
Logan River	700,958	626,134	601,744	(99,214)	(14.2%)
Lower Lockyer Valley	693,697	726,503	714,966	21,298	3.1%
Mary Valley	854,306	656,235	638,805	(215,501)	(25.2%)
Warrill Valley	1,014,102	947,158	903,786	(110,316)	(10.9%)
<i><u>Distribution</u></i>					
Morton Vale Pipeline	24,496	53,417	45,994	21,498	87.8%
Pie Creek	95,226	152,306	153,439	58,186	61.1%
Total	12,058,731	11,659,368	11,189,312	(869,419)	(7.8%)

Source: Seqwater (2012a) and Seqwater (2012aj) Includes some variations to the Draft Report as a result of further quality assurance.

Further Productivity Gains

In addition to the above adjustments for the 2012-13 year, the Authority considered it appropriate to apply a productivity adjustment for anticipated future efficiency gains.

The Authority considered it appropriate to reduce forecast direct operating costs by a further 1.5% per annum as a general productivity gain, applied cumulatively for each of the four years of the regulatory period (2013-14 to 2016-17).

The ESC (2011) proposed that water businesses achieve a minimum of 1% per year productivity improvement on operating expenditure over the regulatory period. IPART (2010) required State Water Corporation to achieve continuing operating cost efficiency improvements of 0.8% per annum, for bulk schemes also providing irrigation water.

The recommended annual reduction exceeds that recommended for SunWater's direct irrigation costs (0.75% per annum). The Authority notes that other jurisdictions have concluded that an ongoing productivity gain of at least 0.8% be applied. The Authority considered that for Seqwater irrigation, however, scope remained for savings of 1.5% per annum, reflecting opportunities for improvements in the budget/planning process, and incurrence and management of irrigation costs (refer to earlier recommendation).

Final Report

Stakeholder Submissions

Seqwater (2013a) disagrees with the concept of the productivity gain on the basis that no evidence of the need to impose the productivity gain was provided.

Authority's Analysis

As stated in Draft Report, Seqwater has hitherto not dedicated internal resources to irrigation customers, budget/planning process, and the incurrence and management of irrigation-related costs. The Authority has recommended that this process continue during 2013-17 and that, via this process, the Authority estimates that productivity gains of 1.5% cumulatively per annum are likely to be identified by Seqwater with respect to irrigation.

This decision is not inconsistent with the SunWater review and other regulators.

Table 6.9: Final All Sectors Direct Operating Expenditure for 2012-13 – by Cost Category (\$ Nominal)

<i>Direct Operating Costs</i>	<i>Seqwater (April 2012)</i>	<i>QCA Draft Recommendation</i>	<i>QCA Final Recommendation</i>	<i>Variance April 2012 vs. Final QCA</i>	<i>Variance Draft vs. Final QCA</i>
Labour and Contractors	5,424,032	5,075,489	5,055,584	(368,448)	(19,905)
Repairs and Maintenance	3,254,530	2,845,212	2,843,255	(411,275)	(1,957)
Materials and Other	2,093,137	1,974,808	1,967,459	(125,678)	(7,349)
Sub Total	10,771,699	9,895,509	9,866,298	(905,401)	(29,211)
Electricity	450,967	457,766	357,632	(93,330)	(100,134)
Rates	836,066	836,066	836,066	0	0
Consultation and NSPs	0	0	49,000	49,000	49,000
Dam Safety	0	0	0	0	0
Total	12,058,731	11,189,312	11,108,996	(949,735)	(80,316)

Source: Seqwater (2012a) and QCA (2013). Note: Seqwater has not proposed Dam Safety expenditure for 2012-13 but proposes \$243,000 during 2013-17, which the Authority recommends reducing to \$220,000.

Table 6.10: Final All Sectors Direct Operating Expenditure for 2012-13 – by Tariff Group (\$ Nominal)

<i>Tariff Group</i>	<i>Seqwater (April 2012)</i>	<i>QCA Draft Recommendation</i>	<i>QCA Final Recommendation</i>	<i>Variance (April vs. Final QCA)</i>	<i>Variance (Draft vs. Final QCA)</i>
<i><u>Bulk</u></i>					
Cedar Pocket Dam	63,278	62,328	78,913	15,635	16,585
Central Brisbane River	7,865,996	7,677,397	7,555,147	(310,850)	(122,250)
Central Lockyer Valley	746,672	390,853	395,567	(351,105)	4,714
Logan River	700,958	601,744	606,773	(94,185)	5,029
Lower Lockyer Valley	693,697	714,966	721,996	28,298	7,030
Mary Valley	854,306	638,805	640,105	(214,200)	1,300
Warrill Valley	1,014,102	903,786	904,066	(110,035)	280
<i><u>Distribution</u></i>					
Morton Vale Pipeline	24,496	45,994	45,994	21,498	0
Pie Creek	95,226	153,410	160,435	65,209	7,025
Total	12,058,731	11,189,312	11,108,996	(949,735)	(80,316)

Source: Seqwater (2012a) and QCA (2013).

Recommendations

- (a) Seqwater's prudent and efficient direct operating costs for 2012-13 should be reduced to \$11.1 million.
 - (b) Seqwater's forecast direct operating costs for 2013-17 (excluding rates and fixed electricity) should be further reduced by a general productivity gain of 1.5% per annum, for each of the four years of the regulatory period, applied cumulatively.
-

6.5 Prudency and Efficiency of Non-Direct Operating Costs

The prudency and efficiency of Seqwater's overall non-direct costs were reviewed by the Authority as part of the 2012-13 review of GSCs.

For this investigation, Seqwater made adjustments to exclude costs not relevant to the provision of irrigation services. The costs remaining after these adjustments were made were then allocated to irrigation tariff groups using total direct costs as the cost allocator as described in the Stage 1 Allocation of Costs to Irrigation Tariff Groups section below.

SunWater Review 2012-17

The Authority recommended that, in 2012-13, SunWater's non-direct operating costs be reduced by 2.7% for irrigation service contracts to reflect the Authority's proposed efficiency gain in that year. For subsequent years, the Authority recommended that SunWater's forecast 2013-17 non-direct operating costs be reduced by a further 1.5% per annum, applied cumulatively, to reflect general productivity growth.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012a) submitted that non-direct costs for 2012-13 reflect a representative year. One-off and abnormal expenditure items have been removed.

Corporate functions have been defined as comprising the office of the CEO and the Organisational Development and Business Services groups. Corporate costs represent almost half the non-direct operating costs allocated to irrigation schemes in 2012-13 (excluding Flood Control costs).

The major component of corporate costs relates to ICT. The major functions involved in ICT relate to services support, database administration, monitoring and maintenance of various servers and network infrastructure, demand management, application management, strategy maintenance and development, business analysis and subject-matter-expert advice.

Flood control costs reflect those costs associated with the on-going operation of Central Brisbane River WSS flood control centres and are attributable to this WSS only.

Seqwater submitted that some non-direct costs relate to urban and industrial customers only and should not be recovered from irrigators.

The costs remaining after these adjustments were made were then allocated to grid and irrigation services, as follows:

- (a) costs incurred in relation to irrigation services only were allocated to individual irrigation schemes based on the 2012-13 forecast directly attributable operating costs;
- (b) costs of flood control centre services were assigned to the Central Brisbane River WSS;
- (c) those costs incurred in relation to grid services only (that is, not relevant to irrigation schemes), such as those associated with water treatment and quality; asset policy, strategy, and planning; program management, etc., were allocated to those grid services based on their 2012-13 forecast directly attributable operating costs;
- (d) those costs incurred in relation to all grid and irrigation services, with the exception of the costs of managing and administering the outsourced services provided by Veolia (called Category 1 costs by Seqwater), were allocated to those services based on their 2012-13 forecast directly attributable operating costs. This approach recognises that there are a range of corporate activities that Veolia provides as part of its service contract. For example, Veolia provides its own ICT and procurement services, and these costs were not allocated to services provided by Veolia, but allocated across the remaining grid and irrigation services; and
- (e) those costs incurred in relation to all grid and irrigation services, including those associated with Veolia (called Category 2 costs by Seqwater), were allocated to those services based on 2012-13 forecast directly attributable operating costs (e.g. finance costs are relevant across irrigation and urban services, as financial functions would be required regardless of whether services were in-sourced or out-sourced).

Following the Government's approval of the 2012-13 GSC review and associated adjustments, Seqwater revised and resubmitted its irrigation NSPs. Table 6.11 refers.

Table 6.11: Seqwater's Forecast Non-Direct Costs (All Sectors) for 2012-13 (\$ Nominal)

Cost Category	April 2012 NSP	November NSP	Variance	
			\$	%
Technical warranty and development	0	0	0	0
Water Delivery	1,202,079	1,113,755	(88,324)	(7)
Asset Delivery	536,663	548,611	11,948	2
Business Services	2,966,785	2,226,046	(740,739)	(25)
Organisational development	1,208,970	1,048,006	(160,964)	(13)
CEO	119,041	165,078	46,037	39
Flood Control (Central Brisbane only)	2,630,999	2,380,429	(250,570)	(10)
Other	366,070	94,766	(271,304)	(74)
Non-Direct Operations	9,030,607	7,576,692	(1,453,915)	(16)
Non-Infrastructure Assets	534,751	533,269	(1,483)	(0.3)
Insurance	1,377,043	1,218,711	(158,332)	11
Working Capital	194,839	194,839	0	0
Total Irrigation WSS	11,137,240	9,523,511	(1,613,730)	(14)
Total Seqwater	139,536,426	105,825,424	(33,711,002)	(24)

Source: Seqwater (2012a) and Seqwater (2012aj). Note: Total Seqwater also includes non-direct operations, non-infrastructure assets, insurance and working capital.

In April 2012, Seqwater had allocated \$11.1 million or 8% of its total non-direct costs to irrigation WSS (all sectors). In November 2012, Seqwater had allocated \$9.5 million or 9% of its total non-direct costs to irrigation WSS.

Other Stakeholders

During consultation (QCA 2012c), irrigators questioned:

- whether any costs related to the presentations to and findings of the dam enquiry and any associated legal action will be included in irrigators' water charges; and
- how much Seqwater is paying on catchment management activities, and proposed that rather than irrigators paying for catchment management (which delivers environmental and water quality benefits to urban customers), Seqwater should pay irrigators for better catchment management practices on farm.

QFF (2012) submitted that non-direct costs are excessively high and exceed operations costs, and queried how the assessment to extract non-irrigation costs was conducted and what actual costs were excluded.

QFF (2012) also noted that although costs associated with technical warranty and development, policy and strategy costs, integrated asset planning and program management and water treatment and quality were excluded, there is no indication what this means as a proportion of total costs.

L. Brimblecombe (2012) queried how operational costs related to Seqwater's core business are lower than non-direct costs such as head office costs, and requested further substantiation of this perceived anomaly.

GVWB (2012), L. Brimblecombe (2012), G. Rozynski (2012), and D. Burnett (2012) commented that recreational costs should not be passed on to irrigators as they are a financial burden, and if recreation costs are included then community access should be restricted to save costs.

Additionally a recreational management plan is required between Seqwater and residents adjoining dam sites. Recreational costs should either be paid for by recreation facility users or the areas closed (QCA 2012c). As residents enjoy using these parks and care for them at no expense, this should provide a cost saving to Seqwater (L. Brimblecombe 2012).

Authority's Analysis

Review of Costs

The Authority (QCA 2012b) assessed Seqwater's non-direct operating costs as part of its 2012-13 GSC Review. That review concluded that Seqwater's operating costs (including non-direct costs) should be reduced by 2.5% to reflect a general efficiency gain.

The Government subsequently increased the general efficiency gain to 3.0% and removed Seqwater's proposed recruitment of 62.5 FTEs for vacant and new positions, both to apply to the 2012-13 year.

Seqwater (2012aj) has taken these adjustments into account in its revised November 2012 submission to the Authority. As these costs have been approved by Government, the Authority proposes to accept the cost reductions for 2012-13 and makes further non-direct cost reductions (relevant to irrigators only) as noted further below.

Available details of Seqwater's adjustments to organisation-wide non-direct costs (that is, the exclusion of costs not relevant to irrigation) are presented in Table 6.12.

Table 6.12: Seqwater's Non-Direct Cost Adjustments

<i>Seqwater Group</i>	<i>Non-Direct Costs Not Allocated to Irrigation</i>	<i>Comment</i>
Technical Warranty and Development Group	<ul style="list-style-type: none"> • Engineering support • Operational integration • Project closure • Research, science and technology • Strategic asset readiness • Technical warranty 	All technical warranty and development group non-direct costs were excluded on the grounds that these activities are associated with water quality and treatment, and the recycled water and desalination assets.
Water Delivery Group	<ul style="list-style-type: none"> • Water treatment operations – North & South • Catchment water quality • Drinking water quality • Laboratory & data management 	These non-direct costs are concerned with Seqwater's non-irrigation water treatment operations.
Asset Delivery Group	<ul style="list-style-type: none"> • Concept & feasibility • Direction • Asset policy & strategy • Management in use • Validation & planning • Integrated asset planning • Program management office 	These non-direct costs are mainly associated with master planning, policy and strategy for major non-irrigation capital projects.

Source: Seqwater (2012p).

The Authority accepts that, in principle, these exclusions are appropriate as the nature of the costs is not related to irrigation. However, the aggregate nature of these adjustments makes the accurate assignment of costs to different sectors problematic in some cases.

In its reviews of renewals and operating costs, the Authority did not identify any systemic allocation of non-irrigation costs to irrigators. In response to stakeholders opposed to irrigators paying recreation costs, the Authority notes that the Ministerial Direction explicitly requires that Seqwater be allowed to recover efficient recreation costs.

The Authority recommends that Seqwater's November non-direct costs be reduced by a further \$0.41 million or about 4% of November non-direct costs. This represents a reallocation of non-direct costs (away from irrigation WAE) – resulting from the Authority's reductions to direct operating costs – as non-direct costs are allocated according to the Authority's recommended direct costs in irrigation WSSs. In response to the issues raised by irrigators during Round 1 consultation:

- (a) Seqwater has advised the Authority that the cost of participation in the flood enquiry is not relevant to irrigators. However, it is possible that some costs related to enquiry recommendations may be relevant at some future date. At this stage, no provision for these costs was made in the 2012-13 budget and consequently, no costs were carried forward into the 2013-17 period for irrigation prices; and
- (b) the Authority notes that catchment management and water quality activities conducted for the sole benefit of urban water supply have been removed from forecast costs.

In response to QFF and L. Brimblecombe, the Authority notes that non-direct costs do not exceed direct costs for irrigators. The Authority has reduced non-direct costs when direct costs are reduced. Table 6.13 shows the impact of the Authority's recommendations.

Table 6.13: Draft Report Non-Direct Operating Expenditure by Tariff Group (2012-13 \$)

<i>Tariff Group</i>	<i>Seqwater April 2012</i>	<i>Seqwater November</i>	<i>QCA Recommendation</i>	<i>Variance (April 2012 vs. QCA) \$</i>	<i>Variance (April 2012 vs. QCA) %</i>
<i>Bulk</i>					
Cedar Pocket Dam	50,140	50,140	42,119	(8,022)	(16%)
Central Brisbane River	7,975,637	7,083,770	6,792,466	(1,183,171)	(15%)
Central Lockyer Valley	634,240	364,627	350,816	(283,423)	(45%)
Logan River	572,001	456,598	434,553	(137,449)	(24%)
Lower Lockyer Valley	482,664	434,436	419,892	(62,772)	(13%)
Mary Valley	677,451	481,672	457,906	(219,544)	(32%)
Warrill Valley	655,616	529,433	495,249	(160,367)	(24%)
<i>Distribution</i>					
Morton Vale Pipeline	18,013	30,838	26,925	8,912	49%
Pie Creek	71,478	91,998	91,428	19,950	28%
Total	11,137,240	9,523,511	9,111,354	(2,025,886)	(18%)

Source: Seqwater (2012a), Seqwater (2012j) and QCA (2012).

Additional Productivity Gains

The one-off cost reductions to the base year (identified above) flow through to establish a lower cost base for all subsequent years of the 2013-17 regulatory period. That is, subsequent annual operating cost levels reflect the reduced base year and the Authority's estimates of cost escalation for each operating cost category.

The Authority also considers it appropriate to apply a productivity adjustment to the established efficient cost base for 2012-13. Future efficiency gains should be brought about by technological, organisational and operational improvements in service delivery.

For this purpose, the Authority recommends reducing non-direct operating costs by 1.5% per annum for each year of 2013-17, to provide an incentive for Seqwater to achieve productivity gains. This is consistent with the Authority's approach for the SunWater review and is supported by productivity gains imposed by regulators in other jurisdictions.

This is not inconsistent with recent regulatory precedents suggesting a real general productivity improvement of around 1% per annum is a reasonable expectation for regulated rural water entities.

Final Report

Stakeholder Submissions

Seqwater

Seqwater (2013a) submitted that the 1.5% efficiency reduction should not be applied to insurance. Seqwater has limited ability to influence the amount of insurance premiums, particularly given that Seqwater has made large claims for flood damage in recent years. Insurance is negotiated on a portfolio of assets and not by scheme. Therefore Seqwater submitted that the efficiency reduction should not apply to insurance costs in any scheme.

In response to the merger, Seqwater (2013b) has endeavoured to produce a revised budget estimate for 2012-13 and now has an indicative position on the change in non-direct costs. Aggregate costs for the three entities have declined as a result of the merger. However, based on an initial indicative assessment, this has not resulted in non-direct cost savings for irrigators beyond those submitted in November 2012 (e.g. removal of the QWC levy and 62.5 FTE positions from Seqwater's organisational structure).

The new Seqwater business has a larger cost base than the previous Seqwater business (upon which the NSPs were based) because it has taken on functions previously conducted by LinkWater and the SEQ WGM. As a result Seqwater's overall costs have increased; however, direct costs allocated to Seqwater irrigation schemes are unchanged.

Irrigation schemes now represent a lower share of total direct costs than previously. However, Seqwater's new non-direct costs have increased at a higher rate than the increase in Seqwater's direct costs. Consequently, when the cost allocation methodology is applied to these initial estimates, the indicative result is an increase in irrigation non-direct costs of \$200,000 (compared to the Authority's Draft Report). As this increase is uncertain and not material to Seqwater, Seqwater submits that the Authority's non-direct costs be retained.

Other Stakeholders

QFF (2013b) considered that non-direct costs allocated to irrigators are high. Seqwater's breakdown of these costs does not allow further assessment, which is not expected to change given the small proportion of revenue obtained from irrigation schemes.

During Round 2 consultation in January (QCA 2013) irrigators noted that non-direct costs should decrease as a result of the merger in January of LinkWater, the WGM and Seqwater.

MBRI (2013d) submitted that it does not accept the non-direct operating costs. These costs are disproportionately high as a portion of total costs, indicating a lack of due diligence by the Authority in proper identification of costs. A high proportion of non-direct costs is not indicative of efficient operations, and could indicate poor accounting practices. The costs associated with the flood operations centre should be excluded. Insurance costs appear high for Central Brisbane River WSS (\$708,000 for 2013-14) which is 30% of total insurance costs.

Authority's Analysis

In response to Seqwater, as insurance is provided in a competitive market, the Authority considers that generally it should be possible to negotiate savings in premiums – the position reflected in the Draft Report. However, the Authority agrees that since the flood inquiry and other events since the Draft Report, it may not be reasonable to expect Seqwater to achieve year-on-year reductions in insurance premium costs.

The Authority concludes that Seqwater's insurance premiums for 2013-17 should be exempt from the productivity gains due to current circumstances (that is, recent claims made by Seqwater and increasing insurance risks due to climate change). Accordingly, the Authority accepts Seqwater's submission and will not apply the 1.5% annual saving to insurance costs.

In relation to merger efficiencies, the Authority accepts Seqwater's recommendation to not change non-direct costs allocated to irrigators.

The Authority acknowledges that non-direct costs are a significant proportion of total costs. However, 46% is comparable to SunWater (QCA 2012a). Non-direct costs are incurred by Seqwater (and SunWater) as they operate in a centralised and compliance-driven business. The Authority has now excluded Central Brisbane River WSS flood control centre costs (\$2.4 million).

The Authority notes that insurance costs allocated to the Central Brisbane River WSS are approximately 13% of Seqwater's total insurance costs. The Authority considers this to be reasonable given the size of Wivenhoe and Somerset dams, but notes that as this is a relatively immaterial cost, it was not reviewed in detail by the Authority. However, as Seqwater sources its insurance in a competitive market (indeed Seqwater conducted a global search) the costs are considered to be efficient.

Non-direct operating expenditures for each tariff group are shown in Table 6.14.

Table 6.14: Final Non-Direct Operating Expenditure by Tariff Group (2012-13 \$)

<i>Tariff Group</i>	<i>Seqwater April 2012</i>	<i>QCA Draft Recommendation</i>	<i>QCA Final Recommendation</i>	<i>Variance (April 2012 vs. QCA Final)</i>	<i>Variance (Draft vs. QCA)</i>
<i><u>Bulk</u></i>					
Cedar Pocket Dam	50,140	42,119	51,029	889	8,910
Central Brisbane River	7,975,637	6,792,466	4,353,939	(3,621,698)	(2,438,527)
Central Lockyer Valley	634,240	350,816	327,126	(307,114)	(23,690)
Logan River	572,001	434,553	437,790	(134,211)	3,237
Lower Lockyer Valley	482,664	419,892	424,306	(58,358)	4,414
Mary Valley	677,451	457,906	459,250	(218,201)	1,344
Warrill Valley	655,616	495,249	496,274	(159,342)	1,025
<i><u>Distribution</u></i>					
Morton Vale Pipeline	18,013	26,925	26,972	8,959	47
Pie Creek	71,478	91,428	82,866	11,388	(8,562)
Total	11,137,240	9,111,354	6,659,554	(4,477,686)	(2,451,802)

Source: Seqwater (2012a), Seqwater (2012j) and QCA (2013).

Recommendations

Seqwater's all sectors:

- (a) **forecast prudent and efficient non-direct operating costs for 2012-13 should be reduced to \$6.7 million; and**
 - (b) **non-direct operating costs (excluding insurance premiums) should be reduced by 1.5% per annum for each year of the 2013-17 regulatory period, applied cumulatively.**
-

6.6 Allocation of Non-Direct Costs

Draft Report

It is necessary to determine the method to allocate non-direct costs across Seqwater's business, including irrigation tariff groups. By definition, non-direct costs do not directly apply to specific activities within schemes, and thereby cannot be allocated according to their relevance to individual service contract activities.

Seqwater's submissions describe a two-stage process for cost assignment:

- (a) Stage 1 – Seqwater attributes its direct costs to the tariff groups in which they are incurred, and allocates its non-direct costs to tariff groups using the preferred cost allocation methodology for this stage; and
- (b) Stage 2 – Seqwater allocates all of the fixed costs assigned to tariff groups in Stage 1 above, between medium and high priority WAE within each tariff groups using the preferred cost allocation methodology for this stage.

Stage 1 – Allocation of Costs to Irrigation Tariff Groups

SunWater Review 2012-17

For the SunWater investigation (QCA 2012a), the Authority engaged Deloitte Touche Tohmatsu (Deloitte) to provide advice on SunWater's proposed methodology to allocate non-direct costs to irrigation schemes based on 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.

Deloitte's analysis made clear that a number of CABs would provide a reasonable allocation of SunWater's non-direct costs.

No assistance was 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.

On the basis of the circumstances prevailing in SunWater and the costs involved in changing from SunWater's preferred method of allocation of non-direct costs, the Authority recommended that non-direct costs be allocated to service contracts (schemes) using direct labour costs (DLC) as proposed by SunWater.

Stakeholder Submissions

Seqwater

Seqwater (2012a) proposed to allocate non-direct costs to tariff groups using TDC (with the exception of insurance premium costs and working capital) because:

- (a) TDC represents a reasonable driver of the non-direct operating costs of Seqwater's irrigation activities;
- (b) it is relatively simple to administer, identify and extract from the reporting system;
- (c) it allows regular comparison between forecast and actual outcomes, and to update allocations where appropriate; and
- (d) it results in cost allocations consistent with expectations about non-direct cost incurrence.

Seqwater maintained that, while a cost allocation approach would normally be determined from first principles, there are a number of practical and other limitations to consider. For example, irrigation pricing is a very small component of Seqwater's revenues, and implementing cost allocation into the financial system involves substantial cost and resourcing effort.

Although Seqwater acknowledged that the Authority recommended the use of DLC as the appropriate CAB in its recent SunWater report, Seqwater considered that cost allocators need not be consistent across all businesses providing irrigation supplies and should instead be developed on a case-by-case basis recognising differences in individual businesses where appropriate.

Seqwater's comparisons of cost allocations using both DLC and TDC showed use of DLC resulted in significantly more costs being allocated to irrigation schemes than considered reasonable. Seqwater considered that this was not representative of actual non-direct costs incurred, but was likely to reflect cost reporting procedures in the business, particularly in relation to the identification and attribution of direct labour costs.

In response to the Authority's request, Seqwater also provided data on allocating its non-direct costs using direct labour costs as the cost allocator, rather than total direct costs. This approach resulted in total non-direct costs allocated to irrigation WSSs increasing by 25%.

For those components of its non-direct costs which are not allocated using TDC, Seqwater proposes to allocate:

- (a) insurance premium costs to tariff groups on the basis of the replacement value of insured assets; and
- (b) working capital allowance to tariff groups according to forecast revenue.

Other Stakeholders

QFF (2012) questioned whether it is necessary to allocate forecasts of non-direct costs to irrigation schemes on the basis of direct costs because it is the only option, given data limitations. QFF questioned whether alternative approaches are available.

Other Jurisdictions

Review of Bulk Water Charges for State Water

As part of their recent review of State Water bulk water charges, Cardno-Atkins (2009) assessed the allocation of corporate expenditure between State Water valleys (WSSs).

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.

Cardno-Atkins supported the use of FTEs to allocate common costs, including corporate 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

For the ESC's 2006 price review, GMW utilised a number of CABs for corporate/shared costs (see Table 6.15).

Table 6.15: Goulburn-Murray Water – Basis of Allocation of Shared Costs

<i>Corporate Cost Category</i>	<i>Basis of Allocation</i>
Corporate governance	
Strategy and development	
Finance	Service share of total expenditure
Records and reception	
Information technology	
Environmental management plan	
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).

GAWB 2005 Investigation of Pricing Practices

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

The Deloitte analysis for SunWater was not determinative on which of these two measures, DLC or TDC (out of the several considered and rejected), would be most suitable to allocate non-direct costs. Both were relatively highly ranked.

Although in the SunWater investigation the Authority accepted the DLC approach, this does not imply that this method of cost allocation is considered necessarily superior for all entities and circumstances.

Both SunWater (DLC) and Seqwater (TDC) approaches are examples of fully distributed cost methods. These methods are often criticised as being arbitrary.

Rather, the CAB is often chosen on the grounds that it represents a 'fair and reasonable' way to allocate the common costs.

The use of DLC for SunWater and TDC for Seqwater are both reasonable approaches on the grounds that both allocators are plausible proxies for non-direct cost incurrence, and there are no clear economic arguments for preferring one approach over the other. Each entity involved also considered that its preferred CAB is better suited to its particular cost accounting systems and procedures.

The Authority proposes therefore that as Seqwater's systems are based on TDC, requiring Seqwater to adopt DLC, would not justify the cost of doing so (nor materially enhance the allocation of costs). The Authority recommended the allocation of non-direct costs based on TDC and endorsed Seqwater's proposed allocation of insurance costs (on the basis of the replacement value of insured assets).

Final Report

Stakeholders Submissions

Seqwater

Seqwater (2013a) concurs with the Authority's Draft Report recommendations.

Other Stakeholders

MBRI (2013d) submitted that it does not accept the allocation of non-direct costs, as the allocation of non-direct costs across WSSs may be disproportionate to that for other operations undertaken by Seqwater. Seqwater is a very significant organisation with large range of activities and errors in allocation of non-direct costs are possible and could be substantial. Refer to Volume 2 for details.

Authority's Analysis

The Authority notes Seqwater's support for the allocation of non-direct costs.

In response to MBRI, the Authority notes that non-direct costs are, by definition, not able to be directly related to tariff groups. Accordingly, a cost allocation method is required that fairly allocates non-direct costs (to tariff groups). For SunWater, the Authority engaged Deloitte to investigate the options in some detail and determined that of direct labour cost and total direct costs, both were appropriate, and neither approach was clearly better. As a result, the Authority considers that TDC (excluding variable electricity) is a suitable method for allocating non-direct costs.

Recommendations

Seqwater should allocate non-direct operating costs (excluding insurance) to irrigation tariff groups on the basis of total direct costs (excluding variable electricity).

Insurance costs should be allocated on the basis of the replacement value of the insured assets (as recommended by Seqwater).

Stage 2 – Allocation of Costs between Priority Groups

Draft Report

Once total fixed costs have been allocated to a tariff group they need to be allocated between high and medium priority WAE within the tariff group. This is the second stage of cost assignment. Variable operating costs are allocated by reference to water use.

Stakeholder Submissions

Seqwater

In general, Seqwater (2012a) has proposed the same approach to stage 2 cost allocation as that proposed by the Authority for SunWater, where for bulk schemes, fixed maintenance costs were allocated to priority groups using HUFs, and fixed operations costs were allocated 50% using HUFs and 50% using current nominal WAE. For distribution schemes, all fixed operating costs were allocated on the basis of current nominal WAE.

Seqwater advised that stage 2 allocations between priority groups are required only for the Logan River, Warrill Valley and Mary Valley tariff groups. For Lower Lockyer Valley, Pie Creek and Cedar Pocket Dam, no stage 2 cost allocations (between priority groups) are required as all WAE in these tariff groups are medium priority. For Central Lockyer Valley, all WAE are treated as medium priority because high priority customer WAE is immaterial (1.1%) and WAE have not yet been formalised for the scheme.

Other Stakeholders

QFF (2012) submitted that the approach of using HUFs to allocate costs between high and medium priority should be consistent with the SunWater approach.

RFPL (2012) submitted that as water supplied to irrigators is of a lower priority it should not be considered of equal value. S. Sinclair and H. Sinclair (2012b) suggested that if dam operations are included in costs, the allocation of costs should be based on the volumetric percentage against combined supply capacity, rather than against Seqwater's allocation.

Authority's Analysis

The Authority agreed with Seqwater's proposal to use the Stage 2 cost allocation approach recommended for the SunWater investigation (QCA 2012a) for Logan River, Mary Valley and Warrill Valley WSSs (where customer WAE is differentiated on the basis of supply reliability) for the following reasons:

- (a) fixed repairs and maintenance costs be allocated to medium and high priority customers using HUFs (as for renewals expenditure) as these expenditures have a similar purpose to renewals expenditure; and
- (b) those components of fixed operations costs that are related to the different reliability (for example, dam safety, facilities and environmental management) also be allocated to medium and high priority customers using HUFs. Whereas those components of fixed operations costs that are more related to service provision than reliability (scheduling, water delivery, customer service, account management) be allocated using current nominal WAE. However, as Seqwater does not disaggregate operations costs into those which are asset and non-asset related, it is proposed that 50% of these costs be allocated using HUFs and 50% using current nominal WAEs.

For the remaining schemes, in which all customers are effectively allocated medium priority WAE, all fixed operating costs should be allocated on the basis of current (or adjusted) nominal WAEs (refer Chapter 5: Renewals Annuity).

In response to RFPL (2012), the Authority agreed that the price of water should reflect different supply reliabilities, where relevant, and has recommended accordingly (for example, between medium and high priority WAE).

In response to S. Sinclair and H. Sinclair (2012b), the Authority took into account adjusted volumetric capacities as measured by HUFs so that cost allocation reflects different supply reliabilities where appropriate. WAEs are used to allocate costs only where users of water face the same reliability of supply.

As proposed by QFF, the Authority's approach to allocating costs between high and medium priority was consistent with the SunWater approach. The application of the HUF in Central Brisbane River WSS fails to account for flood mitigation and as an alternative, the Authority relied upon an alternative methodology (see Central Brisbane River WSS Volume 2 report).

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Stakeholder Submissions

Seqwater

Seqwater (2013a) concurs with the Authority's Draft Report recommendations.

Other Stakeholders

QFF (2013b) supported the use of HUFs or adjusted WAE (where HUFs do not apply).

MBRI (2013d) submitted that no costs should be allocated on the basis of nominal WAE as almost all activities are required to provide high priority WAE. Nominal WAE overstates the benefits received as no irrigation water is ordered and, generally, irrigators do not have meters. A smaller portion of costs should be allocated. Seqwater does not provide a release service to irrigators and irrigators do not benefit from improved reliability.

Authority's Analysis

The Authority notes Seqwater's and QFF's support for the Draft Report recommendation.

In response to MBRI, the Authority notes that in the Central Brisbane River WSS, no water is ordered and many irrigators do not have meters. However, water use log books are expected to be submitted and reviewed by Seqwater. Nevertheless, as Seqwater is yet to propose irrigator meter installations, meter reading costs are not generally incurred by Seqwater, at this stage.

As meter reading, water ordering, release scheduling and water releases are typically operations costs in other schemes, and as these costs are likely occur to a lesser extent for irrigators in Central Brisbane River WSS, there is a case to allocate less operations costs to irrigators than for other WSSs.

Granular data is not available from Seqwater (raising some doubt as to the correct proportion of costs to be allocated using WAE). Therefore, instead of allocating 50% of fixed operations costs on the basis of adjusted WAE (1.6%) and 50% on the basis of WAE (2.4%), it is proposed to allocate 100% of fixed operating costs on the basis of adjusted WAE in the Central Brisbane River WSS.

The Authority and other stakeholders have not identified any grounds for the Authority to alter its Draft Report recommendations in this regard for tariff groups other than the Central Brisbane River WSS. Accordingly, the Authority maintains its recommendations for other WSSs.

Recommendations

For the Logan River, Mary Valley and Warrill Valley tariff groups:

- (a) **fixed repairs and maintenance costs be allocated to medium and high priority customers using HUFs; and**
- (b) **all other fixed operating costs (including insurance premium costs) be allocated 50% using HUFs and 50% using current nominal WAEs.**

For Central Lockyer Valley, Lower Lockyer Valley, Morton Vale Pipeline, Pie Creek, and Cedar Pocket Dam tariff groups, fixed operating costs should be allocated using current nominal WAEs (as recommended for renewals in Chapter 5).

For Central Brisbane River WSS, 100% of fixed operating costs be allocated on the basis of adjusted WAE (1.6%).

6.7 Cost Escalation

Although necessary for price determination, credible forecasts of future operating costs are difficult to produce, particularly over long time horizons. Future costs are often estimated using today's values and then projected forward using an appropriate escalation rate.

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012a) proposed the below approach to the forecasting of its direct and non-direct cost components. Where Seqwater 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.

Direct Labour

Seqwater (2012a) advised that its current Enterprise Bargaining Agreement (EBA) of 4% per annum (nominal) extends from 1 July 2009 to 30 June 2012. Future increases, as well as conditions for a new EBA, were yet to be negotiated⁶.

In the meantime, Seqwater proposed that labour costs continue to be escalated by 4% per annum (nominal) for the 2013-17 regulatory period.

This escalation rate was proposed as it aligns with the Authority's SunWater report (QCA 2012a), and is consistent with historic growth in a number of ABS labour cost indices in relevant industries across Queensland and Australia over the past five and 10 years as shown in Table 6.16 submitted by Seqwater below.

⁶ Email from Damian Scholz to Angus MacDonald dated 27 July 2012. The Authority understands that a single year extension to the EBA has been agreed that includes a general salary increase of 2.2% for 2012-13 only. In addition to the general increase, most Seqwater staff are eligible for an automatic 'incremental' salary increase, which has increased total salary costs by approximately 4% (in 2012-13).

Table 6.16: Labour Price Index - Compound Average Growth Rate

<i>Labour Price Index</i>	<i>Compound Average Growth Rate (%)</i>	
	5 year	10 year
All Industries (Queensland)	3.9	3.9
Electricity, gas, water and waste services (Aust)	4.1	4.3
Construction (Aust)	4.1	4.3
Mining (Aust)	4.6	4.5

Source: ABS (2012b).

Materials and Contractors

Seqwater (2012a) proposes to escalate contractor and material costs by 4% per annum (nominal) for the 2013-17 regulatory period as it aligns with the Authority's SunWater report, and is consistent with historic growth in a number of relevant ABS construction cost indices for Queensland over the past 10 years as shown in Table 6.17.

Table 6.17: Construction Cost Index - Compound Average Growth Rate

<i>Construction Index</i>	<i>10 Year Compound Average Growth Rate (%)</i>
Building Construction (Queensland)	4.9
Non-residential Building Construction (Queensland)	4.7
Queensland Road and Bridge Index	5.2

Source: ABS (2012c).

Seqwater noted the comment made by the Authority in its SunWater report that increased demand from mining, manufacturing and construction sectors for the materials and contractor services procured by SunWater were likely to result in real increases in the prices of these materials and services over the regulatory period.

Seqwater further referred to a recent report by the Queensland Major Contractors Association which suggested that, given existing constraints on labour and equipment, it was likely that overall construction costs would continue to accelerate during the next five years⁷.

Electricity

In April 2012, Seqwater (2012a) advised that its energy costs accounted for 1.9% of total operating costs allocated to irrigation WSSs. In November, Seqwater's (2012aj) revised total electricity costs represent 2.2% of total operating costs.

Seqwater submitted that changes in electricity prices are also very difficult to foresee. For example, the Benchmark Retail Cost Index (BRCI) has shown considerable volatility over recent years and the introduction of the carbon tax introduced further uncertainty.

⁷ Queensland Major Contractors Association, 2012, *2012 Major Projects Report*, February.

Electricity tariff increases represent risks that are beyond Seqwater's control. While Seqwater may have limited control over the energy component of prices (for contestable electricity contracts), through prudent procurement practices, it still bears the risks of changes to network charges.

These factors combine to make the forecasting of electricity costs very difficult.

Given that electricity costs represent a small proportion of irrigation costs which are difficult to forecast, Seqwater proposed that electricity costs in the 2012-13 budget be escalated by inflation (2.5%) for the regulatory period (from 2013-14) with a proposed settlement at the end of the regulatory period to reflect the actual electricity costs incurred.

Seqwater would maintain a running balance across the price path with revenue neutral 'unders and overs' adjustments applied to prices for the next price path to account for the difference between forecast and actual electricity costs.

Seqwater maintained that this approach recognises that:

- (a) it should not bear the cost risk to the extent it is unable to manage those risks, particularly in a lower bound cost recovery environment;
- (b) the proposed adjustment to water charges to reflect differences in forecast and actual electricity costs is consistent with the Ministerial Referral Notice in that Seqwater is permitted to recover its efficient electricity costs; and
- (c) the approach is also consistent with the Authority's view of cost pass throughs. That is, for SunWater the Authority noted that 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 are unambiguous.

Other Direct Costs

Seqwater proposed that other direct operating cost categories (not direct labour, contractors and materials) be escalated from the 2012-13 base year by 2.5%.

Non-direct Costs

Seqwater proposed that non-direct costs be escalated from the 2012-13 by 2.5%.

Other Stakeholders

QFF (2012) queried whether:

- (a) it is appropriate to adopt the same escalation for internal labour and contractors costs and materials as for the Authority's SunWater investigation; and
- (b) the Authority will include new energy tariffs or adopt the approach used in the SunWater analysis.

Central Brisbane River WSS irrigators asked whether the rate of indexation that Seqwater has applied to cost forecasts is appropriate (QCA 2012c).

Other Jurisdictions

Recent Decisions by the Authority

GAWB Investigation of Pricing Practices 2010

The Authority considered 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 proposed that CPI should be applied over the 2010-15 and 2015-30 periods for operations, maintenance and chemicals costs.

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 was to occur in line with 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).

After 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 2011).

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

Direct Labour and Contractors Cost Escalation

For the SunWater investigation (QCA 2012a), the Authority concluded that appropriate ABS labour price index data was an objective and authoritative source of information for the estimation of future labour cost movements.

For SunWater, the Authority also considered that labour costs in Queensland were likely to rise by more than the general inflation rate because the continuation of strong growth in the resources sector would maintain upward pressure on labour costs.

However, since the SunWater review, estimates of labour costs have moderated. The Authority noted recent Queensland Treasury forecasts. Refer Table 6.18.

Table 6.18: Labour Cost Forecast

<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>Average</i>
3.5%	3.5%	3.75%	3.6%

Source: Queensland Treasury (2012).

The Authority considered it appropriate to have regard to the most contemporary forecasts. Accordingly, the Authority recommended that direct labour and contractors be escalated at the average forecast (3.6%) for each of the four years of the 2013-17 regulatory period.

Materials Cost Escalation

In principle, the Authority considered that ABS index data is an objective and authoritative source of information. This data, supplemented by industry studies and water sector investment trends, provides a useful short to medium term guide to future cost movements.

However, the Authority also believed 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 Producer Price Indexes (PPI) construction cost indexes (referred to by Seqwater), is that they are an imperfect match with Seqwater's operating activities. In particular, building construction indexes are more closely related to domestic, commercial, industrial and community service building activity than they are to operating and maintaining the civil engineering infrastructure associated with water storage and supply.

Further problems are that the indexes may not be representative of the particular geographical region of relevance, and usually comprise a mix of cost components, which do not neatly align with the specific cost components used by Seqwater.

However, the Authority considered that the use of appropriate ABS construction indexes to estimate cost escalation factors provides a reasonable guide to construction cost movements given the limited information available on disaggregated cost indexes.

In addition to the PPIs (including the roads and bridges component of the Queensland Construction Index), the Authority also examined the Queensland Engineering Construction Activity Implicit Price Deflator (QECAIPD) to provide additional insight into civil construction cost movements.

Updated estimates for the latest 10-year period (June 2002-June 2012) for the PPI indexes used by Seqwater as well as estimates over the same 10-year period for the QECAIPD are shown in Table 6.19.

Table 6.19: Construction Cost Escalation Factor Estimates

<i>Index</i>	<i>Escalation Factor Estimates*</i>
Building Construction Index (QLD)	4.5%
Non-residential Building Construction Index (QLD)	4.4%
Queensland Road and Bridge Index	5.1%
Queensland Engineering Construction Activity Implicit Price Deflator (QECAIPD)	4.1%

*Source: ABS (2012a) and ABS (2012c). * Note: Estimates are compound annual growth rates based on the most recent available data – June 2002 to June 2012, except QECAIPD which is March 2002 to March 2012.*

The Authority considered that Seqwater’s proposal to escalate its direct materials costs by 4% per annum seems reasonable when compared with ABS construction cost index data.

Electricity Cost Escalation

For SunWater, the Authority recommended that electricity be escalated by 6.6% in 2011-12, 12.5% in 2012-13 and 7% per annum for subsequent years, with the exception of 2015-16 where 8% will apply.

The Authority recommended that, should SunWater sustain further material cost increases due to unanticipated electricity tariff rises over the regulatory period, a cost pass-through or end-of-period adjustment may apply.

For Seqwater, however, given the immateriality of electricity costs, the Authority’s recommended that electricity costs be escalated by 2.5% and that only end-of-period adjustments should be considered.

Other Direct and Non-Direct Cost Escalation

The Authority considered that Seqwater’s proposal to escalate other direct costs (excluding electricity) and all non-direct costs by the general inflation rate (2.5% per annum) is reasonable given that these costs are primarily generated by administrative and management functions, which are likely to be somewhat restrained over the regulatory period given current government institutional initiatives.

In response to QFF (2012) and irrigators (QCA 2012c), the Authority considered that it is appropriate to adopt the same indices for direct labour, contractors and materials costs as for SunWater because the same principles apply, and the approach used to escalate electricity costs differs from that used for SunWater given the relative size of the costs.

Final Report

Stakeholder Submissions

Seqwater

Seqwater (2013a) submitted that, subsequent to the Authority’s Draft Report, the salary escalation component of the 2012-13 EBA is now finalised. Under this agreement general salaries will increase by 2.2%. In addition to this general increase, most salaried staff are eligible for an annual increment which Seqwater has forecast to result in labour costs increasing by a further 3.0%.

Therefore, Seqwater submitted that direct labour escalation for 2012-13 is 5.2%. As the salary and wages average increment trends downward over time when staffing turnover is low and as future enterprise bargaining increases are not known, Seqwater submitted that the direct labour escalation factor for 2013-17 should be 4% per year.

Seqwater (2013a) agreed that the cost of contractors be escalated by 3.6% per annum.

Seqwater (2013a) agreed that costs of materials should be escalated by 4% per annum.

Seqwater (2013a) agreed that electricity should be escalated by 2.5% per annum in nominal terms. However, should Seqwater sustain material electricity cost changes above the escalated level, Seqwater may apply to the Authority for an end-of-period adjustment.

Seqwater (2013a) agrees that other direct costs and non-direct costs should be escalated by 2.5% per annum in nominal terms.

Other Stakeholders

QFF (2013b) accepted the escalation rates recommended in the Authority's Draft Report.

MBRI (2013d) notes that escalation occurs but that irrigators (as price-takers) must seek efficiencies to meet escalating costs and do not have the luxury of escalation. MBRI (2013d) submitted that electricity costs can be the subject of an end-of-period adjustment.

Authority's Analysis

Labour and Contractor Costs

The Authority notes that Seqwater's submission specifies a 5.2% increase in salaries during 2012-13. Seqwater's submission provides little guidance to the Authority on likely labour cost increases for 2013-17. Future enterprise agreements and increments are unknown.

The Authority's Draft Report recommended that labour costs (including direct and non-direct labour costs) be escalated by 3.6% per annum for each year of the 2013-17 regulatory period, based on the Queensland Treasury (Treasury) labour cost forecasts for 2013-2016 (as per the 2012-13 State Budget).

To determine the total labour cost escalation rate for 2013-17, the Authority again considered Treasury's forecasts of annual growth in the Queensland Wage Price Index (WPI) (Table 6.20).

Table 6.20: Labour Cost Forecast

<i>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>	<i>Average</i>
3.5%	3.5%	3.75%	n.a.	3.6%

Source: Queensland Treasury (2013)

The available three-year average forecast in Queensland WPI growth is 3.6% per annum for 2013-16. The Authority considers this to be the most appropriate basis for escalating labour costs over the regulatory period, noting there is no forecast for 2016-17.

The Authority also notes Seqwater's support for the Authority's recommended 3.6% escalation for contractor costs.

As there are no grounds to alter the Draft Report, the Authority recommends that labour and contractor costs be escalated at 3.6% per annum from 2012-13 up to and including 2016-17.

Materials

For materials escalation, the Authority has updated Draft Report estimates for the latest 10-year period for the PPI and QECAIPD indexes as shown in Table 6.21.

Table 6.21: Construction Cost Escalation Factor Estimates

<i>Index</i>	<i>Escalation Factor Estimates*</i>
Building Construction Index (QLD)	4.3%
Non-residential Building Construction Index (QLD)	3.9%
Queensland Road and Bridge Index	4.9%
Queensland Engineering Construction Activity Implicit Price Deflator (QECAIPD)	4.1%

*Source: ABS (2012a) and ABS (2012c). Note: *Estimates are compound annual growth rates based on recent available data – December 2002 to December 2012, except QECAIPD which is September 2002 to September 2012.*

While these estimates have reduced marginally since the Draft Report, they have not changed enough to alter the Authority's view that a materials cost escalation factor of 4% per annum seems reasonable for 2013-17 when compared to ABS construction cost index data.

Electricity Costs

In February 2013, the Authority published the Electricity Draft Determination for 2013-14, which has been adopted as the basis for any regulated electricity tariff incurred by Seqwater in its irrigation schemes for 2013-14 only. While the Authority's draft electricity tariffs may change, this is the most current and public source of regulated electricity tariff forecasts for 2013-14. This is a tariff specific adjustment (for example, Tariff 22 in Lower Lockyer Valley WSS), where the increase is about 15% above the Authority's estimate for 2012-13.

An alternative approach has been adopted for tariff groups where unregulated electricity tariffs apply (that is, Central Brisbane River, Central Lockyer Valley and Pie Creek tariff groups). In these tariff groups, the Authority's estimate of 2012-13 electricity costs has been increased by actual contract-specific increases to 2013-14 or 2.5% where no published source or contract exists as a basis to do otherwise.

Beyond 2013-14, and consistent with the Draft Report, the Authority recommends escalation of electricity costs by 2.5% each subsequent year of the regulatory period. The Authority endorses Seqwater and MBRI's views that material variations could be addressed via application for an end-of-period adjustment (see Chapter 3: Regulatory Framework).

Other Direct and Non-Direct Costs

For other direct costs and non-direct costs (excluding labour), the Authority recommends escalation at 2.5% per annum for 2013-17, consistent with the Draft Report.

Recommendation:

The Authority recommends that for the regulatory period 2013-17:

- (a) the costs of direct and non-direct labour and contractors should be escalated by 3.6% per annum in nominal terms from 2012-13 to 2016-17;**
- (b) the costs of materials should be escalated by 4% per annum in nominal terms for the regulatory period 2013-17;**
- (c) other direct costs and non-direct costs (excluding labour) should be escalated by 2.5% per annum in nominal terms for the regulatory period 2013-17;**
- (d) where Seqwater pays regulated electricity tariffs, the relevant Authority's electricity Draft Determination for 2013-14 applies. This is a tariff specific adjustment but for tariffs such as Tariff 22, is typically 15% above 2012-13 costs;**
- (e) where Seqwater pays unregulated electricity tariffs, the 2012-13 costs should be escalated by 2.5% for 2013-14 unless a published source or contract (for 2013-14) provides a basis to increase the 2012-13 cost by a specific amount (refer Volume 2 for Central Brisbane River, Central Lockyer Valley and Pie Creek tariff groups); and**
- (f) beyond 2013-14, all electricity costs should be escalated by 2.5% per annum in nominal terms (i.e. for 2014-17).**

Should Seqwater sustain material electricity cost changes above the escalated level, consideration should be given to an application to the Authority for an end-of-period adjustment.

6.8 Working Capital

The Authority interpreted the Ministerial Direction to allow for SunWater's revenue stream to include an appropriate allowance for working capital.

Draft Report

Stakeholder Submissions

Seqwater

While noting the Authority's approach to setting a working capital allowance for the SunWater investigation (QCA 2012a), Seqwater (2012a) proposed that, for consistency, the same methodology used by the Authority for calculating the working capital allowance for the 2012-13 GSC review also be used for its irrigation schemes.

Seqwater advised that the overall allowance submitted to the Authority for the 2012-13 GSC review was \$5.54 million, and part of this had been allocated to irrigation schemes based on the proportion of forecast revenue attributable to the schemes as set out in Table 6.22 below.

Seqwater maintained that its approach was reasonable given the desirability for consistency with GSCs, the immateriality of the cost, and the (unnecessary) complexity and cost of developing a new and different methodology.

Table 6.22: Working Capital Costs (2012-13 \$)

<i>Tariff Group</i>	<i>Working Capital</i>
<u>Bulk</u>	
Cedar Pocket Dam	946
Central Brisbane River	128,926
Central Lockyer Valley	11,617
Logan River	10,795
Lower Lockyer Valley	10,486
Mary Valley	16,483
Warrill Valley	13,842
<u>Distribution</u>	
Morton Vale Pipeline	123
Pie Creek	1,622
Total	194,839

Source: Seqwater (2012a).

Other Stakeholders

No submissions on general working capital matters have been received from other stakeholders.

Other Jurisdictions

Deloitte (2011b) have reported on a number of methodologies used to calculate working capital for water and other resource utilities (including past recommendations by the Authority).

Burdekin-Haughton Water Supply Scheme – April 2003

In determining prices for the Burdekin-Haughton WSS, 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 recommendations, and included an allowance of \$0.6 million.

GAWB Investigation of Pricing Practices – June 2010

In its 2005 and 2010 GAWB price investigations, on the basis of advice from its consultants Snowy Mountain Engineering Corporation (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.

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 Australian Economic Regulator (AER) has consistently held the view that under a building block framework, regulatory allowances for working capital funding are unnecessary.

Authority's Analysis

In December 2010, the QWC released a manual which provided the Authority with guidelines on the methodology to be applied and the processes to be followed in investigating and making recommendations on SEQ GSCs for 2011-12.

This manual states that an allowance for working capital is to be included in the grid service charges for the economic cost arising from the timing difference between receivables and payables, and is to be calculated using the following formula:

$$WCA = \left\{ AAR \left(\frac{\text{Average Debtor Days}}{365} \right) - AAP \left(\frac{\text{Annual Creditor Days}}{365} \right) \right\} \cdot WACC$$

Where WCA = working capital allowance; AAR = annual accounts receivable; AAP = annual accounts payable; and WACC = weighted average cost of capital.

Although the Authority had used a different definition of working capital for the SunWater investigation, it considers that one methodology should be applied across Seqwater (as identified above) given the relative size of the irrigation sector and the cost of establishing and adopting a different methodology.

Nevertheless, by far the largest portion of irrigators' payments to Seqwater arises from fixed Part A and C charges paid in advance, whereas GSC charges are paid in arrears. This means that, for irrigation activities, it is likely that average creditors exceeds average debtors, and Seqwater would not suffer an economic cost resulting from the timing difference between receivables and payables.

For this reason, Seqwater was requested to provide further substantiation of its proposal. However, as further evidence was not forthcoming, the Authority has not incorporated a working capital allowance in this instance.

Final Report

Stakeholder Submissions

Seqwater (2013a) accepts that no working capital allowance be included in irrigation prices.

MBRI (2013a to 2013e) accepted the Authority's findings.

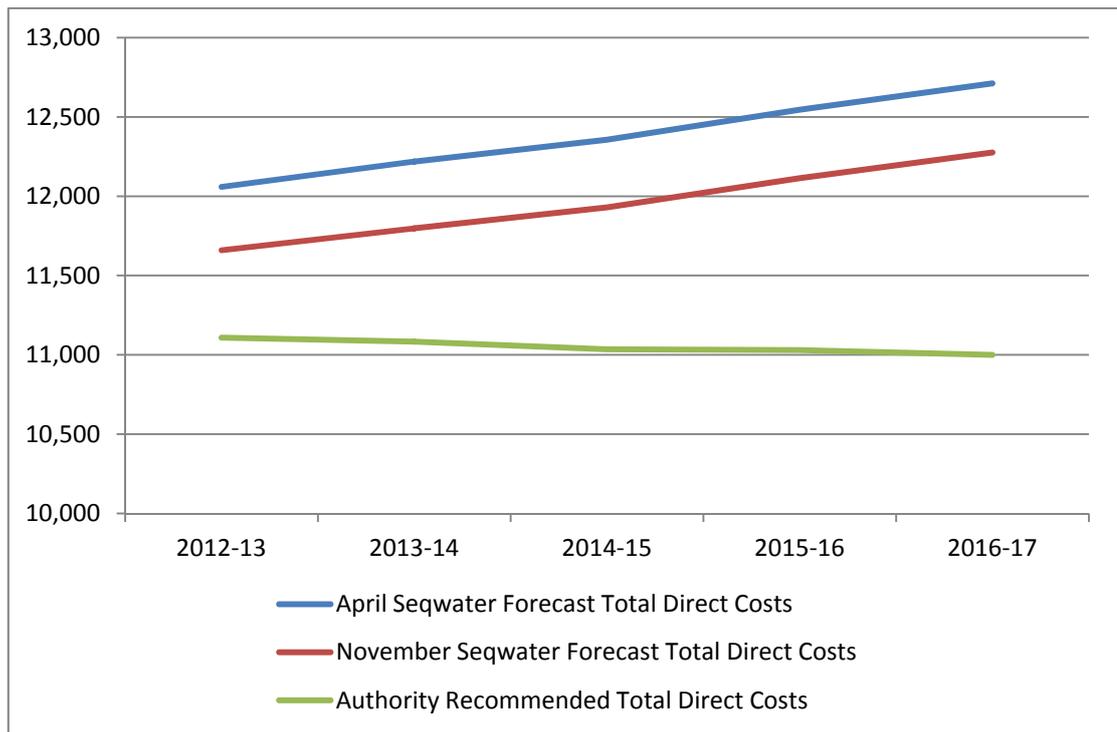
Recommendation

The Authority recommends that a working capital allowance not be allowed for Seqwater's irrigation activities.

6.9 Total Operating Costs (Irrigation Schemes – All Sectors)

The Authority's recommended cost savings applied to direct operating expenditure in irrigation schemes (all sectors costs) for the 2012-13 base year and 2013-17 regulatory period are presented in Figure 6.2.

Figure 6.2: Direct Operating Costs 2012-17 (\$'000 Real)



Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2012).

The total impact on each irrigation tariff group on the Authority’s recommended reductions to 2012-13 direct operating expenditure (all sectors costs) is presented in Table 6.23.

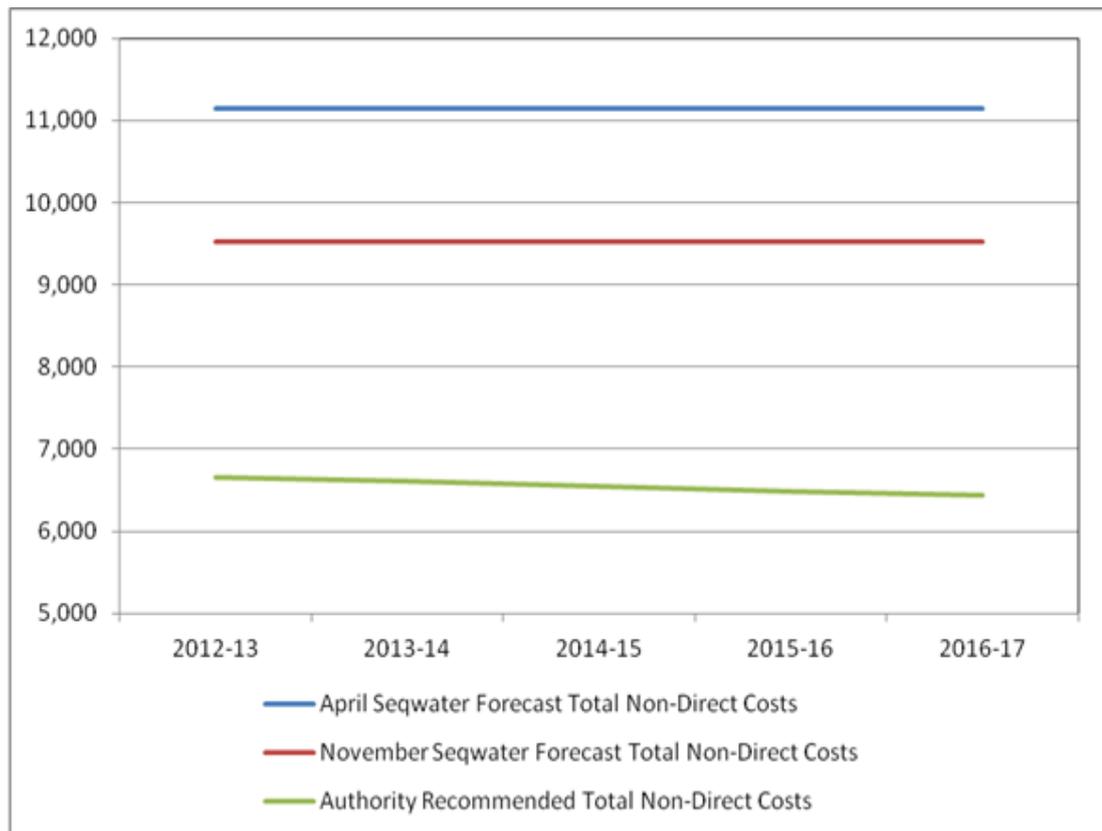
Table 6.23: Direct Operating Costs by Tariff Group 2012-13 (All Sectors)

<i>Tariff Group</i>	<i>Seqwater Initial (April 2012)</i>	<i>QCA Draft Recommendation</i>	<i>QCA Final Recommendation</i>	<i>Variance (Seqwater April vs. Final QCA)</i>	<i>Variance (Draft vs. Final QCA)</i>
<i>Bulk</i>					
Cedar Pocket Dam	63,278	62,328	78,913	15,635	16,585
Central Brisbane River	7,865,996	7,677,397	7,555,147	(310,850)	(122,250)
Central Lockyer Valley	746,672	390,853	395,567	(351,105)	4,714
Logan River	700,958	601,744	606,773	(94,185)	5,029
Lower Lockyer Valley	693,697	714,966	721,996	28,298	7,030
Mary Valley	854,306	638,805	640,105	(214,200)	1,300
Warrill Valley	1,014,102	903,786	904,066	(110,036)	280
<i>Distribution</i>					
Morton Vale Pipeline	24,496	45,994	45,994	21,498	0
Pie Creek	95,226	153,410	160,435	65,209	7,025
Total	12,058,731	11,189,312	11,108,996	(949,735)	(80,316)

Source: Seqwater (2012a) and Seqwater (2012aj)

The Authority's recommended cost savings, as applied to non-direct operating expenditure in irrigation schemes (all sectors costs) for 2012-13 and the 2013-17 regulatory period, are presented in Figure 6.3.

Figure 6.3: Non-Direct Operating Costs 2012-17 (\$'000 Real)



Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2012).

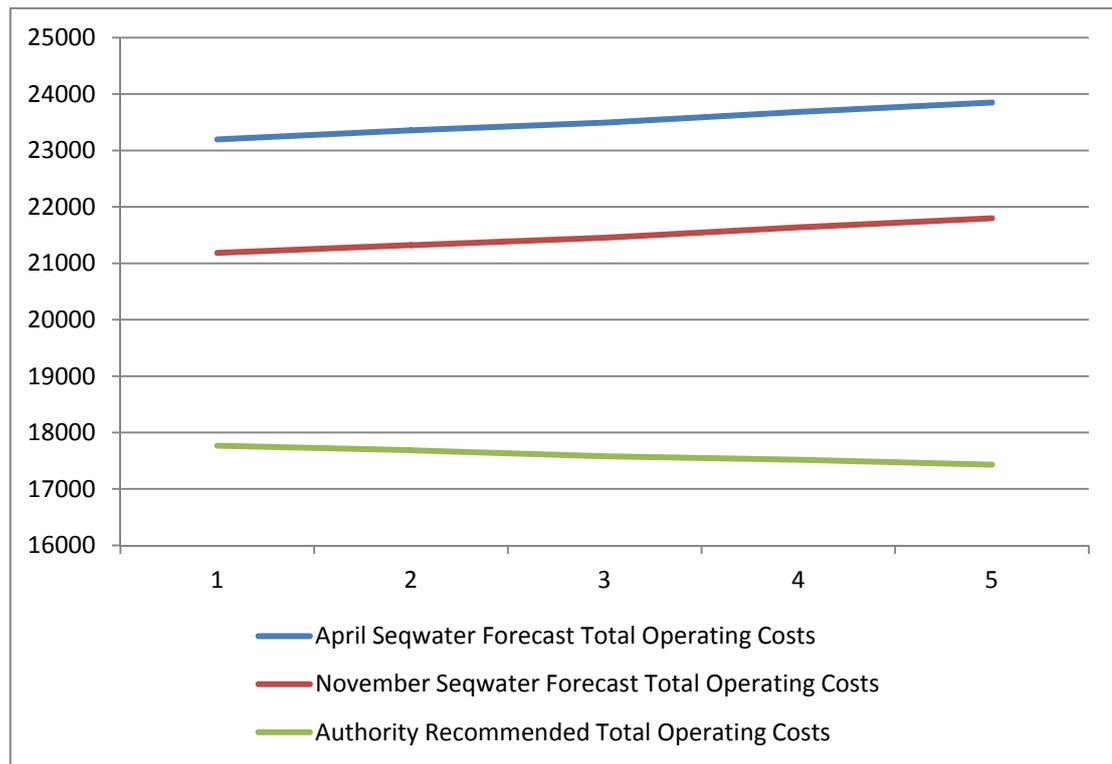
The total impact on each irrigation tariff group, of the Authority’s recommended reductions to 2012-13 non-direct operating expenditure (all sectors costs), is presented in Table 6.24.

Table 6.24: Non-Direct Operating Costs by Tariff Group 2012-13 (All Sectors)

<i>Tariff Group</i>	<i>Seqwater April 2012</i>	<i>QCA Draft Recommendation</i>	<i>QCA Final Recommendation</i>	<i>Variance (Seqwater vs. Final QCA) \$</i>	<i>Variance (Draft vs. Final QCA) %</i>
<i>Bulk</i>					
Cedar Pocket Dam	50,140	42,119	51,029	889	8,910
Central Brisbane River	7,975,637	6,792,466	4,353,939	(3,621,698)	(2,438,527)
Central Lockyer	634,240	350,816	327,126	(307,114)	(23,690)
Logan River	572,001	434,553	437,790	(134,211)	3,237
Lower Lockyer	482,664	419,892	424,306	(58,358)	4,414
Mary Valley	677,451	457,906	459,250	(218,201)	1,344
Warrill Valley	655,616	495,249	496,274	(159,342)	1,025
<i>Distribution</i>					
Morton Vale Pipeline	18,013	26,925	26,972	8,959	47
Pie Creek	71,478	91,428	82,866	11,388	(8,562)
Total	11,137,240	9,111,354	6,659,554	(4,477,688)	(2,451,802)

Source: Seqwater (2012a), Seqwater (2012j) and QCA (2012).

The Authority's recommended cost savings, as applied to total (direct and non-direct) operating expenditure in irrigation schemes (all sectors costs) for 2012-17, are presented in Figure 6.4.

Figure 6.4: Total Operating Costs 2012-17 (\$'000 Real)

Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2013).

The total impact on each irrigation tariff group, of the Authority's recommended reductions to 2012-13 total operating expenditure (all sectors costs), is presented in Table 6.25.

Table 6.25: Total Operating Costs by Tariff Group 2012-13 (All Sectors)

Tariff Group	Seqwater (April 2012)	QCA Draft Recommendation	QCA Final Recommendation	Change (Seqwater vs. Final QCA)	Change (Draft vs. Final QCA)
<i>Bulk</i>					
Cedar Pocket	113,418	104,447	129,942	16,524	25,495
Central Brisbane	15,841,633	14,469,862	11,909,086	(3,932,547)	(2,560,776)
Central Lockyer	1,380,912	741,669	722,694	(658,218)	(18,975)
Logan River Lower	1,272,960	1,036,297	1,044,564	(228,396)	8,267
Lockyer	1,176,362	1,134,888	1,146,302	(30,060)	11,414
Mary Valley	1,531,756	1,096,711	1,099,355	(432,401)	2,644
Warrill Valley	1,669,718	1,399,035	1,400,341	(269,377)	1,306
<i>Distribution</i>					
Morton Vale Pipeline	42,509	72,919	72,966	30,457	47
Pie Creek	166,704	244,838	243,301	76,597	(1,537)
Total	23,195,971	20,300,666	17,768,551	(5,427,421)	(2,532,115)

Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2012, 2013). Includes some variations to the Draft Report as a result of further quality assurance.

Comparisons of all sectors and irrigation only operating costs are presented in Table 6.26.

Table 6.26: Total Operating Costs All Sectors and Irrigation Only 2012-13

	<i>All Sectors Operating Costs</i>			<i>Irrigation Only Operating Costs</i>		
	<i>Direct</i>	<i>Non-Direct</i>	<i>Total</i>	<i>Direct</i>	<i>Non-Direct</i>	<i>Total</i>
Seqwater April 2012	12,058,731	11,137,240	23,195,971	3,003,436	2,175,058	5,178,495
Seqwater November	11,659,368	9,523,511	21,182,879	2,911,236	1,670,978	4,582,214
QCA Draft Recommended	11,189,312	9,111,354	20,300,666	2,363,799	1,621,980	3,985,779
QCA Final Recommended	11,108,996	6,659,554	17,768,550	2,360,363	1,518,584	3,878,947
Change (April 2012 vs Final QCA)	(949,735)	(4,477,686)	(5,427,421)	(643,073)	(656,475)	(1,299,548)
Change (Draft vs Final QCA)	(80,316)	(2,451,800)	(2,532,116)	(3,436)	(103,396)	(106,832)

Note: Irrigation Only values are 2013-14, deflated by 2.5%

The Authority presents further details of irrigation only costs in Chapter 7: Total Costs and Final Prices.

7. TOTAL COSTS AND FINAL PRICES

The Authority has been directed to recommend prices (and tariff structures) for Seqwater's nine irrigation tariff groups for 2013-17.

The Authority estimated total prudent and efficient costs for each tariff group, including renewals, operating, maintenance and administration costs. These are offset by revenues received by Seqwater for property leases, recreation fees and town water supplies.

Seqwater proposed that all costs were fixed and should be recovered through fixed charges. However, the Authority considers that some costs vary with water use over the regulatory period, and recommends that such costs be recovered through volumetric charges.

Cost-reflective fixed tariffs are derived by dividing fixed costs by WAE. Cost-reflective volumetric charges are estimated by dividing total variable costs for each tariff group by typical water use (using all sectors costs and all sectors water use over the past 15 years, where available).

In recommending prices, the Authority has been directed to maintain current prices. However, the Authority has also been directed to consider establishing tariff structures which reflect the nature of the costs. Consequently, the Authority has instead maintained current revenues (in real terms) based on current prices and average water use over 2006-12. Government endorsed this revenue-maintenance approach as part of the Authority's review of SunWater irrigation prices 2012-17.

To provide an efficient signal to customers and manage Seqwater's volume risk, the Authority recommends that cost-reflective volumetric charges be adopted from 1 July 2013. The exception is Pie Creek, where a cost-reflective charge would be excessive (three times the highest volumetric tariff in SunWater WSSs). In most schemes volumetric charges fall in 2013-14. All volumetric charges are increased at CPI over the balance of 2013-17.

To maintain revenues, the balance not recouped by volumetric charges is recovered by fixed charges. The assumed revenue from volumetric tariffs is the product of the recommended volumetric charge/s and the ten-year average irrigation only water use for each tariff group.

Also in recommending prices, the Authority must consider the use of price paths to moderate the impact of price increases exceeding inflation. Accordingly, where current revenues are below cost-reflective revenues, the Authority recommends price paths where fixed charges increase annually by \$2 per ML (plus CPI) until cost-reflective levels are reached.

The Authority's recommended fixed charges are derived by dividing the remaining required revenue by irrigation customer WAE.

In two tariff groups, Cedar Pocket and Pie Creek, volumetric charges are recommended to materially increase on 1 July 2013 (reflecting the Authority's estimates of variable costs).

For all tariff groups, the impact on water bills of the Authority's recommended tariff structures (that is, changes in fixed and volumetric charges) will vary depending on an irrigator's unique water use profile.

To ensure that Seqwater's legitimate commercial interests are recognised, the Authority proposes that if uncontrollable costs change materially, relative to forecast costs, Seqwater can apply for an adjustment to prices. As this is a four year regulatory period, and given the relative immateriality of irrigation revenue to Seqwater, only end-of-period adjustments are expected, if any.

7.1 Background

Ministerial Direction

The Authority is required to recommend irrigation prices for nine Seqwater tariff groups to apply from 1 July 2013 to 30 June 2017, to recover the following allowable costs:

- (a) prudent and efficient expenditure on renewing and rehabilitating existing assets through a renewals annuity; and
- (b) efficient operational, maintenance and administrative costs to ensure the continuing delivery of water services.

Where current prices are already above the level required to recover costs, water prices are to be maintained in real terms using the Authority's recommended measure of inflation. For certain schemes nominated in the Ministerial Direction, 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 where the Authority calculates tariffs that would otherwise result in a price increase for irrigators higher than the Authority's measure of inflation:

- (a) the Authority must consider phasing in price increases to moderate price impacts on irrigators but also have regard for Seqwater'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 price paths are not recommended.

Previous Review 2006-11

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 set reference tariffs for consideration by the Scheme Irrigation Pricing Working Groups (Tier 2).

Tier 2 working groups considered scheme-specific issues and negotiated irrigation tariffs within the Tier 1 recommendations and Government policy. The maximum real tariff increases were capped at \$10 per ML over the five-year price path, plus 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 payment by irrigators for spillway upgrades for the duration of the price path.

For schemes comprising bulk and distribution systems, the prices were bundled together, that is, the costs were established for the combined bulk and distribution activities.

On 1 July 2008 ownership of SEQ schemes was transferred to Seqwater. The tariffs agreed for 2006-11 continued to apply.

Interim Prices: 2011-13

In June 2011, the Treasurer and Minister for Energy and Water Utilities directed Seqwater to comply with the *Rural Pricing Direction Notice (No 01) 2011* which required that: 2011-12 irrigation prices increase by CPI based on 2010-11 prices; and 2012-13 irrigation prices would increase by CPI based on 2011-12 prices.

Comparison of Previous and Current Review

For the purpose of establishing prices for the 2013-17 regulatory period, the Authority recommends, or has 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 refers.

Table 7.1: Regulatory and Pricing Assumptions – Past Review and Final Report

<i>Issue</i>	<i>2006-11 Past Review</i>	<i>2013-17 Authority Final Recommendation</i>
Form of Regulation	All former SunWater WSSs in SEQ chose a price cap.	An adjusted price cap for all schemes.
Lower Bound Costs	<p>Lower bound costs include efficient operational, maintenance and administration costs, and prudent and efficient expenditure on renewing existing assets through a renewals annuity.</p> <p>Costs also include recreational management, electricity and compliance costs. Revenue offsets apply to lower bound costs.</p>	As for 2006-11, consistent with the Ministerial Direction.
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	<p>There was one tariff structure for each scheme segment, with no differentiation between bulk water supply and channel distribution.</p> <p>Tariffs were generally based upon a ratio of 70% Part A (fixed) component and 30% Part B (volumetric) component. The volumetric component sometimes incorporated fixed costs.</p> <p>Where revenues exceeded lower bound costs, the additional revenue was recovered through the Part B charge.</p>	<p>Separate tariffs be adopted for bulk and distribution tariff groups. For cost-reflective tariffs:</p> <p>(a) Part A (bulk fixed) – a fixed charge per ML of WAE, to recover all bulk fixed costs;</p> <p>(b) Part B (bulk volumetric)– a charge per ML of usage, to recover all bulk variable costs;</p> <p>(c) Part C (distribution fixed) – a fixed charge per ML of WAE, to recover all distribution system fixed costs; and</p> <p>(d) Part D (distribution volumetric) – a charge per ML of usage, to recover all distribution system variable costs.</p> <p>Where adjustments to tariffs are required for the maintenance of past revenues, adjustments are made to the fixed tariffs.</p>

<i>Issue</i>	<i>2006-11 Past Review</i>	<i>2013-17 Authority Final Recommendation</i>
Tariff Groups	Eight tariff groups were nominated across five schemes.	Seqwater's nine tariff groups are adopted. Central Brisbane River WSS is included for the first time and Cedar Pocket Dam is a separate WSS, not a tariff group of Mary Valley WSS. Refer Volume 2.
Cost Allocation	<p>Fixed costs allocated by using water pricing conversion factors applied to high priority WAE to allocate more costs per ML of high priority WAE (relative to medium priority WAE) in bulk and distribution systems.</p> <p>A portion of fixed costs were recovered through volumetric tariffs which are effectively allocated by water use.</p>	<p>Cost allocations as follows:</p> <p>(a) Bulk - Renewals, fixed repairs and maintenance and 50% of fixed operations costs allocated by HUF (or equivalent); 50% of fixed operations by nominal WAE (where different priority groups exist). Except in the Central Brisbane River WSS, where all fixed costs are allocated based on HUF equivalent (adjusted WAE);</p> <p>(b) Distribution systems – Fixed costs all allocated by nominal WAE; and</p> <p>(c) Variable costs reflected in volumetric tariffs – all allocated by water use.</p>
Distribution/Bulk Losses	<p>Costs associated with distribution losses were allocated to distribution customers.</p> <p>Costs associated with bulk losses were allocated to bulk customers.</p>	As for 2006-11 prices.
Free Water Allocations	No free water applied to Seqwater schemes subject to 2006-11 price paths.	No free water applies in any Seqwater irrigation scheme.
Termination Fees	A termination fee applied under the Morton Vale Pipeline Contract. No other termination fee applied.	<p>For the Morton Vale Pipeline, as per contract, or if the contract is renegotiated, 11 times the cost-reflective fixed distribution system tariff.</p> <p>For Pie Creek, the Authority recommends transitional termination fees of 11 times recommended fixed Part C charge for 2013-17, while Government and Seqwater conduct a review of Pie Creek.</p>

Source: QCA (2012).

7.2 Total Costs

Draft Report

Based on the methodology outlined in previous chapters, the Authority determined total efficient costs for all sectors for each tariff group. This is comprised of:

- (a) prudent and efficient renewals costs used as a basis for estimating the renewals annuity (refer Chapter 5);
- (b) efficient direct operating costs (refer Chapter 6);
- (c) efficient non-direct operating costs (refer Chapter 6); and

- (d) less revenue offsets (refer below).

Revenue Offsets

Seqwater receives revenue from property leases, recreation fees and the provision of town water supplies. To ensure that Seqwater is not overcompensated for the provision of services, this revenue needs to be offset against the estimate of efficient costs.

SunWater Review 2012-17

SunWater's revenue offsets in most schemes included flood margin leases, rental of SunWater houses and income from miscellaneous fees and charges.

The Authority recommended that, for 27 service contracts, SunWater's forecast revenue offsets be accepted. This was on the basis that they were broadly consistent with the average actual revenues received over the 2006-11 price path.

However, in three distribution systems, SunWater's 2012-17 forecast revenue offsets were materially lower than the average past revenue offsets, without sufficient explanation. Accordingly, the Authority increased revenue offsets to align with the average of past actual revenue offsets.

Submissions

Seqwater

In initial submissions, Seqwater (2012a) estimated it would receive revenue of \$294,400 from property leases, recreation fees and the provision of town water supplies in 2012-13 (base year). The Authority sought from Seqwater explanation for the significant decrease compared to the average of \$501,700 (nominal) over the 2009-12 period.

Seqwater (2012aj) subsequently submitted a higher estimate of \$583,200 in 2012-13 caused by an increased estimate in three tariff groups, as follows:

- (a) in the Central Brisbane River WSS Seqwater's November estimate included lease revenue that was previously misclassified;
- (b) in the Central Lockyer Valley WSS, Seqwater included a revenue offset of \$700 to reflect the historical average; and
- (c) in Pie Creek, Seqwater included a revenue offset for urban water sales.

Table 7.2 refers.

Table 7.2: Actual and Forecast Revenue Offsets (Nominal \$'000)

<i>Tariff Group</i>	<i>Past 2009-12 Average</i>	<i>April 2012-13 Forecast</i>	<i>November 2012-13 Forecast</i>	<i>Variance (Past vs. November) \$</i>	<i>Variance (Past vs. November) %</i>
<i><u>Bulk</u></i>					
Cedar Pocket Dam	0.0	0.0	0.0	0.0	n.a.
Central Brisbane River	457.3	175.9	510.9	53.6	10%
Central Lockyer Valley	0.7	0.0	0.7	0.0	0%
Logan River	25.1	24.4	24.4	(0.7)	(3%)
Lower Lockyer Valley	7.4	13.8	13.8	6.4	46%
Mary Valley	9.3	13.5	13.5	4.2	31%
Warrill Valley	1.8	21.9	19.5	17.7	91%
<i><u>Distribution</u></i>					
Morton Vale	0.0	0.0	0.0	0.0	n.a.
Pie Creek	0.0	0.0	0.4	0.4	100%.
Total	501.6	249.4	583.1	81.5	14%

Source: Seqwater (2012a) and Seqwater (2012aj).

Authority's Analysis

The Authority compared Seqwater's November 2012 forecasts against actual revenue received for the past three completed financial years (in nominal terms). Seqwater has submitted total revenue offsets that are 14% higher than the historical average. However, in real terms the Seqwater forecast was less than 10% above average historical revenue offsets.

In eight tariff groups Seqwater has submitted higher revenue offsets than average past revenue, and in Logan River WSS Seqwater submitted a revenue offset \$700 (3%) lower than the historical average.

As Seqwater's revised revenue offsets are consistent with, but exceed the historical averages (in real terms), and are to Seqwater's account if they fail to be realised (as higher revenue offsets reduce prices) the Authority has accepted the Seqwater November 2012 data.

Final Report

Stakeholder Submissions

Seqwater (2013a) agrees with the Authority's revenue offsets presented in the Draft Report.

MBRI (2013d) submitted that the Draft Report failed to take into account revenues from customers such as Kilcoy, Esk, Coominya abattoir and Splityard hydro-electricity plant.

Authority's Analysis

The Authority notes Seqwater's support for the Draft Report revenue offsets recommendation. In response to MBRI, the customers specified above are supplied under urban water arrangements, or from WAE that Seqwater holds. These customers are, therefore, allocated costs through bulk pricing and the revenues paid are not considered to be revenue offsets.

Irrigators therefore do not pay the costs allocated to such customers. As such there are no grounds to alter the Draft Report approach and the Authority maintains its recommendation that Seqwater's (November 2012) estimates of revenue offsets be accepted.

Recommendation

The Authority recommends that Seqwater's November 2012 revenue offsets be accepted.

Summary of Total Costs – Draft Report

Base year 2012-13 and 2013-17 forecast costs are presented in Table 7.3 in real terms.

Table 7.3: Draft Report Total Cost Comparisons 2012-17 (All Sectors Real \$'000)

	2012-13	2013-14	2014-15	2015-16	2016-17
Renewals Annuity					
Seqwater	2,394	2,454	2,427	2,482	2,682
Authority	n.a.	2,067	2,011	2,043	2,397
Labour and Contractors					
Seqwater	5,424	5,503	5,584	5,666	5,749
Authority	n.a.	5,053	5,029	5,005	4,979
Repairs and Maintenance					
Seqwater	3,255	3,302	3,350	3,400	3,449
Authority	n.a.	2,844	2,841	2,838	2,835
Materials and Other					
Seqwater	2,544	2,552	2,561	2,569	2,578
Authority	n.a.	2,405	2,383	2,361	2,338
Dam Safety					
Seqwater	0	25	25	75	100
Authority	n.a.	23	23	68	89
Rates					
Seqwater	836	836	836	836	836
Authority	n.a.	836	836	836	836
Non-Direct Costs					
Seqwater	11,137	11,137	11,137	11,137	11,137
Authority	n.a.	9,014	8,915	8,815	8,715
Revenue Offsets					
Seqwater	(249)	(249)	(249)	(249)	(249)
Authority	n.a.	(583)	(583)	(583)	(583)
Total Costs					
Seqwater	24,890	25,560	25,671	25,916	26,281
Authority	n.a.	21,664	21,461	21,388	21,612

Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2012).

Base year 2012-13 and 2013-17 forecast costs are presented in Table 7.4 in nominal terms.

Table 7.4: Draft Report Total Cost Comparisons 2012-17 (All Sectors Nominal \$'000)

	2012-13	2013-14	2014-15	2015-16	2016-17
Renewals Annuity					
Seqwater	2,394	2,515	2,550	2,673	2,960
Authority	n.a.	2,118	2,113	2,200	2,646
Labour and Contractors					
Seqwater	5,424	5,641	5,867	6,101	6,345
Authority	n.a.	5,179	5,284	5,390	5,496
Repairs and Maintenance					
Seqwater	3,255	3,385	3,520	3,661	3,807
Authority	n.a.	2,915	2,985	3,056	3,129
Materials, Electricity and Other					
Seqwater	2,544	2,616	2,690	2,767	2,845
Authority	n.a.	2,471	2,509	2,548	2,587
Dam Safety					
Seqwater	0	26	26	81	110
Authority	n.a.	24	24	73	99
Rates					
Seqwater	836	857	878	900	923
Authority	n.a.	857	878	900	923
Non-Direct Costs					
Seqwater	11,137	11,416	11,701	11,994	12,293
Authority	n.a.	9,239	9,366	9,493	9,619
Revenue Offsets					
Seqwater	(249)	(256)	(262)	(269)	(275)
Authority	n.a.	(598)	(613)	(628)	(644)
Total Costs					
Seqwater	24,890	26,199	26,971	27,908	29,010
Authority	n.a.	22,205	22,548	23,033	23,855

Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2012).

Table 7.5 presents the Authority's draft recommended costs for each tariff group.

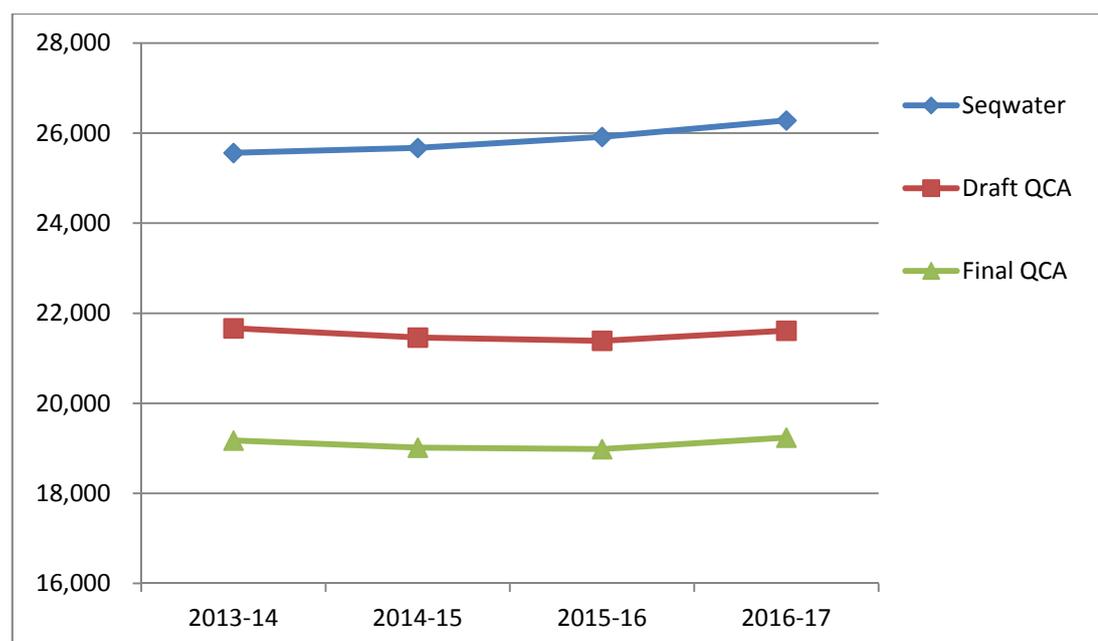
Table 7.5: Draft Report Costs by Component (All Sectors Nominal \$'000 2013-14)

<i>Tariff Group</i>	<i>Renewals Annuity</i>	<i>Direct Operating Costs</i>	<i>Non-Direct Operating Costs</i>	<i>Revenue Offsets</i>	<i>Total Efficient Costs</i>
<i>Bulk</i>					
Cedar Pocket Dam	12	64	43	0	119
Central Brisbane River	1,065	7,838	6,889	(524)	15,269
Central Lockyer Valley	210	400	355	(1)	965
Logan River	113	614	440	(25)	1,142
Lower Lockyer Valley	168	753	426	(14)	1,332
Mary Valley	343	651	464	(14)	1,444
Warrill Valley	161	922	502	(20)	1,565
<i>Distribution</i>					
Morton Vale Pipeline	(20)	47	27	0	54
Pie Creek	66	157	93	0	315
Total	2,118	11,446	9,239	(598)	22,205

Source: QCA (2012).

Summary of Total Costs – Final Report

Seqwater's initial costs, and the Authority's draft and final costs are shown in Figure 7.1.

Figure 7.1: Final Comparison of Irrigation WSS Costs 2013-17 (Real \$'000)

Source: Seqwater (2012a) and QCA (2012, 2013).

Base year 2012-13 and 2013-17 final forecasts are presented in Table 7.6 in real terms.

Table 7.6: Final Comparison of Total Costs 2012-17 (All Sectors Real \$'000)

	2012-13	2013-14	2014-15	2015-16	2016-17
Renewals Annuity					
Seqwater	2,394	2,454	2,427	2,482	2,682
Authority	n.a.	2,070	2,017	2,047	2,390
Labour and Contractors					
Seqwater	5,424	5,503	5,584	5,666	5,749
Authority	n.a.	5,033	5,010	4,985	4,960
Repairs and Maintenance					
Seqwater	3,255	3,302	3,350	3,400	3,449
Authority	n.a.	2,842	2,839	2,836	2,833
Materials, Electricity and Other					
Seqwater	2,544	2,552	2,561	2,569	2,578
Authority	n.a.	2,337	2,315	2,293	2,271
Dam Safety					
Seqwater	0	25	25	75	100
Authority	n.a.	23	23	68	89
Rates					
Seqwater	836	836	836	836	836
Authority	n.a.	836	836	836	836
Consultation and NSPs					
Seqwater	0	0	0	0	0
Authority	n.a.	49	49	49	49
Non-Direct Costs					
Seqwater	11,137	11,137	11,137	11,137	11,137
Authority	n.a.	6,604	6,548	6,491	6,433
Revenue Offsets					
Seqwater	(249)	(249)	(249)	(249)	(249)
Authority	n.a.	(583)	(583)	(583)	(583)
Total Costs					
Seqwater	24,890	25,560	25,671	25,916	26,281
Authority	n.a.	19,208	19,054	19,023	19,277

Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2013).

Base year 2012-13 and 2013-17 final forecasts are presented in Table 7.7 in nominal terms.

Table 7.7: Final Comparison of Total Costs 2012-17 (All Sectors Nominal \$'000)

	2012-13	2013-14	2014-15	2015-16	2016-17
Renewals Annuity					
Seqwater	2,394	2,515	2,550	2,673	2,960
Authority	n.a.	2,122	2,119	2,204	2,638
Labour and Contractors					
Seqwater	5,424	5,641	5,867	6,101	6,345
Authority	n.a.	5,159	5,263	5,369	5,474
Repairs and Maintenance					
Seqwater	3,255	3,385	3,520	3,661	3,807
Authority	n.a.	2,913	2,983	3,054	3,127
Materials, Electricity and Other					
Seqwater	2,544	2,616	2,690	2,767	2,845
Authority	n.a.	2,396	2,432	2,469	2,506
Dam Safety					
Seqwater	0	26	26	81	110
Authority	n.a.	24	24	73	99
Rates					
Seqwater	836	857	878	900	923
Authority	n.a.	857	878	900	923
Consultation and NSPs					
Seqwater	n.a.	0	0	0	0
Authority	n.a.	50	51	53	54
Non-Direct Costs					
Seqwater	11,137	11,416	11,701	11,994	12,293
Authority	n.a.	6,769	6,879	6,990	7,101
Revenue Offsets					
Seqwater	(249)	(256)	(262)	(269)	(275)
Authority	n.a.	(598)	(613)	(628)	(644)
Total Costs					
Seqwater	24,890	26,199	26,971	27,908	29,010
Authority	n.a.	19,692	20,018	20,485	21,278

Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2013).

Table 7.8 presents the Authority's recommended costs for each tariff group for 2013-14.

Table 7.8: Final Total Costs by Component (All Sectors Nominal \$'000 2013-14)

<i>Tariff Group</i>	<i>Renewals Annuity</i>	<i>Direct Operating Costs</i>	<i>Non-Direct Operating Costs</i>	<i>Revenue Offsets</i>	<i>Total Efficient Costs</i>
<i>Bulk</i>					
Cedar Pocket Dam	12	81	52	0	145
Central Brisbane River	1,052	7,732	4,424	(524)	12,685
Central Lockyer Valley	211	411	333	(1)	955
Logan River	117	620	446	(25)	1,158
Lower Lockyer Valley	169	765	431	(14)	1,351
Mary Valley	352	655	467	(14)	1,460
Warrill Valley	163	923	504	(20)	1,570
<i>Distribution</i>					
Morton Vale Pipeline	(21)	47	27	0	53
Pie Creek	66	166	84	0	316
Total	2,122	11,400	6,769	(598)	19,691

Source: QCA (2013).

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 and tariff structures.

Previous Review 2006-11

For the 2006-11 price paths:

- 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
- 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.

The tariff structures agreed for 2006-11 varied considerably between tariff groups (see Chapter 4: Pricing Framework). Table 7.9 refers.

Table 7.9: Seqwater's 2012-13 Tariff Structures

<i>Tariff Group</i>	<i>Fixed</i>	<i>Variable</i>
<i>Bulk</i>		
Cedar Pocket Dam	70%	30%
Central Brisbane River	n.a.	n.a.
Central Lockyer Valley	37%	63%
Logan River	53%	47%
Lower Lockyer Valley	70%	30%
Mary Valley	80%	20%
Warrill Valley	61%	39%
<i>Distribution</i>		
Pie Creek	70%	30%
Morton Vale Pipeline	70%	30%

Source: Seqwater (2012aj).

SunWater Review 2012-17

The Authority engaged Indec Consulting (Indec) to advise the portion of SunWater's costs that could vary with water use over the regulatory period. Indec found that costs could be reduced when water demand is low due to:

- (a) re-allocation of operations personnel to other schemes;
- (b) re-allocation of operations personnel to activities that would otherwise be carried out by contractors (temporarily reduce the use of contractors and casual labour);
- (c) deferment of non-essential planned and unplanned maintenance activities; and
- (d) reduction in overtime and time off in lieu, during periods of low demand.

Table 7.10 and Table 7.11 present the average findings for both bulk and distribution systems by activity and then by expenditure type.

Table 7.10: Variable Costs by Activity

<i>Activity</i>	<i>Variable in Bulk</i>	<i>Variable in Distribution</i>
Operations (excl. electricity)	10%	28%
Preventative Maintenance	20%	24%
Corrective Maintenance	20%	25%
Renewal Annuity	1%	1%

Source: Indec (2011).

Table 7.11: Variable Costs by Expenditure Type

<i>Expenditure Type</i>	<i>Variable in Bulk</i>	<i>Variable in Distribution</i>
Labour	20%	26%
Contractors	20%	26%
Materials and Other	20%	26%
Electricity Pumping Costs	100%	100%
Non-Directs	0%	0%

Source: Indec (2011).

The Authority accepted Indec's findings for operating costs but recommended that renewals costs are fixed in relation to water use (rather than 1% variable as per Table 7.10).

Draft Report

Stakeholder Submissions

Seqwater

Seqwater (2012s) submitted that operations, maintenance and renewal costs do not all vary with water use (that is, they are 100% fixed costs). The only variable costs are electricity costs associated with the use of the Pie Creek Pump Station to pump water from the Mary River to the Pie Creek tariff group infrastructure.

Seqwater specifically submitted that the average variable cost percentages determined for SunWater do not apply to Seqwater schemes as Indec's assumptions do not apply to Seqwater. These assumptions include that, when water use is low:

- (a) operations and maintenance staff have the skills and qualifications to perform other work;
- (b) contractors can be interrupted (without cost) and replaced with suitably qualified internal resources; and
- (c) staff can be moved to different schemes (again, without cost) and can then be called back at short notice when demands return to 'normal'.

However, Seqwater submitted that if the Authority applies its findings to Seqwater schemes then a direct application of the SunWater findings to Seqwater schemes is not appropriate.

Most SunWater schemes consist mainly of medium priority customers. Seqwater submitted that four Seqwater schemes have a high portion of high priority customers. These schemes are unlikely to have prolonged periods of low water use. Accordingly, there is no opportunity to reduce costs, as high priority customers will continue to demand water. For example, operations and maintenance would need to continue to supply high priority customers, irrespective of medium priority use. Therefore, as activity cannot be reduced, the percentage of variable costs in these schemes will be close to 0%.

Seqwater submitted that Morton Vale Pipeline is gravity fed and, therefore, no electricity costs are incurred. Seqwater considers that the Authority cannot apply the average

SunWater distribution system finding but the average should be calculated to exclude electricity. This results in an average of 11.6% variable costs for distribution systems.

Other Stakeholders

QFF (2012) supported a tariff structure that reflects the variable and fixed nature of costs but note that Seqwater have not provided sufficient data for the Authority to establish the portion of variable costs.

QFF considered that a 100% fixed charge will result in financial hardship for irrigators (particularly, in Central Brisbane River and Logan River WSSs) and reduced scheme viability (in Lower Lockyer Valley, Mary Valley and Cedar Pocket Dam).

Other Jurisdictions

In Chapter 4: Pricing Framework it was noted that:

- (a) IPART (2010) 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, 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 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 noted that SunWater and Seqwater WSSs share similar characteristics. Most bulk operating costs are fixed and do not vary with water use. The assets and their operation are similar across both businesses. Both businesses have a large degree of manually operated schemes (with some exceptions) that require ongoing effort to deliver water. In times of reduced supply, some activities can be reduced or deferred.

Given the similarities between the businesses and the cost involved in appointing an independent consultant to calculate the portion of costs that are variable, the Authority applied the Indec findings to Seqwater schemes.

In response to Seqwater's concerns about this application, the Authority considered that:

- (a) an optimal business structure would allow for existing employees to modify their work program depending on customer demands. For example, when operations activities

are reduced, operations staff should be able to undertake other activities such as mowing and general maintenance of recreation areas;

- (b) contractors are engaged to undertake repair and maintenance activities. Seqwater engages contractors on an ‘as needed’ basis and does not typically guarantee a minimum value of work. Therefore, contractor expenses do not need to be incurred if current management of contractors does not require contractor expenses to be incurred if the repair and maintenance requirements decrease; and
- (c) Seqwater schemes are within close geographic proximity. Operational staff service several tariff groups (for example, Cedar Pocket Dam, Mary Valley and Pie Creek), allocating time between them depending on operational requirements.

In response to Seqwater’s submission that schemes with high priority WAE do not have variable costs, the Authority considered that costs that vary with water use over the regulatory period include labour, contractors, maintenance, materials and electricity pumping costs (where the electricity cost relates to delivering water to customers).

High priority customers (for example, urban water supplies) typically have a consistent water use profile. Therefore, schemes with a significant portion of high priority WAE will have what appear to be consistent costs. Seqwater interprets this to mean that all costs are fixed.

In contrast, the Authority considered that constant costs, with constant water use, are due to the incurrence of variable (and fixed) costs in a consistent manner. The Authority considered, therefore, that a portion of costs in bulk schemes, even with a high proportion of high priority WAE, will vary with water use.

Accordingly, the Authority proposed to apply the (Indec) specific average findings, recommended as part of the SunWater review, to Seqwater tariff groups. The portions of variable costs presented below are derived from Tables 7.10 and 7.11 above. Table 7.12 refers.

Table 7.12: Recommended Variable Costs

<i>Activity</i>	<i>Variable in Bulk</i>	<i>Variable in Distribution*</i>
Labour	20%	25%
Contractors	20%	25%
Repairs and Maintenance	20%	25%
Materials and Other	20%	25%
Dam Safety	0%	n.a.
Rates	0%	n.a.
Electricity (pumping) [#]	50-100%	100%
Non-Directs	0%	0%
Renewal Annuity	0%	0%

Source: QCA (2012). Note: * For labour, contractors, repair and maintenance and materials and other distribution costs, the Authority has adopted 25% variable based on Indec’s findings for SunWater which ranged from 24-28%.

The Authority notes that the electricity pumping costs in Central Lockyer Valley are 50% fixed (relating to a ROP requirement to fill the off-stream storage Lake Clarendon Dam) and 50% variable (relating to water deliveries to meet customer demand). By contrast, 100% of electricity pumping costs in Pie Creek tariff group relate to meeting customer demand and are, therefore, treated as variable costs.

Final Report

Stakeholder Submissions

Seqwater

Seqwater (2013a) agrees with the concept of fixed and variable tariffs.

Seqwater noted, however, that operations activities are both fixed and variable. Seqwater assumes from the Draft Report that when customer demand (that is, water use) reduces thereby reducing Seqwater's variable cost activities, Seqwater staff should undertake fixed cost activities. However, the management of work in Seqwater operates in the reverse.

Operations staff spend the majority of their time engaged in operations work activities that are fixed costs. Staff cease these activities to attend to customer demands and then return to take up fixed cost activities. The level of customer water use determines the backlog of fixed-cost work to be completed when the demand tapers off.

With Seqwater's current staffing levels, operations staff are fully utilised undertaking fixed cost work. This holds for times when full supply is available without releases and in drought conditions when no water is released, contrary to the initial findings of SKM.

Authority's Analysis

The Authority accepts that Seqwater can and does move staff to address fixed operations workload-backlogs when water use is low. However, depending on the scheme characteristics including the extent of backlog, over time even costs initially considered to be fixed, will be impacted by water use. It will be possible for Seqwater to remove or reduce some fixed costs where protracted periods of low water use occur.

For these reasons, and those noted in the Draft Report, the Authority maintains its view that certain activities and the associated costs will vary with water use over the regulatory period. On the basis of its estimates, only a small portion of total costs will vary with water usage.

As there are no grounds to alter the Draft Report, the Authority recommends the application of fixed and variable tariff structures on the basis of the variable cost portions outlined in Table 7.12 (above).

Recommendation

The Authority recommends the application of fixed and variable tariff structures on the basis of the variable cost portions outlined in Table 7.12.

7.4 Fixed Charges

Draft Report

To establish the irrigation share of fixed costs, total fixed costs must be allocated between medium and high priority WAE in each relevant tariff group. Variable costs are allocated according to water use.

The Authority identified in earlier chapters its preferred approach to allocating costs between medium and high priority WAE. This approach is summarised in Table 7.13.

Table 7.13: Authority's Recommended Fixed Cost Allocation Between High and Medium Priority WAE

<i>Cost Component</i>	<i>Fixed Cost Allocation Methodology</i>	
	<i>Bulk WSSs</i>	<i>Distribution Systems</i>
Renewals annuity	HUF	WAE
Repairs and Maintenance	HUF	WAE
Other Operating Costs	50% by HUF and 50% by WAE	WAE

Source: QCA (2012). Note: Where HUF does not apply the Authority proposed an alternative approach. Refer Volume 2 reports. Variable costs are allocated between medium and high priority WAE according to water use.

The resulting total fixed revenue requirements for high and medium priority WAE and the irrigation share of the total fixed revenue requirement are as shown in Table 7.14.

Table 7.14: Authority's Draft Recommended Allocation of Fixed Revenue Requirement between High and Medium Priority WAE (2013-14 Nominal \$'000)

<i>Tariff Group</i>	<i>HP Fixed Revenue Requirement</i>	<i>MP Fixed Revenue Requirement</i>	<i>HP Irrigation Share</i>	<i>MP Irrigation Share</i>
<i>Bulk</i>				
Cedar Pocket Dam	0	106	0	106
Central Brisbane River	13,625	271	0	261
Central Lockyer Valley	9	845	9	841
Logan River	672	361	0	361
Lower Lockyer Valley	0	1,203	0	1,187
Mary Valley	774	544	5	474
Warrill Valley	903	489	0	422
<i>Distribution</i>				
Morton Vale Pipeline	0	42	0	42
Pie Creek	0	263	0	263
Total	15,974	4,124	14	3,957

Source: QCA (2012).

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In eight tariff groups, the Authority has not altered its approach to allocate costs between priority groups. However, the Authority has recommended a change in total costs, which

impacts on costs allocated to each priority group. The resulting total fixed revenue requirements for high and medium priority WAE and the irrigation share of the total fixed revenue requirement are as shown in Table 7.15.

In the Central Brisbane River WSS, the Authority modified its draft recommendation and has allocated fewer costs to medium priority users. Additional details are provided in relevant chapters above and in the Volume 2 Reports. Table 7.15 also refers.

Table 7.15: Authority’s Final Recommended Allocation of Fixed Revenue Requirement between High and Medium Priority WAE (Nominal \$’000 2013-14)

<i>Tariff Group</i>	<i>HP Fixed Revenue Requirement</i>	<i>MP Fixed Revenue Requirement</i>	<i>HP Irrigation Share</i>	<i>MP Irrigation Share</i>
<i>Bulk</i>				
Cedar Pocket Dam	0	130	0	130
Central Brisbane River	11,168	149	0	144
Central Lockyer Valley	6	840	3	837
Logan River	678	371	0	371
Lower Lockyer Valley	0	1,222	0	1,205
Mary Valley	784	552	5	481
Warrill Valley	946	453	0	452
<i>Distribution</i>				
Morton Vale Pipeline	0	42	0	42
Pie Creek	0	255	0	255
Total	13,581	4,013	7	3,915

Source: QCA (2013).

7.5 Volumetric Charges

On the basis of its analysis of the share of total costs (see 7.3 above), the Authority has estimated total variable costs for each tariff group. To convert this estimate of total variable costs to a volumetric tariff requires the Authority to estimate annual volumes.

The Authority notes that Seqwater’s forecast costs were developed using a zero-based budgeting approach that assumed a typical year and assumed that all costs (except some electricity) were fixed. The challenge is to estimate a water use volume consistent with a typical year.

Unfortunately, water use in each Seqwater scheme has been highly variable over the last decade with no discernible year to year consistency. Furthermore, past water use seems more variable for Seqwater WSSs than for SunWater, where the Authority adopted the highest five of the past eight years of use as an estimate of typical water use.

The Authority uses its estimate of typical water use as the basis for establishing the volumetric charge for each tariff group.

As the notion of typical costs relates to management practices that seek to ensure services are made available when required, the Authority adopted a water use estimate based on the average of those years that exceed the ten year average for each tariff group. In the Draft

Report, the Authority considered that a longer term estimate (say the past 15 years) may fail to recognise structural changes occurring in water use, while a shorter period (say the most recent five years) would reflect the most recent years of flood and drought.

The Draft Report's total variable costs (all sectors), estimate of typical all sectors water use and the resulting volumetric charge for each tariff group are presented in Table 7.16.

Table 7.16: Draft Report Derivation of Volumetric Charges (2013-14 Nominal \$)

<i>Tariff Group</i>	<i>Total All Sectors Variable Costs (\$'000)</i>	<i>Authority Estimate of Typical All Sectors Water Use (ML)</i>	<i>Unbundled Volumetric Charge (\$/ML)</i>
<i><u>Bulk</u></i>			
Cedar Pocket Dam	13	395	32.02
Central Brisbane River	1,373	110,698	12.31
Central Lockyer Valley	112	6,272	18.48
Logan River	110	7,140	15.27
Lower Lockyer Valley	129	2,923	43.77
Mary Valley	125	14,572	8.42
Warrill Valley	173	4,978	34.52
<i><u>Distribution</u></i>			
Morton Vale Pipeline	12	489	24.84
Pie Creek	52	294	180.45

Source: QCA (2012). Note: Includes irrigation and minor non-irrigation medium priority WAE and therefore water use.

Final Report

Stakeholder Submissions

Period of Estimation

Seqwater did not provide a written submission on the Authority's Draft Report estimates of typical water use for each tariff group. However, officers of Seqwater advised the Authority that, with the benefit of hindsight, there were concerns that the Authority's adoption of only the past ten years of water use may have adversely influenced volumetric charges in some schemes (i.e. Central Lockyer Valley, Lower Lockyer Valley and Warrill Valley WSSs).

In response to the Draft Report volumetric charges, other stakeholders also submitted that:

- (a) average use over the past 10 years has not been typical. The Authority should examine options that will provide better assessments of 'typical' use. One option is to adopt a 15-year period. While this approach may fail to recognise structural changes that may have been occurring, the currently recommended prices will impede change in schemes over the next four years (QFF 2013a);
- (b) there is a disparity between the estimated water use [based on 10 years data] and probable future use. The low use figures distort the Part B charge. In the past 10

years water use has been low due to several years of drought, followed by consecutive years of flood, where there is no demand for water (Hinrichsen 2013); and

- (c) water use during 2013-17 could return to higher levels than the Authority has assumed in recommending its prices. The years prior to the past 10 years may be more indicative of water use in the coming years (QCA 2013).

Impact of Recommended Tariff Structures

In response to the Draft Report, irrigators and their representatives submitted:

- (a) that a high Part B charge discourages water use and should be lower and therefore, provide an incentive for irrigators to increase water use. The Authority should be encouraging, not providing a disincentive to productive high water users. The draft recommended prices may have a particularly negative impact on larger irrigation enterprises that seek to maximise water use under most water supply conditions;
- (b) that a high Part B charge discourages water trading and investment on farm that would subsequently (further) increase productive water use; and
- (c) the Authority's recommended prices should, via a higher Part A charge, encourage water trading. That is, a high part A would encourage inactive WAE holders to sell WAE, thus promoting the movement of WAE to higher value uses. (QFF 2013a and QCA 2013)

Authority's Analysis

Period of Estimation

In response to submissions that the last 10 years of water use has not been typical, the Authority considered the adoption of 15 years of data as a basis for estimating typical water use in Seqwater WSSs.

The Authority notes:

- (a) irrigator advices that former SEQ dairy farmers continue to irrigate fodder crops or move to other crops (vegetables and grains) that require similar water use; and
- (b) the past 10 years of water use was likely more impacted by drought and flood than by structural adjustment, particularly in light of the recent resurgence of water use noted in year to date 2012-13 water use data.

The Authority accepts that the past 10 years of water use in SEQ have not been typical, as there has been low water use due to up to nine years of drought followed by one to two years of floods. Moreover, the Authority notes that water use has recently returned to levels that were common prior to the past 10 years. That is, water use to 31 December 2012 significantly exceeds the 10-year average in a number of tariff groups.

In response to the above submissions and further analysis, the Authority has extended to 15 years the basis for its estimates of typical water use. Specifically, the Authority has applied the Draft Report methodology (the average of the above average water use years) to this longer period, resulting in materially higher estimates of typical water use in the Central Lockyer Valley, Lower Lockyer Valley and Warrill Valley WSSs.

Impact of Recommended Tariff Structures

In general, the impact has been lower (or unchanged) volumetric charges with moderately higher (or unchanged) fixed charges. Schemes not experiencing a change may not have had 15 years of water use data available, or were less impacted by drought and flood than the majority of Seqwater WSSs.

The specific impacts on the estimate of typical water use and the volumetric charges are shown in Table 7.17.

Table 7.17: Derivation of Cost-Reflective Volumetric Charges (2013-14 Nominal \$)

Tariff Group	Draft Report			Final Report		
	All Sectors Variable Costs (\$'000)	Typical All Sectors Water Use (ML)	Unbundled Volumetric Charge (\$/ML)	All Sectors Variable Costs (\$'000)	Typical All Sectors Water Use (ML)	Unbundled Volumetric Charge (\$/ML)
<i><u>Bulk</u></i>						
Cedar Pocket Dam	13	395	32.02	15	395	36.94
Central Brisbane River	1,373	110,698	12.31	1,368	110,698	10.14
Central Lockyer Valley	112	6,272	18.48	110	11,857	9.89
Logan River	110	7,140	15.27	110	10,881	9.98
Lower Lockyer Valley	129	2,923	43.77	129	5,750	22.25
Mary Valley	125	14,572	8.42	124	14,823	8.30
Warrill Valley	173	4,978	34.52	172	18,383	7.31
<i><u>Distribution</u></i>						
Morton Vale Pipeline	12	489	24.84	12	1,453	8.17
Pie Creek #	52	294	180.45	59	339	178.20

Source: QCA (2012 and 2013). Note: Includes irrigation and minor non-irrigation medium priority WAE and water use. All sectors variable costs may not align with the volumetric charge due to particular cost allocation adjustments that are detailed in Volume 2. # Pie Creek's final recommended volumetric charge is adjusted further below.

In response to stakeholder submissions:

- (a) tariff groups with high draft Part B charges have seen these charges reduced under the Authority's new approach, which should encourage irrigators to increase water use and avoid negative impacts on productive / high water users;
- (b) the now lower volumetric charges should encourage appropriate investment on-farm, which may further increase productive water use; and
- (c) the now moderately higher fixed charges will likely encourage water trading to a greater extent as inactive WAE holders will have an increased incentive to sell WAE to willing buyers, promoting the movement of WAE to higher value uses.

7.6 Cost-Reflective Fixed and Volumetric Tariffs

Draft Report

The Authority derived cost-reflective fixed and volumetric tariffs for each tariff group on the basis of assessed efficient costs identified above, and the recommended tariff structures.

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 tariff is based on WAE in each tariff group, while the variable Part B tariff reflects the Authority's estimate of typical water use for the scheme as a whole.

Current 2012-13 tariffs, Seqwater's (April 2012 and November 2012) proposed tariffs for 2013-14 and the Authority's cost-reflective tariffs for 2013-14 are presented in Table 7.18. Bundled prices also set out below, allow irrigators a familiar comparison with bundled current prices.

Table 7.18: Draft Report Cost-Reflective Tariffs by Tariff Group (Nominal \$/ML)

<i>Tariff Group</i>	<i>Actual</i>	<i>Seqwater (April 2012)</i>	<i>Seqwater (November)</i>	<i>Draft QCA Cost Reflective</i>
	<i>2012-13</i>	<i>2013-14</i>	<i>2013-14</i>	<i>2013-14</i>
Cedar Pocket Dam				
Fixed (Part A)	15.68	271.65	306.07	221.93
Volumetric (Part B)	16.81	0.00	0.00	32.02
Central Brisbane River				
Fixed (Part A)	0.00	56.52	52.44	38.34
Volumetric (Part B)	0.00	0.00	0.00	12.31
Central Lockyer Valley				
Fixed (Part A) – Bulk River	12.37	96.15	66.53	51.71
Volumetric (Part B) – Bulk River	32.91	0.00	0.00	18.48
Fixed (Part A) Bulk Pipeline	n.a.	96.15	66.53	51.71
Volumetric (Part B) Bulk Pipeline	n.a.	0.00	0.00	9.35
Morton Vale Pipeline				
Fixed (Part C)	9.61	10.51	5.45	14.85
Volumetric (Part D)	4.77	0.00	0.00	24.84
Morton Vale Pipeline (Bundled)				
Fixed (Part A + C)	21.98	106.66	71.98	66.57
Volumetric (Part B + D)	37.68	0.00	0.00	34.19
Logan River				
Fixed (Part A)	17.50	34.54	27.85	26.37
Volumetric (Part B)	27.93	0.00	0.00	15.27
Lower Lockyer Valley				
Fixed (Part A)	24.49	124.28	125.39	103.57
Volumetric (Part B)	29.99	0.00	0.00	43.77
Mary Valley				
Fixed (Part A)	17.90	39.76	27.77	24.91
Volumetric (Part B)	11.19	0.00	0.00	8.42
Pie Creek				
Fixed (Part C)	22.73	311.34	387.49	326.86
Volumetric (Part D)	46.84	0.00	55.72	180.45
Pie Creek (Bundled)				
Fixed (Part A + C)	40.63	351.10	415.26	351.77
Volumetric (Part B + D)	58.03	0.00	55.72	188.87
Warrill Valley				
Fixed (Part A)	18.96	30.87	25.63	20.39
Volumetric (Part B)	22.37	0.00	0.00	34.52

Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2012).

Final Report

The Authority's final cost-reflective tariffs are presented in Table 7.19 and Volume 2.

Table 7.19: Final Cost-Reflective Tariffs by Tariff Group (Nominal \$/ML)

Tariff Group	Actual	Seqwater (April 2012)	Seqwater (November)	Draft QCA Cost- Reflective	Final QCA Cost- Reflective
	2012-13	2013-14	2013-14	2013-14	2013-14
Cedar Pocket Dam					
Fixed (Part A)	15.68	271.65	306.07	221.93	270.81
Volumetric (Part B)	16.81	0.00	0.00	32.02	36.94
Central Brisbane River					
Fixed (Part A)	0.00	56.52	52.44	38.34	21.11
Volumetric (Part B)	0.00	0.00	0.00	12.31	10.14
Central Lockyer Valley					
Fixed (Part A) – Bulk River	12.37 ⁸	96.15	66.53	51.71	53.14
Volumetric (Part B) – Bulk River	32.91	0.00	0.00	18.48	9.89
Fixed (Part A) Bulk Pipeline	n.a.	96.15	66.53	51.71	46.24
Volumetric (Part B) Bulk Pipeline	n.a.	0.00	0.00	9.35	4.94
Morton Vale Pipeline					
Fixed (Part C)	9.61	10.51	5.45	14.85	9.54
Volumetric (Part D)	4.77	0.00	0.00	24.84	8.17
Morton Vale Pipeline (Bundled)					
Fixed (Part A + C)	21.98	106.67	71.98	66.56	55.78
Volumetric (Part B + D)	37.68	0.00	0.00	34.19	13.10
Logan River					
Fixed (Part A)	17.50	34.54	27.85	26.37	27.19
Volumetric (Part B)	27.93	0.00	0.00	15.27	9.98
Lower Lockyer Valley					
Fixed (Part A)	24.49	124.28	125.39	103.57	105.35
Volumetric (Part B)	29.99	0.00	0.00	43.77	22.25
Mary Valley					
Fixed (Part A)	17.90	39.76	27.77	24.91	25.44
Volumetric (Part B)	11.19	0.00	0.00	8.42	8.30
Fixed (Part A) Bulk Distribution					23.25
Pie Creek					
Fixed (Part C)	22.73	311.34	387.49	326.86	317.67
Volumetric (Part D)	46.84	0.00	55.72	180.45	178.20
Pie Creek (Bundled)					
Fixed (Part A + C)	40.63	351.10	415.26	351.77	340.92
Volumetric (Part B + D)	58.03	0.00	55.72	188.87	186.50
Warrill Valley					
Fixed (Part A)	18.96	30.87	25.63	20.39	21.85
Volumetric (Part B)	22.37	0.00	0.00	34.52	7.31

Source: Seqwater (2012a, 2012aj) and QCA (2013).

⁸ This charge was set for 2006-11 but has not been applied.

In Morton Vale Pipeline and Pie Creek, the bundled fixed charges exclude meter replacement costs, which are relevant to bulk customers only. As Morton Vale customers do not benefit from variable electricity costs, the bundled Part B excludes electricity.

7.7 Queensland Government Pricing Policies

Previous Review 2006-11

Under the past Ministerial Direction, for 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 four hardship tariff groups 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.

Ministerial Direction

Under the new 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 tariff groups nominated in the Ministerial Direction, 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 to be maintained in real terms.

In tariff groups where the Authority calculated tariffs that would otherwise result in a price increase for irrigators 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 Seqwater'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 provide reasons if the recommendation is not to adopt price paths.

Draft Report

Stakeholder Submissions

During Round 1 consultation in June 2012, Pie Creek irrigators submitted that a \$2/ML per annum [Part A] increase for many years will make irrigation unviable.

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 implies 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 to be an important outcome of this review if the needs of irrigators and Seqwater are to be met. It is also consistent with the requirement of the Ministerial Direction to have regard to the fixed and variable nature of the underlying costs.

The Authority therefore interpreted the Ministerial Direction to require the Authority to maintain current water revenues (rather than prices) in real terms, consistent with those achieved at the end of the current price path (that is, 2006-12). These revenues are to be maintained on a tariff group basis.

For this purpose, the Authority determined current irrigation revenue by multiplying 2012-13 tariffs by actual WAE and 2006-12 average irrigation water use.

Seqwater's current revenue (indexed to 2013-14 dollars) and the revenue that would be obtained through the Authority's cost-reflective prices are presented in Table 7.20.

Table 7.20: Draft Report Irrigation Only Revenues by Tariff Group (2013-14 Nominal \$'000)

<i>Tariff Group</i>	<i>Current Revenue</i>	<i>Revenue Based on QCA Cost-Reflective Prices</i>	<i>Variance (\$)</i>	<i>Current Cost Recovery</i>
<i><u>Bulk</u></i>				
Cedar Pocket Dam	11.6	116.6	105.0	10%
Central Brisbane River	0.0	291.8	291.8	n.a.
Central Lockyer Valley	249.9	709.3	459.3	35%
Logan River	317.9	397.3	79.5	80%
Lower Lockyer Valley	323.8	1,215.1	891.3	27%
Mary Valley	375.2	476.2	100.8	79%
Warrill Valley	462.3	514.2	51.9	90%
<i><u>Distribution</u></i>				
Morton Vale Pipeline	91.3	242.6	151.3	38%
Pie Creek	43.3	320.7	277.5	13%
Total	1,875.3	4,283.8	2,408.5	44%

Source: QCA (2012).

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. Under this approach, the cost-reflective volumetric charge remains unaffected providing the most appropriate marginal cost pricing signal to customers while addressing Seqwater'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 determining the revenue to be maintained), it would necessarily result in low revenues from the volumetric charge, with the balance of the revenue required derived from fixed charges.

If conditions returned to normal, Seqwater 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 has, therefore, adopted a 10-year irrigation only average for the purposes of determining expected revenue from volumetric charges with that revenue then used to determine the revenue to be raised from fixed charges. The 10-year average provides a more stable estimate of revenues raised from variable 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.

Table 7.21 shows total current revenue consistent with the Ministerial Direction (revenue maintenance requirement), variable revenue (based on 10-year average irrigation water use) and fixed revenue (based on the balance to be recouped through fixed charges).

Table 7.21: Draft Report Revenue Maintenance Target by Tariff Group (2013-14 Nominal \$'000)

<i>Tariff Group</i>	<i>Revenue Maintenance Target*</i>	<i>Fixed Revenue</i>	<i>Variable Revenue</i>
<u>Bulk</u>			
Cedar Pocket Dam	12.6	4.8	7.8
Central Brisbane River	171.0	153.4	17.6
Central Lockyer Valley	282.4	211.4	71.1
Logan River	345.0	296.4	48.6
Lower Lockyer Valley	346.0	286.0	60.0
Mary Valley	411.9	366.3	45.7
Warrill Valley	481.5	417.6	63.9
<u>Distribution</u>			
Morton Vale Pipeline	98.3	90.5	7.8
Pie Creek	44.9	7.0	38.0
Total	2,193.7	1,833.3	360.4

Source: QCA (2012). Note: * The revenue maintenance target is the current revenue (refer Table 7.20) plus an increase of \$2/ML per unit of nominal WAE for tariff groups on a price path towards cost-reflective pricing.

The Authority notes that this reflects an estimated \$0.32 million (or 17%) increase in total irrigation only revenue when compared with current revenue (Table 7.20 further above). The increase is calculated as current revenue plus the Authority's \$2/ML real increase to Part A (fixed) tariffs for 2013-14, in all tariff groups.

In Warrill Valley WSS, however, the increase to obtain the 2013-14 recommended Part A tariff is approximately \$1/ML, which achieves cost-reflective pricing in this tariff group.

Scheme Categories

In the context of the Ministerial Direction, the Authority identified which tariff groups are above and below the efficient cost-reflective revenue requirement. Table 7.22 refers.

Table 7.22: Cost Recovery Status of Tariff Groups (Draft Report)

<i>Below Efficient Cost-Reflective Revenue Requirement throughout 2013-17</i>	<i>Reaches Efficient Cost-Reflective Revenue Requirement during 2013-17</i>
Cedar Pocket Dam	Logan River
Central Brisbane River	Mary Valley
Central Lockyer Valley	Warrill Valley
Lower Lockyer Valley	
Morton Vale Pipeline	
Pie Creek	

Source: QCA (2012). Warrill Valley WSS reaches cost-reflective prices in 2013-14 while Logan River and Mary Valley WSSs reach cost reflective prices in 2016-17.

Where current revenues are below the assessed level of efficient costs (that is, charges are below cost-reflective levels), the Authority is required to consider recommending a price path for the four-year period from 1 July 2013 to 30 June 2017, but may recommend a longer price path if more time is needed to transition prices.

The price path is to transition prices to eventually recover costs. However, the Authority understands that the price paths do not have to be revenue neutral. That is, any revenue shortfalls in early years from prices being below lower bound do not have to be offset by higher revenues from prices above costs in later years.

The Authority's recommended price paths, therefore, aim to achieve the cost-reflective price over time. Revenue shortfalls during that time (that is, efficient costs not recovered from irrigators) may have CSO implications. However, this is a matter for Seqwater and the Government. It is not considered by the Authority as part of this review.

Schemes Below Efficient Cost-Reflective Revenue Levels in 2013-17

The Ministerial Direction identified four hardship tariff groups. These were the tariff groups that, under the previous review, were expected to remain below the lower bound during 2006-11. These were Cedar Pocket Dam, Central Lockyer Valley, Lower Lockyer Valley and Pie Creek. Each is expected to remain below cost reflective levels during 2013-17.

Other tariff groups that will not reach cost-recovery levels during 2013-17 are Central Brisbane River WSS and the Morton Vale Pipeline.

Under the Ministerial Direction, water charges in such tariff groups are to be increased in real terms at a pace consistent with the 2006-11 prices or until such time as the tariff group reaches cost-reflective levels. For these hardship tariff groups, the \$10/ML cap was implemented during the 2006-11 price paths 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 fifth year. This increase applied to Part A and Part B without consideration of the nature of fixed and variable costs.

For tariff groups where current revenue is below efficient costs, the Authority recommends price paths be set at an average rate of increases similar to that applied in 2006-11. That is, the Authority has adopted a \$2/ML annual real increase in fixed tariffs for 2013-17. The Authority considers that this approach is consistent with the requirement of the Ministerial Direction and is the same as the approach recommended for SunWater 2012-17 irrigation prices and accepted by Government.

It is also proposed to escalate all prices at CPI (2.5% per annum from 1 July 2013) in accordance with past practice.

Regardless of the Government's previous classification of some tariff groups as hardship schemes, the Authority proposes to apply the \$2/ML real price increases to fixed tariffs for all tariff groups below cost recovery until such a time as the required revenue is achieved.

Applying this approach has meant, for some tariff groups, the efficient cost requirement will not be achieved by the end of the 2013-17 regulatory period. The Authority has not recommended price paths beyond this period as any such prices may be subject to a subsequent regulatory review.

Schemes at Efficient Cost-Reflective Revenue Levels in 2013-17

Under the Ministerial Direction, where prices are already sufficient to meet the assessed level of efficient costs, prices are to be maintained in real terms. None of Seqwater's irrigation tariff groups' current prices are above the level required to meet cost-reflective revenue requirements. However, three tariff groups achieve cost reflective pricing levels during 2013-17.

Warrill Valley WSS current revenues are 90% of cost-reflective revenues (Table 7.20). With the adoption of the cost-reflective volumetric charge and with a less than \$2/ML real increase applied to the fixed charge, this scheme reaches cost-reflective levels in 2013-14.

Logan River WSS current revenues are 80% of cost-reflective revenues (Table 7.20). With the adoption of the cost-reflective volumetric charge and annual \$2/ML real increases applied to the fixed charge, this scheme reaches cost-reflective levels in 2016-17.

Mary River WSS current revenues are 79% of cost-reflective revenues (Table 7.20). With the adoption of the cost-reflective volumetric charge and annual \$2/ML real increases applied to the fixed charge, this scheme reaches cost-reflective levels in 2016-17.

Accordingly, there are no schemes with excess revenues required to be maintained during the 2013-17 regulatory period.

Central Brisbane River WSS

Seqwater (2011a) proposed a cost-reflective price of \$56.52/ML Part A only charge for 2013-14. In contrast, for 2013-14, the Authority's cost-reflective Part A tariff is \$38.34/ML and the Part B volumetric tariff is \$12.31/ML.

Given that irrigation tariffs have not previously applied, it was not possible to calculate current irrigation revenues, in the same manner as described above. Further, the Ministerial Direction does not specify a rate of increase to apply over a price path to the Central Brisbane River WSS. In considering this matter, the Authority considered a price path that 'moderates the price impacts on irrigators' and has 'regard for Seqwater's legitimate commercial interests'.

For the purpose of the Draft Report, the Authority in setting draft prices for Central Brisbane River WSS, took into account charges faced by (competing) irrigators in neighbouring WSSs. Under such an approach, the initial Part A tariff for the Central Brisbane River WSS was the simple numerical average of recommended 2013-14 Part A tariffs in the Logan River, Lower Lockyer Valley and Warrill Valley WSSs. See Volume 2 for further details.

Final Report

As in the Draft Report, the Authority determined current irrigation revenue by multiplying 2012-13 tariffs by nominal WAE (fixed charges) and 2006-12 average irrigation water use (volumetric charges).

Seqwater's current revenue (indexed to 2013-14 dollars) and the revenue that would be obtained through the Authority's cost reflective prices are presented in Table 7.23.

Table 7.23: Irrigation Only Revenues by Tariff Group (2013-14 Nominal \$'000)

<i>Tariff Group</i>	<i>Draft Report</i>			<i>Final Report</i>		
	<i>Current Revenue</i>	<i>Revenue Based on Cost-Reflective Prices</i>	<i>Current Cost Recovery</i>	<i>Current Revenue</i>	<i>Revenue Based on Cost-Reflective Prices</i>	<i>Current Cost Recovery</i>
<u>Bulk</u>						
Cedar Pocket Dam	11.6	116.6	10%	11.6	141.8	8%
Central Brisbane River	0.0	291.8	n.a.	0.0	168.9	0%
Central Lockyer Valley	249.9	709.3	35%	309.9	894.2	35%
Logan River	317.9	397.3	80%	317.9	394.6	81%
Lower Lockyer Valley	323.8	1,215.1	27%	323.8	1,203.6	27%
Mary Valley	375.2	476.2	79%	392.2	507.2	77%
Warrill Valley	462.3	514.2	90%	462.3	468.2	99%
<u>Distribution</u>						
Morton Vale Pipeline	91.3	242.6	38%	91.3	198.0	46%
Pie Creek	43.3	320.7	13%	43.3	311.3	14%
Total	1,875.3	4,283.8	44%	1,952.3	4,287.9	46%

Source: QCA (2013).

Based on current revenues (above), Table 7.24 shows the Authority's revenue maintenance target for 2013-14 by tariff group. It also shows expected variable revenue (based on 10-year average irrigation water use) and fixed revenue (based on the balance required to meet the revenue target to be recouped through fixed charges).

Table 7.24: Revenue Maintenance Target by Tariff Group (2013-14 Nominal \$'000)

<i>Tariff Group</i>	<i>Draft Report</i>			<i>Final Report</i>		
	<i>Revenue Maintenance Target*</i>	<i>Fixed Revenue</i>	<i>Variable Revenue</i>	<i>Revenue Maintenance Target*</i>	<i>Fixed Revenue</i>	<i>Variable Revenue</i>
<u>Bulk</u>						
Cedar Pocket Dam	12.6	4.8	7.8	12.6	3.6	9.0
Central Brisbane River	171.0	153.4	17.6	128.3	102.3	26.0
Central Lockyer Valley	282.4	211.4	71.1	275.8	236.9	38.9
Logan River	345.0	296.4	48.6	345.0	313.2	31.8
Lower Lockyer Valley	346.0	286.0	60.0	346.0	322.2	23.7
Mary Valley	411.9	366.3	45.7	409.9	364.8	45.0
Warrill Valley	481.5	417.6	63.9	462.3	448.8	13.5
<u>Distribution</u>						
Morton Vale Pipeline	98.3	90.5	7.8	98.3	95.3	3.0
Pie Creek	44.9	7.0	38.0	44.9	29.1	15.8
Total	2,193.7	1,833.3	360.4	2,123.1	1,916.2	206.8

Source: QCA (2012). Note:* The revenue maintenance target is the current revenue plus an increase of \$2/ML per unit of nominal WAE for tariff groups on a price path towards cost-reflective pricing.

Scheme Categories

In the context of the Ministerial Direction, the following tariff groups are above and below the efficient cost-reflective revenue requirement. Table 7.25 refers.

Table 7.25: Cost Recovery Status of Tariff Groups

<i>Below Efficient Cost-Reflective Revenue Requirement throughout 2013-17</i>	<i>Reaches Efficient Cost-Reflective Revenue Requirement during 2013-17</i>
Cedar Pocket Dam	Logan River
Central Lockyer Valley	Mary Valley
Lower Lockyer Valley	Warrill Valley
Morton Vale Pipeline	Central Brisbane River
Pie Creek	

Source: QCA (2013). Warrill Valley WSS reaches cost-reflective prices in 2013-14 while Central Brisbane River, Logan River and Mary Valley WSSs reach cost reflective prices in 2016-17.

Schemes at Efficient Cost-Reflective Revenue Levels in 2013-17

Under the Ministerial Direction, where prices are already sufficient to meet the assessed level of efficient costs, prices are to be maintained in real terms. None of Seqwater's irrigation tariff groups' current prices (2012-13) are above the level required to meet cost-reflective revenue requirements. However, four tariff groups achieve cost reflective pricing levels during 2013-17.

Warrill Valley WSS current revenues are 99% of cost-reflective revenues (Table 7.23). With the adoption of the cost-reflective volumetric charge and with a less than \$2/ML real increase applied to the fixed charge, this scheme reaches cost-reflective levels in 2013-14.

Logan River WSS current revenues are 81% of cost-reflective revenues (Table 7.23). With the adoption of the cost-reflective volumetric charge and annual \$2/ML real increases applied to the fixed charge, this scheme reaches cost-reflective levels in 2016-17.

Mary River WSS current revenues are 77% of cost-reflective revenues (Table 7.23). With the adoption of the cost-reflective volumetric charge and annual \$2/ML real increases applied to the fixed charge, this scheme reaches cost-reflective levels in 2016-17.

In the Central Brisbane River WSS, no charges currently apply. The Authority recommends that prices transition towards cost-reflective prices over the regulatory period and reach cost-reflective prices in 2016-17.

Accordingly, there are no schemes with excess revenues required to be maintained during the 2013-17 regulatory period.

Central Brisbane River WSS

In the Draft Report, the Authority recommended that the fixed charge to apply in the Central Brisbane River WSS should be the average of the recommended fixed charges in neighbouring WSSs. However, the cost-reflective charge is now below the average. Instead, the Authority recommends that the fixed charge commence at \$15.11 and increase by \$2/ML per year to reach cost-reflective levels in the final year of the 2013-17 regulatory period.

Pie Creek Distribution System

As detailed in Volume 2, the Authority has moderated the impact of the exceptionally high cost-reflective volumetric charge in the Pie Creek Distribution System. The Authority recommends that the volumetric charge in Pie Creek reflect electricity pumping costs plus the Mary Valley WSS bulk volumetric charge.

For 2013-14, the Authority's recommended bundled volumetric charge has reduced from a draft \$188.87 per ML to a final \$78.96 per ML. To maintain revenues in 2013-14, the bundled fixed charge has increased from a draft of \$8.37 per ML to a final of \$34.82 per ML.

7.8 Final Prices

On the basis of the above analysis and principles, and in keeping with the Ministerial Direction requirements to moderate price increases and at least maintain current (2006-12) levels of revenues in real terms, the Authority recommends the prices outlined in Table 7.26 and Table 7.27. The Authority's prices are presented in nominal terms for 2013-17.

Table 7.26: Bulk Prices 2006-17 (Nominal \$/ML)

<i>Scheme</i>	<i>Current</i>	<i>Recommended Draft Prices</i>				<i>Recommended Final Prices</i>			
	2012-13	2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17
Cedar Pocket Dam									
Fixed (Part A)	15.68	9.70	11.99	14.39	16.91	7.28	9.51	11.85	14.30
Volumetric (Part B)	16.81	32.02	32.82	33.64	34.48	36.94	37.87	38.81	39.78
Central Brisbane River									
Fixed (Part A)	0.00	22.66	25.28	28.01	30.86	15.11	17.54	20.08	22.73
Volumetric (Part B)	0.00	12.31	12.62	12.94	13.26	10.14	10.40	10.65	10.92
Central Lockyer Valley									
Fixed (Part A) [#]	12.37 ⁹	0.00	0.00	17.87	20.47	0.00	0.00	0.00	26.43
Volumetric (Part B)	32.91	18.48	18.94	19.42	19.90	9.89	10.13	10.39	10.65
Logan River									
Fixed (Part A)	17.50	21.87	24.47	27.18	28.40	23.11	25.74	28.48	29.28
Volumetric (Part B)	27.93	15.27	15.65	16.04	16.45	9.98	10.23	10.49	10.75
Lower Lockyer Valley									
Fixed (Part A)	24.49	25.72	28.41	31.23	34.16	28.98	31.76	34.65	37.67
Volumetric (Part B)	29.99	43.77	44.87	45.99	47.14	22.25	22.80	23.37	23.96
Mary Valley									
Fixed (Part A)	17.90	19.95	22.49	25.16	26.83	20.81	23.38	26.07	27.40
Volumetric (Part B)	11.19	8.42	8.63	8.84	9.06	8.30	8.51	8.72	8.94
Warrill Valley									
Fixed (Part A)	18.96	20.39	20.90	21.42	21.96	21.91	22.46	23.02	23.59
Volumetric (Part B)	22.37	34.52	35.39	36.27	37.18	7.31	7.50	7.68	7.88

Source: QCA (2012). Note: The Authority recommends that Central Lockyer Valley tariff group bulk customers do not pay Part A in 2013-14 to 2015-16 as no nominal WAE have been issued at the customer level.

⁹ This charge was set for 2006-11 but has not been applied.

Table 7.27: Distribution System Prices 2006-17 (Nominal \$/ML)

Scheme	Current	Recommended Draft Prices				Recommended Final Prices			
	2012-13	2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17
Central Lockyer Valley – Morton Vale Pipeline Only Bulk Charges									
Fixed (Part A)*	n.a.	13.01	15.39	17.87	20.47	18.55	21.06	23.69	26.43
Volumetric (Part B)	n.a.	9.35	9.59	9.83	10.07	4.94	5.06	5.19	5.32
Morton Vale Pipeline									
Fixed (Part C)	n.a.	13.06	13.38	13.72	14.06	8.91	9.14	9.36	9.60
Volumetric (Part D)	n.a.	24.84	25.46	26.10	26.75	8.17	8.37	8.58	8.79
Morton Vale Pipeline (Bundled)									
Fixed (Part A + C)	21.98	26.07	28.77	31.59	34.53	27.46	30.20	33.05	36.03
Volumetric (Part B + D)	37.68	34.19	35.05	35.93	36.82	13.10	13.43	13.77	14.11
Mary Valley									
Fixed (Part A)*	n.a.	19.95	22.49	25.16	26.83	20.81	23.38	26.07	27.40
Volumetric (Part B)	n.a.	8.42	8.63	8.84	9.06	8.30	8.51	8.72	8.94
Pie Creek									
Fixed (Part C)#	n.a.	0.00	0.00	0.00	0.00	14.01	14.36	14.72	16.57
Volumetric (Part D)	n.a.	180.45	184.96	189.58	194.32	70.66	72.43	74.24	76.09
Pie Creek (Bundled)									
Fixed (Part A + C)	40.63	8.37	10.63	12.99	15.47	34.82	37.75	40.79	43.96
Volumetric (Part B + D)	58.03	188.87	193.59	198.43	203.39	78.96	80.94	82.96	85.03

Source: QCA (2012 and 2013). Note* Bulk Part A prices apply only to Morton Vale Pipeline (not river and groundwater) customers of Central Lockyer Valley WSS in 2013-14 to 2015-16. The Bulk Part A charge payable by distribution system customers is less than paid by river customers, as the cost of bulk water meter replacements is excluded. # Pie Creek Fixed Part C is zero in the Draft Report due to revenue maintenance requirements.

Termination Fees – Final Report

As noted in Chapter 4: Pricing Framework, termination fees should reflect the relevant fixed distribution system costs.

During the 2006-11 price paths (and during the 2011-13 interim period), a termination fee only applied in the Morton Vale Pipeline.

The Authority acknowledges that currently the Morton Vale Pipeline Contract has effect. However, as also noted in Chapter 4, the Authority considers that this contract could be renegotiated and notes Seqwater's advice that this may be advisable.

If such a renegotiation takes place, the Authority would recommend the adoption of its general approach to establishing termination fees. That is, the Morton Vale Pipeline termination fee should be 11 times the cost-reflective Part C fixed charge and not that outlined in the Morton Vale Pipeline Contract, which includes provision for the payment of future fixed and volumetric charges. The latter would not be incurred when a customer exits this tariff group.

The Authority also recommends that a termination fee should apply in Pie Creek. As noted in Chapter 4, the cost-reflective termination fee in Pie Creek was extremely high at \$3,595.46 per ML in 2013-14. While this accurately reflects the Authority's draft cost estimates and general approach to establishing an appropriate termination fee, in response to consultation and further reflection on the Ministerial Direction's requirement for price moderation, the Authority has reconsidered this recommendation.

As the draft termination fee was approximately three times the highest SunWater termination fee, and as this review has identified the need for long-term consideration of the future of Pie Creek (which is outside the scope of this review), the Authority now recommends a temporary termination fee for 2013-17, based on 11 times the recommended (not cost-reflective) Part C fixed charge. This would apply for four years only, while Government and Seqwater conduct a review of Pie Creek's future during 2013-17.

The recommended termination fees for 2013-17 are provided in Table 7.28.

Table 7.28: Termination Fees

Tariff Group	2013-14	2014-15	2015-16	2016-17
Draft Report				
Pie Creek	3,595.46	3,685.33	3,777.51	3,871.89
Morton Vale Pipeline	163.35	167.42	171.71	176.00
Final Report				
Pie Creek	154.11	157.96	161.92	182.27
Morton Vale Pipeline	104.94	107.58	110.33	113.08

Source: QCA (2012) and QCA (2013).

7.9 Broader Implications of Final Recommended Prices

As a result of the rebalancing of the tariff structures from those prevailing in 2006-11, the implications of the final recommended prices are best assessed in terms of their impact on total revenues implied for Seqwater or, for a customer, on the basis of individual water bills.

As noted above, however, the Authority recommends charges that maintain current irrigation revenues (2012-13 prices times average irrigation water use over 2006-12).

The recommended volumetric charge for each tariff group reflects variable costs so as to manage volume risk and send efficient price signals. In most schemes, recommended volumetric charges fall in 2013-14. All volumetric charges are increased at CPI over the balance of the regulatory period.

To maintain revenues, the balance not recouped by volumetric charges is recovered by fixed charges. Where current revenues are below cost-reflective revenues, the Authority recommends price paths where fixed charges increase annually by \$2 per ML (plus CPI) until cost-reflective levels are reached.

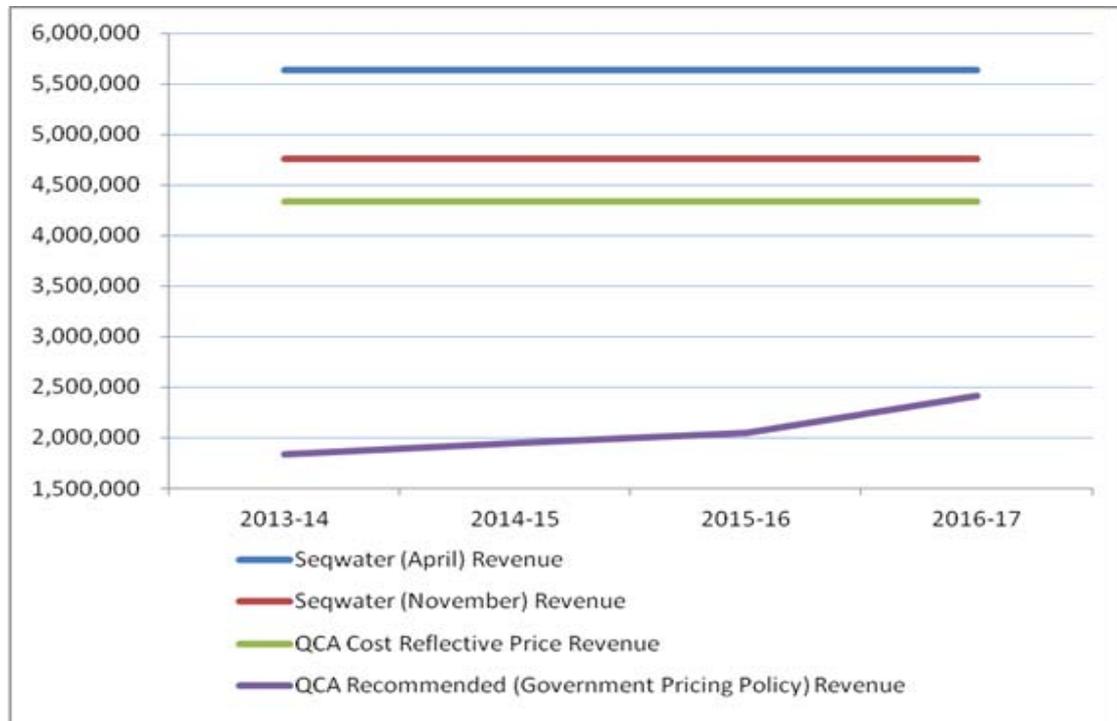
In two tariff groups, Cedar Pocket Dam and Pie Creek, volumetric charges are recommended to materially increase on 1 July 2013 (reflecting the Authority's estimates of variable costs).

For all tariff groups, the impact on water bills of the Authority's recommended tariff structures (that is, fixed and volumetric charges) will vary depending on an irrigator's unique water use profile.

Together with the safeguards provided within the Authority's recommended regulatory framework, Seqwater's legitimate commercial interests have been taken into account within the context of the provisions of the Ministerial Direction. This includes that Seqwater (or a customer) can apply for end-of-period adjustments for material uncontrolled cost changes.

Figure 7.2 presents a comparison of the revenue implied by Seqwater's submitted irrigation prices, the Authority's cost-reflective prices and the Authority's recommended prices.

Figure 7.2: Comparison of Irrigation Revenues 2013-17 (Real \$)



Source: QCA (2013).

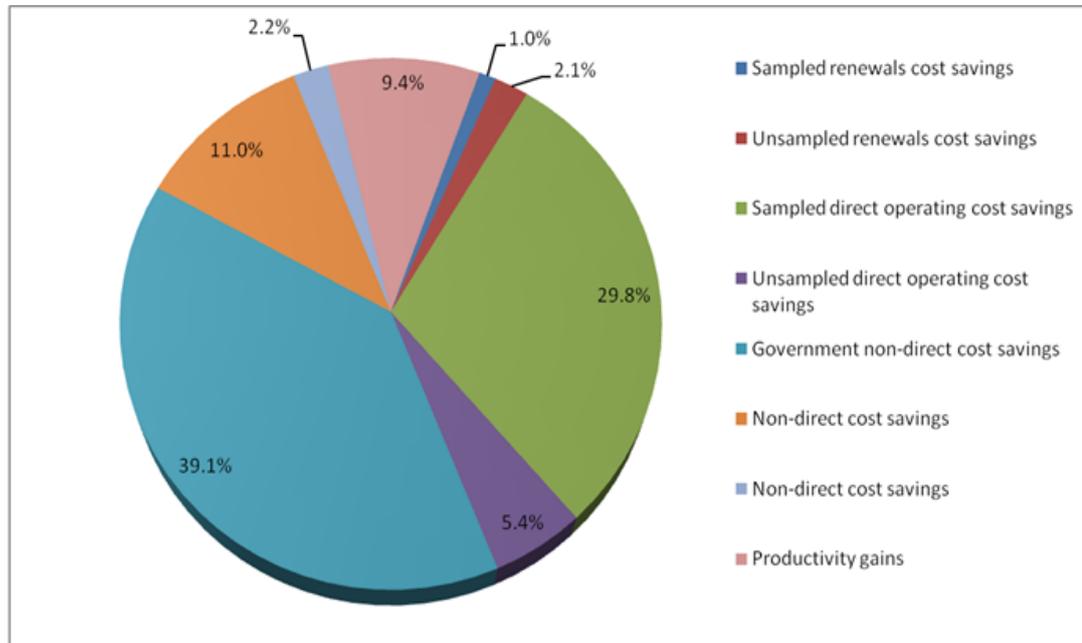
As noted in Chapter 2: Business Overview, Seqwater forecasts total revenue from irrigation charges of approximately \$2.0 million for 2012-13. However, revenue to be maintained – based on average annual irrigation revenues 2006-12 – is less than \$2 million due to low water use over this period (with adjustments for Central Brisbane River).

In 2013-14, the Authority's recommended prices imply forecast total irrigation revenue of approximately \$1.7 million of the recommended cost-reflective target of \$4.5 million.

In contrast, Seqwater's submitted cost-reflective revenues were \$5.6 million.

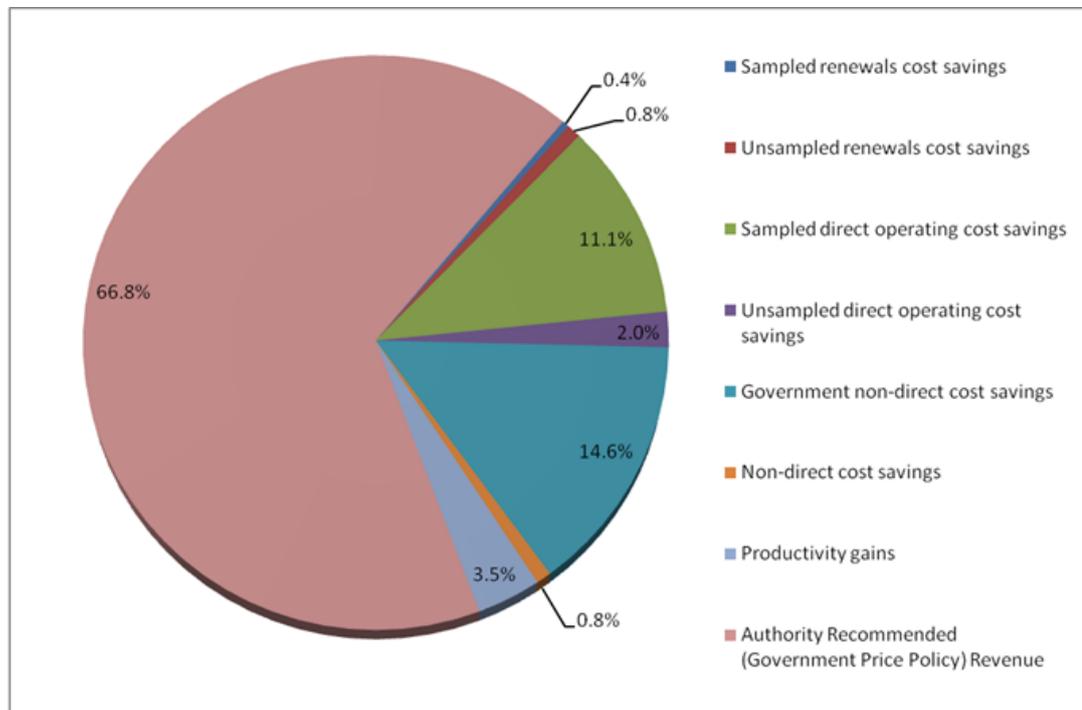
Key components of the differences between Seqwater and the Authority's recommended approach are presented in Figures 7.3 and 7.4. Some differences reflect cost savings while others reflect differences in methodology (which allocate costs to non-irrigation customers).

Figure 7.3: Differences between Seqwater (April 2012) and QCA Cost-Reflective Irrigation Revenues (2012-13)



Source: QCA (2013).

Figure 7.4: Differences between Seqwater’s (April 2012) Proposed Revenues and QCA Recommended (Government Pricing Policy) Irrigation Revenues (2012-13)



Source: QCA (2013).

APPENDIX A: MINISTERIAL DIRECTION

16

QUEENSLAND GOVERNMENT GAZETTE No. 2

[6 January 2012

QUEENSLAND COMPETITION AUTHORITY ACT 1997

Section 23

MINISTERS' REFERRAL NOTICE

Referral

As the Treasurer of Queensland and Minister for Finance and the Arts, pursuant to Section 23 of the *Queensland Competition Authority Act 1997* (the Act), we hereby direct the Queensland Competition Authority (the Authority) to recommend irrigation prices to apply to the following Queensland Bulk Water Supply Authority (Seqwater) water supply schemes (WSS) from 1 July 2013 to 30 June 2017 (the price path period):

- i. Central Lockyer Valley;
- ii. Lower Lockyer Valley;
- iii. Logan River;
- iv. Warrill Valley;
- v. Mary Valley;¹
- vi. Cedar Pocket;² and
- vii. Central Brisbane River

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 pipeline prices/tariff structures are to be set as follows:
 - a) to provide a revenue stream that allows Seqwater 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 2013); 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 2013.

¹ Previous name Mary River (Upper Section).

² Previously part of the Mary River (Upper Section). Now a separate WSS as per the Mary Basin Resource Operations Plan: September 2011.

6 January 2012]

QUEENSLAND GOVERNMENT GAZETTE No. 2

17

-
- b) the Authority is not to consider the regulated asset base (RAB) for existing irrigation assets (that is assets commissioned prior to 1 July 2013);
 - 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 Seqwater'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 2013.
- These schemes are Central Lockyer Valley; Lower Lockyer Valley; Mary Valley-Pie Creek; and Cedar Pocket.
- 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 Seqwater.
- 1.4 For the purposes of this Direction, the Authority, is not to consider the recovery of capital expenditure for:
- i) dam safety upgrades; and
 - ii) any proposed adoption of a national metering standard.
- 1.5 The Authority is to have regard to the level of service provided by Seqwater 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 Seqwater, and the requirement for Seqwater to operate as a commercial entity, subject to 1.1 (above).
- 1.7 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 Seqwater's legitimate commercial interests;
 - b) 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

Seqwater must provide its Network Services Plans and supporting documentation to the QCA by no later than 30 April 2012.

The Authority must provide to the responsible Ministers and the Minister for Energy and Water Utilities:

- a) Draft Report and draft irrigation prices by no later than 30 November 2012; and
- b) Final Report and recommended price paths by no later than 30 April 2013.

The Final Report will inform the Government's deliberations for price paths to apply to Seqwater's irrigation water prices for the period commencing 1 July 2013 and ending 30 June 2017.

4. Other matters

To put beyond doubt, nothing in this Referral prevents Seqwater 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

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6 January 2012]

QUEENSLAND GOVERNMENT GAZETTE No. 2

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QUEENSLAND COMPETITION AUTHORITY ACT 1997**Section 19****MINISTERS' DECLARATION NOTICE**

Pursuant to section 19 of the *Queensland Competition Authority Act 1997*, the Ministers hereby declare that each of the following government business activities undertaken by Queensland Bulk Water Supply Authority (ABN 75 450 239) (trading as Seqwater) be declared to be government monopoly business activities:

the carrying on of activities relating to:

- (i) bulk water storage services; and
- (ii) water distribution services

provided to irrigation customers of each of the Water Supply Schemes.

In this declaration, "Water Supply Schemes" mean:

- the Central Lockyer Valley Water Supply Scheme;
- the Lower Lockyer Valley Water Supply Scheme;
- the Logan River Water Supply Scheme;
- the Warrill Valley Water Supply Scheme;
- the Mary Valley Water Supply Scheme;
- the Cedar Pocket Water Supply Scheme; and
- the Central Brisbane River Water Supply Scheme.

ANDREW FRASER MP
DEPUTY PREMIER, TREASURER AND
MINISTER FOR STATE DEVELOPMENT
AND TRADE

RACHEL NOLAN MP
MINISTER FOR FINANCE
NATURAL RESOURCES
AND THE ARTS

APPENDIX B: WACC

Draft Report

Introduction

Ministerial Direction

Under the Ministerial Direction (Direction), the Authority must set irrigation prices to provide a revenue stream that allows Seqwater 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 2013 (except for dam safety upgrades and any proposed national metering standard costs).

The Direction explicitly provides that the Authority is to exclude any rate of return on existing rural irrigation assets (as at 30 June 2013).

Previous Review

For the previous price path, renewals annuities and irrigation prices were based on the discount rate used by SunWater for the 2006-11 price review (Seqwater 2012a).

The Weighted Average Cost of Capital (WACC) was used to estimate the discount rate, the capital asset pricing model (CAPM) to estimate the cost of equity capital, and the risk-free rate (plus a debt premium) to estimate the cost of debt capital. A single WACC was applied across all SunWater water supply schemes (WSSs), including those subsequently transferred to Seqwater in 2008.

Authority's Approach

Under the Direction, Seqwater'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.

The Authority recommended the same approach, as adopted for SunWater, to estimating an appropriate discount rate and associated constituent parameters for the Seqwater irrigation price review 2013-17.

The Authority is researching WACC issues generally and findings will be available for public comment. [This research has not been finalised prior the Seqwater Irrigation Final Report].

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 market values of debt and equity expressed as shares of the entity's funding mix; the cost of debt is based on a 'benchmark' capital structure, and the cost of equity is based on the Capital 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

Seqwater

Seqwater submitted that the WACC should be developed from first principles, but that this should be delayed until the scope of the Authority's review of GSCs for 2013-14 to 2014-15 was known (2012a).

In support of its view, Seqwater noted that the Authority may need to develop a WACC from first principles in its future GSC reviews, and joint consideration of WACC issues across both its irrigation and urban bulk water supply business would avoid duplication and ensure issues are considered fully.

Seqwater noted that it was, therefore, reluctant to present a WACC from first principles for this review, and it would prefer that considerations about WACC for irrigation pricing do not lead to binding positions about the WACC for GSCs in the future, particularly as the implications of the WACC for GSCs is more significant in revenue terms.

Seqwater proposed an interim discount rate, based on the WACC prescribed for the 2012-13 GSC review (9.90% pre-tax nominal). This interim WACC should be revisited once Government issues a Ministerial Direction to the Authority for the 2013-14 GSC review and:

- (a) if that Direction requires the Authority to develop a WACC from first principles, then the discount rate should be determined for the irrigation and GSC reviews in a manner that avoids duplication and ensures that all issues are considered fully; or
- (b) if that Direction continues to prescribe WACC parameters for GSCs, then a stand-alone assessment of WACC for irrigation prices should be undertaken, as for SunWater.

Other Stakeholders

M. Jendra (2012) submitted that farmers efficiently contribute to the Australian economy and that to increase prices for Atkinson's [existing dam infrastructure] to have a 7 to 10% rate of return in the future is not looking after Queensland farmers.

Authority's Analysis

The Authority noted that Seqwater would prefer to await the Ministerial Direction for future GSC reviews, before considering a WACC from first principles.

On 17 July 2012 (subsequent to the receipt of the Seqwater submission), the Government advised that the Authority will not be required to investigate GSCs for 2013-14.

Therefore, consistent with the approach advocated by Seqwater, the Authority considered that the appropriate discount rate should be derived from first principles. In particular, the discount rate should be based on the Authority's current methodology as it represents generally accepted regulatory practice that the appropriate discount rate for regulated activities is the opportunity cost of capital for the providers of debt and equity funds, given the underlying risk of those activities.

The WACC prescribed for previous GSC reviews ensured consistency between return on capital and the method used to value assets transferred by Government from Councils to Seqwater in 2008 (KPMG 2007). This issue does not arise for Seqwater irrigation prices as they do not include a return on existing capital (as noted below, this also responds to the issue raised by Jendra).

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 credits¹⁰. This form of the discount rate, and its corresponding cash flows, are defined as follows:

$$WACC3 = r_e^L \frac{E}{V} + r_d \frac{D}{V}$$

$$X_0 - t_\varepsilon (X_0 - X_d)$$

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 t_c is the statutory corporate tax rate.

To calculate Officer's WACC3 for Seqwater's irrigation activities, 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:

$$r_e^L = r_f + \beta_e^L (r_m - r_f) = r_f + \beta_e^L .mrp$$

where r_f is an estimate of the risk-free rate; β_e^L is an estimate of the levered equity beta which is a measure of the non-diversifiable 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:

$$\beta_e^L = \beta_a + (\beta_a - \beta_d)(1 - t_\varepsilon) \frac{D}{E}$$

Issues Raised by Other Stakeholders

In response to M. Jendra (2012), the Direction explicitly provides that the Authority is to exclude any rate of return on existing rural irrigation assets (as at 30 June 2013).

¹⁰ Officer (1994) analysed four versions of the WACC model that vary according to cash flow definitions.

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.

Seqwater provides untreated bulk water directly to irrigation customers, and treated bulk water indirectly to urban and industrial customers in SEQ through the SEQ WGM. Therefore, the question arises as to whether the risks (and thus the entity-specific parameters) are sufficiently different across different parts of Seqwater's business to justify the use of different discount rates, or whether a single discount rate should be applied to Seqwater's activities generally.

Stakeholder Submissions

Seqwater

While noting the Authority's conclusion in the SunWater investigation that different business sectors (irrigation, urban, industrial) may give rise to different systematic risks (QCA 2012a), Seqwater proposed an interim discount rate, based on the WACC prescribed for the 2012-13 GSC review.

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 jurisdictions. Neither regulator distinguished between the non-diversifiable 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.

Due to variations in systematic risk, the UK Civil Aviation Authority (2008) applied a lower WACC to Heathrow than to Gatwick airport (which had the same owner). Ofcom (2005) differentiated British Telecom's WACC between the copper network and the rest of the business.

Authority's Analysis

The WACC of projects within a firm may differ from the firm-wide WACC (Kruger, Landier and Thesmar 2011)¹¹. The WACC of a firm is the relevant discount rate for a project only when the project has exactly the same risk profile as the entire firm (Grinblatt and Titman 2002). The weighted average formula works only for projects that are carbon copies of the firm (Brealey et al 2005).

The cost of capital principles for Queensland Government corporations (Queensland Treasury 2006) states that a WACC should be calculated for each business activity with a different risk profile.

The Authority's current review is limited to the irrigation activities of Seqwater. However, this is only a small proportion of Seqwater revenues and costs. The majority belong to its urban water business. Thus it is relevant to consider whether a different WACC is required for the irrigation business.

While it is unusual in economic regulatory practice for a different WACC to be applied to different parts of a regulated business, it has occurred in some other jurisdictions (as noted above).

¹¹ Cooper (2012) notes that a 'standard' method of splitting the risk of a firm into divisions or different levels of risk does not change the overall risk – the split simply allocates more risk per unit of capital to one part of the firm with the other part receiving less.

For SunWater (QCA 2012a), NERA (2010b) advised the Authority that whether multiple discount rates should be applied across different parts of SunWater's business depended primarily on: the likelihood that the non-diversifiable risk (as measured by asset beta) of different sectors of SunWater's business will be materially different; and the extent to which any differences in the asset betas of different sectors 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/service and customer, regulatory framework, growth opportunities, duration of contracts and degree of monopoly power.

NERA concluded that, conceptually, the different sectors of SunWater's business would have different exposures to changes in economic activity (different asset betas and discount rates). SunWater's irrigation business has the lowest systematic risk, whereas the industrial business has the highest systematic risk. The systematic risk of an urban business (residential and commercial) would lie somewhere in between. However, NERA argued that, in practice, it would be difficult to reliably quantify the extent of any differences due to the lack or inadequacy of relevant data.

For SunWater, the Authority differentiated the systematic risk of irrigation activities from other segments of the business (urban and industrial). Although some assets were used in both activities, it was considered possible to make reasonable qualitative judgments about the risks of the cashflows associated with SunWater's irrigation activities by comparing relevant risk studies.

The Authority considered that the above risk analysis applied to SunWater is relevant to Seqwater. If the relevant irrigation WSSs had not been transferred from SunWater to Seqwater, the Authority would have analysed them in the same way during the 2012-17 SunWater review.

Thus, it is considered that different business segments (irrigation and urban) of Seqwater's business give rise to different systematic risk (and urban is outside the scope of this review).

A further issue then arises as to whether the systematic risks of irrigation activities vary among Seqwater's schemes or tariff groups. For example, differences in fixed/variable tariff structures and the conditions governing water rights across schemes may affect the systematic risk of the cash flows of a tariff group. However, the systematic risk of Seqwater's irrigation activities is unlikely to vary across schemes or tariff groups to any significant extent for the reasons discussed further in the section below on asset and equity betas. In any case, as concluded by NERA, measuring any differences in systematic risk is fraught with difficulties.

Recommendation

The Authority recommends that a single discount rate (WACC) determined for Seqwater's irrigation business (separately) be applied consistently to each of Seqwater's irrigation WSSs.

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 payments is certain.

Stakeholder Submissions

Seqwater

Seqwater proposed an interim discount rate, based on the WACC prescribed for the current 2012-13 GSC review. The Ministerial Direction for the 2012-13 GSC review required that the risk free rate for calculating the WACC be as advised by the Queensland Treasury Corporation (QTC).

The QTC estimate of the risk-free rate (5.92% p.a.) for the GSC review was obtained by taking the weighted average of the actual cost of debt on non-drought asset accounts (8.04% p.a.) and deducting fees of 1.23% p.a. (administration, capital market and competitive neutrality), and the average margin between QTC and Commonwealth Government bonds based on 10-year bond rates over the period 1/7/2008 to 31/12/2011 (0.89% p.a.).

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) and ERA (2011) have recently decided to apply a five-year term for the risk-free rate.

Authority's Analysis

In relation to the term of the risk-free rate, the Authority undertook a comprehensive review of this issue as part of the 2010 QR Network pricing decision and concluded that this 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 acknowledged 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.

To address the issue of refinancing risk, the Authority accepted 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 retained 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 Seqwater irrigation price path is for the four-year period 2013-17. Therefore, the Authority proposes to adopt a four-year term to estimate the risk-free rate.

In relation to the appropriate proxy for the risk-free rate, and the duration of the averaging period used to estimate the rate, the Authority's current methodology is to use the Commonwealth Government bond yield as the appropriate proxy and a 20-day averaging period for estimation purposes. This approach is consistent with generally accepted regulatory practice and that adopted by the Authority for the SunWater 2012-17 irrigation price investigation.

The Authority's approach was considered appropriate for the Seqwater irrigation price investigation because the proxy used for the risk-free rate is a direct market-wide benchmark (Commonwealth bond) rather than one obtained indirectly by adjusting entity-specific debt costs, as was the case for the GSC review. In addition, the data used for estimation purposes is more timely. Some of the data used

for the QTC estimate is based on the period 1/7/2008 to 31/12/2011, whereas the data used for the Authority's estimate is closer to the determination date and thus reasonably represents a forward-looking rate that embodies currently available information.

The Authority's estimate of the risk-free rate for Seqwater (2.55% p.a.) was obtained from the annualised four-year Commonwealth Government bond yield averaged over the 20 days up to and including 2 October 2012.

Recommendation

The Authority recommends that the risk-free rate be based on the four-year Commonwealth Government bond averaged over 20 trading days. An indicative estimate using the 20 days trading up to and including 2 October 2012 was 2.55% per annum.

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.

Stakeholder Submissions

Seqwater

Seqwater proposed an interim discount rate, based on the WACC prescribed for the 2012-13 GSC review. The Ministerial Direction for the 2012-13 GSC review mandated that a MRP of 6% per annum be used in determining this WACC.

Seqwater observed that this value was the same as that adopted by the Authority for the recent SunWater 2012-17 irrigation price review.

Other Stakeholders

No submissions were received from other stakeholders on this matter for the Draft Report.

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 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

As part of its analysis for the SunWater investigation, 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 which 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 10-year rate does not materially change the MRP estimate.

The Authority proposed to continue to use its current MRP estimate of 6% per annum for this investigation on the grounds that it is consistent with recent decisions by the Authority, it is a reasonable value given current market circumstances, and there have been no submissions from stakeholders recommending a different value for the MRP.

Recommendation

The Authority recommends a market-risk premium of 6.0% per annum.

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.

Stakeholder Submissions

Seqwater

Seqwater proposed an interim discount rate, based on the WACC prescribed for the 2012-13 GSC review. The Ministerial Direction for the 2012-13 GSC review mandated that a debt/equity leverage ratio of 50:50 (equivalent to a debt to value ratio of 50%) be used in determining this WACC.

Other Stakeholders

No submissions were received from other stakeholders on this matter for the Draft Report.

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 among 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 for water entities.

Authority's Analysis

The Authority considered that SunWater's irrigation sector is the most appropriate comparator for assessing the capital structure of Seqwater's irrigation schemes due to the very close similarities between the irrigation activities of the two entities.

In relation to the SunWater investigation (QCA 2012a), NERA (2011) advised the Authority that, ideally, SunWater's benchmark capital structure should 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 relied on a sample of domestic and international water and energy businesses (regulated and unregulated) to estimate a reasonable benchmark capital structure for SunWater.

NERA concluded that, for SunWater, a debt to value ratio in the range 50% to 60% was reasonable. Moreover, as discussed in the SunWater report, SunWater's irrigation activities are likely to have a lower risk than SunWater as a whole, and therefore could reasonably support a leverage ratio at the upper end of this range.

The Authority considered that, as the risk profile of Seqwater's irrigation activities is similar to that of SunWater, it is reasonable to conclude that Seqwater's irrigation activities could also support a debt to value ratio of around 60%.

In relation to the debt to value ratio of 50% prescribed for the GSC review, it is relevant to note that this relates to the provision of Seqwater's water services to urban, commercial and industrial customers which could be expected to have a higher risk than its irrigation activities and therefore, other things being equal, a lower debt capacity.

Therefore, the Authority proposed to adopt a benchmark capital structure of 60% debt and 40% equity for Seqwater's irrigation activities.

Recommendation

The Authority recommends a capital structure of 60% debt and 40% equity for Seqwater's irrigation activities.

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.

Stakeholder Submissions

Seqwater

Seqwater proposed an interim discount rate, based on the WACC prescribed for the 2012-13 GSC review. The Ministerial Direction for the 2012-13 GSC review mandated that an equity beta of 0.68 at a debt to value ratio of 50% be used in determining this WACC.

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 (low) to 0.9575 (high) at a leverage of 50%. GPOC adopted a medium value 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 considered that SunWater's irrigation sector is the most appropriate comparator for assessing the systematic risk of Seqwater's irrigation cash flows. The risk analysis recently applied to SunWater's irrigation activities is also relevant to Seqwater, due to the close similarities between the irrigation activities of the two entities.

In the SunWater investigation (QCA 2012a), after taking into account available evidence, the views of its consultant NERA (2010b), other experts in the field, and previous water industry regulatory decisions, the Authority concluded that an asset beta of 0.3 was appropriate for SunWater's irrigation business. Therefore, at first sight, an asset beta of 0.3 would appear appropriate for Seqwater's irrigation activities.

However, the Authority also considered whether the systematic risks of the irrigation sectors of SunWater and Seqwater can be distinguished. Further, whether the systematic risks of irrigation activities across Seqwater's schemes or tariff groups should, or could, be differentiated.

As NERA (2010b) pointed out, the demand for water services by the irrigation customers of SunWater is largely dependent on the availability of water rather than on changes in general domestic economic activity. As weather conditions generally have a low correlation with general movements in the economy, irrigation cash flows have low systematic risk. That is, an investor can diversify most of the risk. The Authority considered that these circumstances also apply to Seqwater's irrigation activities.

Moreover, the regulatory setting for Seqwater's irrigation activities is similar to that for SunWater. Both have low exposure to demand and cost shocks under the regulatory framework, with regulatory cost pass-throughs and reset triggers for unforeseen circumstances. 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 the irrigation activities of these entities.

In the Authority's view these factors combine to suggest that, in general, the cash flows associated with Seqwater's irrigation activities, like those of SunWater, have minimal co-variation with domestic economic conditions (low systematic risks), and therefore relatively low asset and equity betas.

Further, there is unlikely to be any material or measurable difference in systematic risk across schemes or tariff groups due to the relatively high fixed tariff component and the regulatory framework as discussed earlier. Differences in water rights or contractual conditions (e.g. permanent versus temporary trading, surrender conditions) affect specific customer risk – not the covariance of Seqwater's irrigation cash flows with domestic economic conditions (systematic risk).

Therefore, the Authority proposed to adopt an asset beta of 0.3 for Seqwater's irrigation activities. 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 60%. In turn, with a risk-free rate of 2.55% per annum and a MRP of 6% per annum, this yields a return on equity of 5.853% per annum.

Recommendation

The Authority recommends an asset beta of 0.3 corresponding to an equity beta of 0.55 at 60% debt-to-value ratio.

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.:

$$r_d = r_f + \beta_d (r_m - r_f) = r_f + \beta_d \cdot mrp$$

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.

Stakeholder Submissions

Seqwater

Seqwater proposed an interim discount rate, based on the WACC prescribed for the 2012-13 GSC review. The Ministerial Direction for the 2012-13 GSC review mandated that the cost of debt to be used in determining this WACC be set equal to the forecast cost of debt (including administration and capital market charges and the Competitive Neutrality Fee) as advised by the QTC. In addition, Seqwater was to be immunised from interest rate exposure by basing the rate of return for 2012-13 on the actual cost of debt.

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 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 stated 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

As noted previously, the Authority's approach is to estimate Seqwater's WACC from first principles. This approach requires that the WACC is set by reference to a benchmark rate of return commensurate with prevailing conditions in the market for funds and the risks involved in providing the entity's services. The WACC reflects the risk-adjusted opportunity cost of both equity and debt funds required to invest in a benchmark business providing the services, rather than the actual costs of capital of the entity concerned.

Thus, the Authority's general approach to estimating the cost of debt is different to that prescribed for the GSC review, which was based on the actual cost of debt of Seqwater as advised by QTC.

The Authority also proposed that, consistent with its approach to the estimation of the risk-free rate, the term to be used for the cost of debt should be set equal to the regulatory cycle, with other adjustments to be made to accommodate refinancing risk.

In principle, the Authority considered that its analysis of the cost of debt for the SunWater investigation (QCA 2012a) should also apply to Seqwater given the similarities of the relevant services and activities of the two entities.

In the case of the SunWater investigation, NERA (2011) advised the Authority that SunWater's cost of debt should be based on the promised yield on five-year corporate debt expressed as the sum of the five-year risk-free rate and a corporate spread for five-year BBB+-rated debt.

NERA also advised that the following 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:

- (a) an allowance for credit default swaps, to compensate the entity for the cost of converting the debt premium element of the cost of debt (estimated at 10-year debt on average) into 5-year debt, based on the method used by the Australian Energy Regulatory (AER) to estimate the 10-year debt margin at the time (NERA 2011);
- (b) an allowance for interest-rate swaps to cover the costs of converting the risk-free element of the cost of debt into 5-year debt, based on the difference between 10-year and 5-year risk-free rates; and

- (c) an allowance for annual debt refinancing costs based on the Authority's current approach.

In general, the Authority accepted NERA's advice for SunWater, with the exception of the allowance for interest-rate swaps for which an alternative market-based estimate provided by Evans and Peck was used. This was generally consistent with the Authority's approach used in other recent decisions¹².

For the Seqwater investigation, the Authority applied the same methodology to estimate the cost of debt that it used for SunWater, with the following exceptions:

- (a) the term of the regulatory period, and therefore the cost of debt, is four years for Seqwater, whereas for SunWater it was five years; and
- (b) the estimate of the credit swap allowance is based on the difference between 10-year and four-year debt margins where the 10-year debt margin is estimated using the AER's current approach¹³.

In summary, the Authority's estimate of Seqwater's cost of debt was based on updated estimates provided by NERA and Evans & Peck and is the sum of the following elements:

- (a) the promised yield on four-year corporate debt expressed as the sum of the risk-free rate (2.55% per annum) and the four-year corporate spread, estimated to be 2.78% per annum using Bloomberg fair value yields for four-year Australian corporate debt averaged over the 20 days up to and including 2 November 2012;
- (b) a credit default swap allowance of 0.25% per annum, based on methods currently used by the AER to estimate the 10-year debt margin (NERA, 2012), to compensate Seqwater for the cost of converting the debt premium element of 10-year debt into four-year debt;
- (c) an interest rate swap allowance of 0.15% per annum (Evans & Peck, 2012), to compensate Seqwater for the cost of converting the risk-free element of 10-year corporate debt into four-year debt; and
- (d) an allowance of 0.125% per annum for annual debt issuance costs.

These estimates result in an indicative estimate of the cost of debt as at 2 November 2012 of 5.861% per annum.

¹² For example, see GAWB (2010), QR (2010), SEQ Interim Price Monitoring (2011).

¹³ In a recent decision the AER has adopted the following approach to estimate the 10-year BBB debt margin: the 7 year debt premium is first estimated using the Bloomberg BBB-rated 7-year fair value curve; to this is added the spread between the Bloomberg 7 and 10 year AAA rated fair value curves, to extrapolate the 7 year debt margin estimate to 10 years. (AER 2012, pp 180-182). For SunWater, the credit swap allowance was based on the method used by the AER at the time; that is, the 10-year debt margin was calculated as an equal weight on the Bloomberg 10-year estimate and the APT bond yield.

Recommendation

The Authority recommends that the cost of debt be based on the BBB+ margin above the risk-free rate for four-year corporate bonds. As at 2 November 2012, the indicative cost of debt was 5.861% per annum. This is comprised of a corporate spread of 2.78% on the four-year risk-free rate of 2.55% and transactions costs relating to credit default swaps of 0.25%, interest rate swaps of 0.15%, and debt issuing costs of 0.125%.

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).

Stakeholder Submissions

Seqwater

As discussed previously, Seqwater has proposed an interim discount rate, based on the WACC prescribed for the 2012-13 GSC review. The Ministerial Direction for the 2012-13 GSC review mandated a gamma of 0.5.

Seqwater observed that this value was the same as that adopted by the Authority for the recent SunWater 2012-17 irrigation price review.

Other stakeholders

No submissions were received from other stakeholders on this matter for the Draft Report.

Other Jurisdictions

In the past, 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) adopted a range of 0.3 to 0.5 for the State Water Corporation bulk water charges review.

However, the Authority also noted that, on 12 May 2011, in a review of a distribution determination made by the AER in relation to ETSA Utilities, the Australian Competition Tribunal determined that gamma be set at 0.25 (ACompT 2011).

Following the ACompT decision, both the Australian Energy Regulator (AER) and the Economic Regulation Authority of Western Australia (ERAWA) have adopted a gamma value of 0.25 in recent decisions, and IPART has signalled its intention to do so (IPART 2012).

Authority's Analysis

As part of its analysis for the SunWater investigation, NERA (2011) concluded that 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.

Notwithstanding the recent determination by the Australian Competition Tribunal, and consequential decisions by some regulators to adopt a gamma value of 0.25, the Authority proposed to apply its current gamma estimate of 0.5 for the Seqwater irrigation investigation for the reasons that it is generally consistent with regulatory precedent in Australia, and aligns with the recent SunWater analysis and decision.

The value of gamma (and other generic parameters and approaches) will be reviewed further as part of the Authority's current comprehensive review of its cost of capital methodology.

Recommendation

The Authority recommends a gamma value of 0.5.

Indicative WACC for SunWater

The Authority considered each of the key parameters which determine WACC (to be applied to renewals annuity and price calculations) and recommended its proposed approach. The Authority applied this approach to calculate an indicative nominal post-tax WACC of 5.86% per annum as at 2 November 2012, as outlined in Table B.1.

For comparison purposes, the interim parameter values and WACC proposed by Seqwater were also provided along with the Authority's final parameter values and WACC for SunWater's irrigation activities.

Table B.1: WACC Parameters (Draft Report)

<i>Parameter</i>	<i>SunWater QCA Final Report</i>	<i>Seqwater (interim WACC)</i>	<i>QCA Draft</i>
Risk-free rate	3.76%	5.92%	2.55%
Market risk premium	6.0%	6.0%	6.0%
Capital structure (debt to value ratio)	60%	50%	60%
Corporate tax rate	30%	30%	30%
Debt beta	0.11	0.35	0.11
Asset beta	0.30	0.4*	0.30
Equity beta	0.55	0.68	0.55
Gamma	0.5	0.5	0.5
Cost of equity	7.06%	10.0%	5.853%
Corporate spread	3.63%	-	2.78%
Spread between 10-year QTC and Commonwealth Government bonds	-	0.89%	-
QTC administration, capital market and competitive neutrality fees	-	1.23%	-
Credit default swap allowance	3.63%	-	0.25%
Interest rate swap allowance	0.09%	-	0.15%
Debt financing allowance	0.125%	-	0.125%
Total debt margin	4.025%	2.12%	3.31%
Cost of debt	7.785%	8.04%	5.861%
Post-tax nominal WACC (Officer WACC3)	7.49%	9.02% (equivalent to 9.90% pre-tax nominal)	5.86%

*Seqwater's asset beta of 0.4 is assumed to be the same as that estimated in KPMG (2007). This asset beta is consistent with the prescribed levered equity beta of 0.68, debt to value ratio of 50% and corporate tax rate of 30% using the Hamada leveraging formula applied by KPMG. Note: The Authority provided its draft estimates of the cost of debt and cost of equity to three decimal places, as the cost of debt would otherwise appear to equate to the WACC due to rounding. Source: Seqwater (2012a); KPMG (2007); NERA (2012b); Evans and Peck (2012).

Stakeholder Submissions on the Draft Report

The only submission received on the Draft Report relating to the WACC was from Seqwater, which agreed with the Authority's Draft Report recommendations (Seqwater 2013a).

Authority's Analysis and Conclusions

For the Final Report, the Authority used the same methodologies for calculating WACC parameters as those outlined in the Draft Report, with the exception of the method used to estimate the credit default

swap allowance (CDSA). Parameter values that vary through time have been re-estimated based on 1 March 2013 as the reference date.

Although the CDSA is still calculated as the difference between the 10-year and four-year debt margins, the estimate of the 10-year debt margin has been revised to align with the latest approach adopted by the Australian Energy Regulator (AER)¹⁴.

The latest AER's approach to estimate the 10-year debt margin can be described as follows:

- (a) annualise the Australian corporate 7-year BBB Bloomberg fair value (BFV) yield for the 20 days to 1 March 2013;
- (b) estimate the 7-year BBB debt risk premium, by deducting an annualised 7-year Commonwealth Government Security (CGS) yield from the 7-year BFV yield calculated above; and
- (c) extrapolate the 7-year BBB debt margin to a 10-year maturity (consistent with the definition of a BBB+ benchmark bond), using paired bond¹⁵ analysis.

NERA advised the Authority that Bloomberg fair value curves (FVC) for Australian corporate debt is not estimated for +/- credit rating increments. Bloomberg FVCs are provided only for BBB, A, AA, AAA rated debt. The AER uses the BBB Bloomberg FVC as a conservative estimate of the BBB+ benchmark debt¹⁶ (NERA 2013).

The methodology for selecting the paired bonds endorsed by the AER was set out in a PricewaterhouseCoopers (PwC) report¹⁷. Under the PwC approach, the Bloomberg 7-year BBB FVC was extrapolated to 10 years based on the annual change in the debt risk premium observed for a sample of paired bonds.

Application of the AER's approach by NERA leads to a debt risk premium for 10-year BBB+ Australian corporate debt of 3.04%. Consequently, the current difference between the 10-year debt margin (3.04%) and the four-year debt margin (2.61%) is 43 basis points (or 0.43%).

Table B.2 shows updated WACC parameters, as at 1 March 2013, and the final WACC to be adopted by the Authority in its modelling of Seqwater irrigation prices for the 2013-17 regulatory period.

¹⁴ The AER's most recent decision is for the Victorian gas pipeline businesses, see: AER, Access arrangement draft decision APA GasNet Australia (Operations) Pty Ltd 2013-17 Part 1, September 2013.

¹⁵ Paired bonds refer to two bonds issued by the same company but with different terms: a longer-dated bond with a term to maturity close to 10 years; and a shorter-dated bond with a term to maturity closest to 7 years.

¹⁶ NERA noted that the Australian Competition Tribunal (ACT) in Application by Jemena Gas Networks (NSW) Ltd (No 5) [2011] ACompT 10 found that the Bloomberg BBB FVC was an appropriate estimator of the BBB+ benchmark debt and was a superior fit to the observed data than the CBASpectrum BBB+ FVC.

¹⁷ PwC, Estimating the benchmark debt risk premium: A report for SP AusNet, MultiNet, Envestra and APA Group, March 2012.

Table B.2: WACC Parameters (Final Report)

<i>Parameter</i>	<i>QCA Draft</i>	<i>QCA Final</i>
Risk-free rate	2.55%	2.89%
Market risk premium	6.0%	6.0%
Capital structure (debt to value ratio)	60%	60%
Corporate tax rate	30%	30%
Debt beta	0.11	0.11
Asset beta	0.30	0.30
Equity beta	0.55	0.55
Gamma	0.5	0.5
Cost of equity	5.853%	6.19%
Corporate spread	2.78%	2.61%
Spread between 10-year QTC and Commonwealth Government bonds	-	-
QTC administration, capital market and competitive neutrality fees	-	-
Credit default swap allowance	0.25%	0.43%
Interest rate swap allowance	0.15%	0.155%
Debt financing allowance	0.125%	0.125%
Total debt margin	3.31%	3.32%
Cost of debt	5.861%	6.21%
Post-tax nominal WACC (Officer WACC3)	5.86%	6.20%

Source: QCA (2013)

REFERENCES

- Andrew, A.R. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Andrew, V.J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Aurecon. (2011). Review of SunWater's Network Service Plans Bundaberg Cluster Draft Report. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Australian Bureau of Statistics (ABS). (2012a). *Engineering Construction Activity, Australia., cat. no. 8762*. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS). (2012b). *Labour Price Index, cat. no. 6345*. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS). (2012c). *Producer Price Index, cat. no. 6427*. Canberra: Australian Bureau of Statistics.
- Australian Competition and Consumer Commission (ACCC). (2008a). Water Charge (Termination Fees) Rules Final Advice. Canberra: Commonwealth of Australia.
- Australian Competition and Consumer Commission (ACCC). (2008b). Water Market Rules. Canberra: Commonwealth of Australia.
- Australian Competition and Consumer Commission (ACCC). (2011). Pricing Principles for Price Approvals and Determinations Under the Water Charge (Infrastructure) Rules 2010. Canberra: Commonwealth of Australia.
- Australian Competition Tribunal (ACompT). (2011). *Application by Energex Limited (Gamma)*, No5. ACompT 9, May.
- Australian Energy Regulator (AER). (2009). Electricity Transmission and Distribution Network Service Providers - Review of the Weighted Average Cost of Capital (WACC) Parameters Final Decision, May.
- Australian Energy Regulator (AER). (2011). Investra Ltd - Access Arrangement for Qld Gas Network: 1 July 2011 - 30 June 2016, February
- Australian Energy Regulator (AER). (2012). *Powerlink Transmission Determination 2012-13 to 2016-17: Final Report*, April.
- Bailey, J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Battersby, J.B. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Beard, G.C. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Begg, J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

-
- Bell, G.N. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Bernitt, B. and Summerville, C. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Brealey, R., Myers, S., and Allen, F. (2005). *Principles of Corporate Finance*, McGraw-Hill, New York. McGraw-Hill, New-York, NY.
- Brimblecombe, L. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Lockyer Valley Water Supply Scheme), July.
- Brooks, R. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Brown, G.K. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Brown, S.J. and Sibley, D.S. (1986). *The Theory of Public Utility Pricing*. Cambridge University Press.
- Brown Salt Pty Ltd. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Burnett, D. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Mary Valley Water Supply Scheme), July.
- Cardno-Atkins. (2009). *Strategic Management Overview and Review of Operating and Capital Expenditure of State Water Corporation 2009: Final. A Consultancy Report Prepared for the Independent Pricing and Regulatory Tribunal of New South Wales (IPART)*, November.
- Central Lockyer Valley Water Supply Scheme (WSS) Representatives. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Lockyer Valley WSS), March.
- Chalmers, A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Chalmers, A.C. and D.K. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Collier, D. and Collier, J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Cooper, I. (2012). Comment on the Split Cost of Capital Proposal of Professor Helm, submitted by BA. Available at <http://www.caa.co.uk/docs/5/BAASplitCoC.pdf>.
- Council of Australian Governments (COAG). (1994). *Report of the Working Group on Water Resource Policy: Communiqué*. Canberra: Council of Australian Governments.
- Council of Australian Governments (COAG). (2004). *Intergovernmental Agreement on a National Water Initiative*. Canberra: Council of Australian Governments.
- Council of Australian Governments (COAG). (2010). *National Water Initiative Principles*. Canberra: Council of Australian Governments.
-

-
- Craigie, J.M. (2012a). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Craigie, J.M. (2012b). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), August.
- Crockett, S. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Cunningham, T. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Da Silva, A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- De Lange, J.H. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Deloitte. (2011a). SunWater Administration Cost Review Phase 2. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Deloitte. (2011b). SunWater Working Capital Allowance. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Department of Environment and Resource Management (DERM). (2008a). Interim Resource Operations Licence for Central Lockyer Valley Water Supply Schemer, July.
- Department of Environment and Resource Management (DERM). (2008b). Interim Resource Operations Licence for Lower Lockyer Valley Water Supply Schemer, July.
- Department of Environment and Resource Management (DERM). (2009a). Moreton Resource Operation Plan, December.
- Department of Environment and Resource Management (DERM). (2009b). Logan Basin Resource Operations Plan, December.
- Department of Environment and Resource Management (DERM). (2011). Mary Basin Resource Operations Plan, September.
- Department of Natural Resources and Mines (DNRM). (2009). Permanent Water Trading Report.
- Department of Natural Resources and Mines (DNRM). (2010). Permanent Water Trading Report.
- Department of Natural Resources and Mines (DNRM). (2011). Permanent Water Trading Report.
- Department of Natural Resources and Mines (DNRM). (2012). Permanent Water Trading Report.
- Department of Natural Resources and Mines (DNRM). (2013a). Submission re: Seqwater 2013-17 Irrigation Price Review Draft Report, February.
- Department of Natural Resources and Mines (DNRM). (2013b). Department of Natural Resources and Mines (7 March 2013) Submission/Response to QCA Information/Data Request of 27 February 2013.
- Department of Natural Resources and Mines (DNRM). (2013c). Department of Natural Resources and Mines (8 March 2013) Submission/Response to QCA Information/Data Request of 8 March 2013.
-

Department of Natural Resources and Mines (DNRM). (2013d). Department of Natural Resources and Mines (22 March 2013) Submission/Response to QCA Information/Data Request of 14 March 2013.

Department of Sustainability, Environment, Water, Population and Communities. (2010). *National Water Initiative Pricing Principles*. Steering Group on Water Charges. Canberra: Australian Government.

DeRuijter, A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Drynan, G. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Logan River Water Supply Scheme), July.

Economic Regulation Authority (ERA). (2007). Inquiry on Harvey Water Bulk Water Pricing, April.

Economic Regulation Authority (ERA). (2009). Inquiry into Tariffs of the Water Corporation, Aqwest and Busselton Water, August.

Economic Regulation Authority (ERA). (2011). Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, October.

Ellis, J.B., Ellis, A.M., Ellis, D.K., Ellis, L.M. and Ellis, W.F. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Pie Creek), March.

Ernst and Young. (1997). SCARM Water Industry Asset Valuation Study - Draft Guidelines on Determining Full Cost Recovery, August.

Essential Services Commission (ESC). (2008). 2008 Water Price Review: Regional and Rural Businesses' Water Plans 2008-13 and Melbourne Water's Drainage and Waterways Water Plan 2008-13, June.

Essential Services Commission (ESC). (2009). *Metropolitan Melbourne Water Price Review 2008-09: Final Decision*, June.

Essential Services Commission (ESC). (2011). *2013 Water Price Review: Guidance on Water Plans*, October.

Essential Services Commission of South Australia (ESCOSA). (2010). Inquiry into the 2010-11 Metropolitan and Regional Potable Water and Sewerage Pricing Process: Final Report, October.

Evans and Peck. (2012). Seqwater Price Review. A Consultancy Report Prepared for the Queensland Competition Authority, November.

Farnsea Pty Ltd. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Frontier Economics. (2005). Review of Pricing Policies: A Report Prepared for Goulburn Murray Water, March.

Frontier Economics. (2008). Termination Fees and Landholder Considerations. A Consultancy Report Prepared for the Australian Competition and Consumers Association, October.

Geiger, A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

- GHD. (2011). Review of SunWater's Network Service Plans: Toowoomba Cluster - Operational and Capital Expenditure - Final Report. A Consultancy Report Prepared for the Queensland Competition Authority, August.
- Gilbert and Sutherland. (2011). Quality Assurance Assessment of a Review of SunWater's Headworks Utilisation Factors Methodology. A Consultancy Report Prepared for the Queensland Competition Authority, March.
- Glamorgan Vale Water Board (GVWB). (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Goulburn-Murray Water (GMW). (2009). Goulburn-Murray Water: Water Services Committee Charter, September.
- Government Prices Oversight Commission (GPOC). (2007). Investigation into the Pricing Policies of Hobart Regional Water Authority, Esk Water Authority and Cardle Coast Water.
- GRASSCO Pty Ltd. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Grinblatt, M. and Titman, S. (2002). Financial Markets and Corporate Strategy. McGraw-Hill, New-York, NY.
- Halcrow. (2005). 2005 Review of Rural Water Prices Assessment of Expenditure Forecasts: Goulburn-Murray Water. A Consultancy Report Prepared for the Essential Services Commission, December.
- Harris, J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Harsant, I. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Warrill Valley Water Supply Scheme), January.
- Hay, B.L. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Hayes, K. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Lower Lockyer Valley Water Supply Scheme), January.
- Heck, S. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Hill, C. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Hill, N. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Hinrichsen, R. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Warrill Valley Water Supply Scheme), January.
- INDEC. (2011). SunWater Water Supply Schemes 2011-16 Price Paths: Qualitative Framework and Assessment of Fixed and Variable Cost Drivers. A Consultancy Report Prepared for the Queensland Competition Authority, October.

-
- INDEC. (2012). Seqwater Water Supply Schemes Asset Restoration Reserve Balances. A Consultancy Report Prepared for Seqwater, July.
- Independent Competition and Regulatory Commission (ICRC). (2008). Waste and Wastewater Price Review: Final Report and Price Determination, April.
- Independent Pricing and Regulatory Tribunal (IPART). (2004). Bulk Water Prices 2005-06 - Issues Paper, September.
- Independent Pricing and Regulatory Tribunal (IPART). (2009a). Review of Prices for the Sydney Catchment Authority From 1 July 2009 to 20 June 2012; Water - Determination and Final Report, June.
- Independent Pricing and Regulatory Tribunal (IPART). (2009b). Review of Prices for Water, Sewerage and Other Services for Hunter Water Corporation: Determination and Final Report, July.
- Independent Pricing and Regulatory Tribunal (IPART). (2010). Review of Bulk Water Charges for State Water Corporation: Water - Final, June.
- Independent Pricing and Regulatory Tribunal (IPART). (2011). Review of Prices for the Water Administration Ministerial Corporation: Water - Determination, February.
- Independent Pricing and Regulatory Tribunal (IPART). (2012a): Review of Imputation Credits (Gamma): Research - Final Decision, March.
- Independent Pricing and Regulatory Tribunal (IPART). (2012b): Review of Rural Water Charging Systems: Water - Final Report, August.
- Jackson, N.C. and Jackson, L.R. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- James, D.R. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- James, R.W. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Jendra, M. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Lower Lockyer Valley Water Supply Scheme), July.
- Jendra, M. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Lower Lockyer Valley Water Supply Scheme), January.
- Jensen, B.A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Jensen, M.W. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Johnson, L.G. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keable, B. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

-
- Keable, R. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keller, J.B. and Keller, B.L. (2012a). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keller, J.B. and Keller, B.L. (2012b). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keller, K. and Keller, N.J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keller, P.J. Keller, J.M. and Keller, N.J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keller, P.J. Keller, J.M., Keller, N.J. and Keller, N. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keller, P.J. Keller, J.M. and Keller, W.A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keller, W.A. and Keller, L.M. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Kelly, B.J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Keyes, G.J. and Keyes, M. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Kirby, M. and Kirby, B. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- KPMG. (2007). Valuation of SEQ Councils' Bulk Water Assets: Approach and Process. Report to the Queensland Treasury. December.
- Kruger, P., Landier, A. and Thesmar, D. (2011). The WACC Fallacy: The Real Effects of Using a Unique Discount Rate, AFA 2012 Chicago Meetings Paper, February.
- Ladbrook, R.G. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Larsen, C.V. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Larsen, K.E. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Lee, W.J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Long, D. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Lowood and District Golf Club Inc. (LDGCI). (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

-
- Lyne, I. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Morton Vale Pipeline), January.
- MacDonald, K. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Mahon, B. and Mahon, L. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Mahon, W.M. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- McCarthy, D.T. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- McInnes, L. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Mid Brisbane River Irrigators Inc (MBRI). (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Mid Brisbane River Irrigators Inc (MBRI). (2013a). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), February.
- Mid Brisbane River Irrigators Inc (MBRI). (2013b). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), February.
- Mid Brisbane River Irrigators Inc (MBRI). (2013c). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), February.
- Mid Brisbane River Irrigators Inc (MBRI). (2013d). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), March.
- Mid Brisbane River Irrigators Inc (MBRI). (2013e). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), April.
- Mid Brisbane River Irrigators Inc (MBRI). (2013f). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), April.
- Montgomery, P. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Pie Creek), January.
- Morgan, P.G. and Morgan, M.N. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- National Water Commission (NWC). (2008). *National Performance Report 2006-07: Rural Water Service Providers*. Canberra: Australian Government.
- National Water Commission (NWC). (2009). *Australian Water Reform: Second Biennial Assessment of Progress in Implementation of the National Water Initiative*. Canberra: Australian Government.
- NERA Economic Consulting (NERA). (2010a). Form of Price Control: SunWater Water Supply Schemes. Issues Paper Prepared for the Queensland Competition Authority, August.
- NERA Economic Consulting (NERA). (2010b). Single or Multiple Rate of Return: SunWater. A Consultancy Report Prepared for the Queensland Competition Authority, August.
-

- NERA Economic Consulting (NERA). (2011). Cost of Capital for Water Infrastructure Company. A Consultancy Report Prepared for the Queensland Competition Authority, March.
- NERA Economic Consulting (NERA). (2012a). SunWater's Electricity Cost Model. A Consultancy Report Prepared for the Queensland Competition Authority, April.
- NERA Economic Consulting (NERA). (2012b). Cost of Debt for Seqwater. A Consultancy Report Prepared for the Queensland Competition Authority, November.
- NERA Economic Consulting (NERA). (2013). Cost of Debt for Seqwater, A Consultancy Report for the Queensland Competition Authority, March.
- Nunn, G. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Ofcom (2005). Ofcom's approach to risk in the assessment of the cost of capital – Final Statement. Available from http://stakeholders.ofcom.org.uk/consultations/cost_capital2/statement.
- Office for Water Security. (2010). Water for Good. Adelaide: Government of South Australia.
- Officer, R. R. (1994). "The Cost of Capital of a Company Under an Imputation Tax System", Accounting and Finance, May.
- Olive, P. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Parsons Brinckerhoff (PB). (2012). Hydrologic Assessment of Headworks Utilisation Factors (HUFs), A Consultancy Report Prepared for Seqwater, March.
- PricewaterhouseCoopers (PwC). (2010a). Pricing Principles and Tariff Structures for SunWater's Water Supply Schemes. Issues Paper Prepared for the Queensland Competition Authority, September.
- PricewaterhouseCoopers (PwC). (2012). Estimating the Benchmark Debt Risk Premium. A Report Prepared for SP AusNet, MultiNet, Envestra and APA Group, March.
- Queensland Competition Authority (QCA). (2000). Statement of Regulatory Pricing Principles for the Water Sector, December.
- Queensland Competition Authority (QCA). (2002). Gladstone Area Water Board: Investigation of Pricing Practices, September.
- Queensland Competition Authority (QCA). (2005). Gladstone Area Water Board: Investigation of Pricing Practices - Final Report, March.
- Queensland Competition Authority (QCA). (2010a). Gladstone Area Water Board: Investigation of Pricing Practices, July.
- Queensland Competition Authority (QCA) (2010b). QR Network's 2010 DAU: Final Decision, September.
- Queensland Competition Authority (QCA). (2012a). SunWater Irrigation Price Review: 2011-17, Volume 1: Final Report, May.
- Queensland Competition Authority (QCA). (2012b). SEQ Grid Service Charges 2012-13: Final Report, July.

-
- Queensland Competition Authority (QCA). (2012c). Issues Arising from Round 1 Stakeholder Consultations, June.
- Queensland Competition Authority (QCA). (2013a). Issues Arising from Round 2 Stakeholder Consultations, February.
- Queensland Farmers' Federation (QFF). (2012). Submission re: Seqwater 2013-17 Irrigation Price Review, July.
- Queensland Farmers' Federation (QFF). (2013a). Submission re: Seqwater 2013-17 Irrigation Price Review, February.
- Queensland Farmers' Federation (QFF). (2013b). Submission re: Seqwater 2013-17 Irrigation Price Review, March.
- Queensland Treasury (QT). (2006). Government Owned Corporations – Cost of Capital Principles. February.
- Reck, B. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Lower Lockyer Valley Water Supply Scheme), January.
- Reid, F. and Reid E. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Rieck, M. and Rieck, T. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Warrill Valley Water Supply Scheme), January.
- Rivermead Pty Ltd. (RPL). (2012a). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Rivermead Pty Ltd. (RPL). (2012b). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Riverside Farming Pty Ltd. (RFPL). (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Riverside Farming Pty Ltd. (RFPL). (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Round, D.I. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Rozynski, G. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Mary Valley Water Supply Scheme including Pie Creek), July.
- Rozynski, G. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Mary Valley Water Supply Scheme including Pie Creek), January.
- Russell, M.T. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Ryder, R. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Sentinella, N. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

-
- Seqwater. (undated). SM Project Outline: Clarendon Diversion Access Road.
- Seqwater. (undated). Updated SM Project Outline: Clarendon Diversion Access Road.
- Seqwater. (1995). Agreement between Primary Industries Corporation and the Proprietor, March.
- Seqwater (2010). System Leakage Management Plan. A Plan Submitted to the Department of Environment and Resource Management, February.
- Seqwater (2012). Fees and Schedules for Various Schemes (2006-07 to 2011-12).
- Seqwater. (2012a). 2013-14 Irrigation Pricing – Submission to the Queensland Competition Authority, April.
- Seqwater. (2012b). Cedar Pocket Dam Water Supply Scheme Network Service Plan, April.
- Seqwater. (2012c). Central Brisbane River Water Supply Scheme Network Service Plan, April.
- Seqwater. (2012d). Central Lockyer Valley Water Supply Scheme Network Service Plan, April.
- Seqwater. (2012e). Logan River Water Supply Scheme Network Service Plan, April.
- Seqwater. (2012f). Lower Lockyer Valley Water Supply Scheme Network Service Plan, April.
- Seqwater. (2012g). Mary Valley Water Supply Scheme Network Service Plan, April.
- Seqwater. (2012h). Warrill Valley Water Supply Scheme Network Service Plan, April.
- Seqwater. (2012i). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Cedar Pocket Tariff Group, April.
- Seqwater. (2012j). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Central Brisbane River Tariff Group, April.
- Seqwater. (2012k). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Central Lockyer Tariff Group, April.
- Seqwater. (2012l). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Logan River Tariff Group, April.
- Seqwater. (2012m). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Lower Lockyer Tariff Group, April.
- Seqwater. (2012n). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Mary Valley Tariff Group, April.
- Seqwater. (2012o). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Morton Vale Pipeline Tariff Group, April.
- Seqwater. (2012p). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Pie Creek Tariff Group, April.
- Seqwater. (2012q). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Warrill Valley Tariff Group, April.
-

-
- Seqwater. (2012r). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Report on Methodology, April.
- Seqwater. (2012s). Seqwater's Response (29 June 2012, 6 July 2012, 11 July 2012 and 16 July 2012) to QCA Information/Data Request of June 14 2012 Re: Various Matters, June and July.
- Seqwater. (2012t). Seqwater Irrigation Price Model, July.
- Seqwater. (2012u). Seqwater's Response (10 July 2012) to QCA Information/Data Request of 29 June 2012 Re: Interim Water Allocations (IWA), July.
- Seqwater. (2012v). Seqwater's Response (10 July 2012) to QCA Information/Data Request of 10 July 2012 Re: Morton Vale Pipeline Contract Matters, July.
- Seqwater. (2012w). Seqwater's Response (27 July 2012) to QCA Information/Data Request of 23 July Re: Various Matters, July.
- Seqwater. (2012x). Seqwater's Response (1 August 2012) to QCA Information/Data Request of 1 August 2012 Re: Pie Creek Losses, August.
- Seqwater. (2012y). Seqwater's Response (6 August 2012) to QCA Information/Data Request of 30 July 2012 Re: Indec Report, August.
- Seqwater. (2012z). Seqwater's Response (10 August 2012) to QCA Information/Data Request of 3 August 2012 Re: Various Matters, August.
- Seqwater. (2012aa). Seqwater's Response (17 August 2012) to QCA Information/Data Request of 10 August 2012 Re: Various Matters, August.
- Seqwater. (2012ab). Seqwater's Response (23 August 2012) to QCA Information/Data Request of 14 August 2012 Re: Various Matters, August.
- Seqwater. (2012ac). Seqwater's Response (28 August 2012) to QCA Information/Data Request of 28 August 2012 Re: Cost Categories in the Asset Delivery Group, August.
- Seqwater. (2012ad). Seqwater's Response (31 August 2012) to QCA Information/Data Request of 24 August 2012 Re: Various Matters, August.
- Seqwater. (2012ae). Seqwater's Response (3 September 2012) to QCA Information/Data Request of 24 August 2012 Re: Various Matters, August.
- Seqwater. (2012af). Seqwater's Response (3 September 2012) to QCA Information/Data Request of 31 August 2012 Re: Various Matters, September.
- Seqwater. (2012ag). Seqwater's Response (10 September 2012) to QCA Information/Data Request of 5 September 2012 Re: Various Matters, September.
- Seqwater. (2012ah). Reconciliation of Seqwater's Baseline Expenditures, September.
- Seqwater. (2012ai). Seqwater's Response (22 October 2012) to QCA Information/Data Request of 12 October 2012 Re: Various Matters, October.
- Seqwater. (2012aj). 2013-14 Irrigation Pricing – Submission to the Queensland Competition Authority, November.
- Seqwater. (2012ak). Cedar Pocket Dam Water Supply Scheme Network Service Plan, November.
-

-
- Seqwater. (2012al). Central Brisbane River Water Supply Scheme Network Service Plan, November.
- Seqwater. (2012am). Central Lockyer Valley Water Supply Scheme Network Service Plan, November.
- Seqwater. (2012an). Logan River Water Supply Scheme Network Service Plan, November.
- Seqwater. (2012ao). Lower Lockyer Valley Water Supply Scheme Network Service Plan, November.
- Seqwater. (2012ap). Mary Valley Water Supply Scheme Network Service Plan, November.
- Seqwater. (2012aq). Warrill Valley Water Supply Scheme Network Service Plan, November.
- Seqwater. (2012ar). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Cedar Pocket Tariff Group, September.
- Seqwater. (2012as). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Central Brisbane River Tariff Group, September.
- Seqwater. (2012at). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Central Lockyer Tariff Group, September.
- Seqwater. (2012au). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Logan River Tariff Group, September.
- Seqwater. (2012av). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Lower Lockyer Tariff Group, September.
- Seqwater. (2012aw). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Mary Valley Tariff Group, September.
- Seqwater. (2012ax). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Morton Vale Pipeline Tariff Group, September.
- Seqwater. (2012ay). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Pie Creek Tariff Group, September.
- Seqwater. (2012az). Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Warrill Valley Tariff Group, September.
- Seqwater. (2012ba). Seqwater's Response (9 November 2012) to QCA Information/Data Request of 7 November 2012 Re: Various Matters, November.
- Seqwater. (2012bb). Seqwater Irrigation Price Model, November.
- Seqwater. (2013a). Submission re: Seqwater 2013-17 Irrigation Price Review Draft Report, February.
- Seqwater. (2013b). Seqwater's Response (1 March 2013) to QCA Information/Data Request of 25 February 2013, March.
- Seqwater. (2013c). Seqwater's Response (11 March 2013) to QCA Information/Data Request, March.
- Seqwater. (2013d). Seqwater's Response (11 March 2013) to QCA Information/Data Request of 25 February 2013, March.
-

-
- Seqwater. (2013e). Seqwater's Response (18 March 2013) to QCA Information/Data Request of 13 March 2013, March.
- Seqwater. (2013f). Seqwater's Response (19 March 2013) to QCA Information/Data Request of 12 March 2013, March.
- Seqwater. (2013g). Seqwater's Response (21 March 2013) to QCA Information/Data Request of 19 March 2013, March.
- Seqwater. (2013h). Seqwater's Response (26 March 2013) to QCA Information/Data Request of 22 March 2013, March.
- Seqwater. (2013i). Seqwater's Submission (2 April 2013) on Pie Creek Electricity, April.
- Seqwater. (2013j). Seqwater's Submission (5 April 2013) on Labour Costs Escalation, April.
- Seqwater. (2013k). Seqwater's Submission (8 April 2013) on Electricity Price Queries, April.
- Seqwater. (2013l). Seqwater's Submission (17 April 2013) on Pie Creek Electricity, April.
- Seqwater. (2013m). Seqwater's Submission (16 April 2013) on Statement of Obligations for Queensland Bulk Water Supply Authority Issued by Treasurer and Minister for Trade and Minister for Energy and Water Supply 2013, April.
- Shard, B. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Warrill Valley Water Supply Scheme), January.
- Sims, M. and Sims, R. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Pie Creek), March.
- Sinclair, S. and Sinclair, H. (2012a). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Sinclair, S. and Sinclair, H. (2012b). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Sinclair Knight Merz (SKM). (2012). Seqwater Irrigation Price Review - Assessment of Capital and Operating Expenditure: Final. A Consultancy Report Prepared for the Queensland Competition Authority, September.
- Sinclair Knight Merz (SKM). (2013). Letter re: Seqwater Irrigation Price Review - Assessment of Capital and Operating Expenditure, February.
- Sippel, L. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Morton Vale Pipeline), January.
- Sippel, L. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Skerman, R.G.M. and Skerman, H.M. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Smith, A.P.W. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

-
- Smith, K.J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Smith, S.A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Southern Rural Water (SRW). (2007a). Customer-Charter: Water Supply, Version 5, August.
- Southern Rural Water (SRW). (2007b). Southern Rural Water: Water Plan 2008-13.
- Stallmann, D. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- State Water. (2008). 2008-12 Customer Service Charter Terms of Reference.
- Strong, D. and Strong, L. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- SunWater. (2006a). Statewide Irrigation Pricing Working Group: Tier 1 Report. Brisbane: SunWater Limited, April.
- SunWater. (2006b). SunWater Irrigation Price Paths 2006-07 to 2010-11: Final Report. Brisbane: SunWater Limited, September.
- SunWater. (2011a). QCA Review of Irrigation Prices: Pricing Principles and Tariff Structures January.
- SunWater. (2011b). QCA Review of Irrigation Prices: Water Distribution Entitlements Supplementary Information, February.
- SunWater. (2011c). QCA Review of Irrigation Prices: Pricing of Distribution Losses, March.
- SunWater. (2011d). QCA Review of Irrigation Prices: Pricing Principles and Tariff Structures January.
- Thefs, R.J. and Thefs, E.R. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Cedar Pocket Dam Water Supply Scheme), July.
- Thomson, B. and Thomson, E. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Toft, D. and Toft, L. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Toft, J. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Tramacchi, S. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Cedar Pocket Dam Water Supply Scheme), July.
- Tudge, R. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.
- Turner, W.A. and Turner, C.M. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

United Kingdom (UK) Civil Aviation Authority. (2008). Economic Regulation of Heathrow and Gatwick Airports 2008-2013, March.

Van der Est, G. (2013). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Valley Water Supply Scheme), July.

Vogler, D. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Vogler, R.F. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Walther, M. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Wendt, J.R. and Wendt, L.A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Westaway, B.W. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Wilkinson, T. and Wilkinson, A. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Winson, M., Brown, V., Cumming, M. and Cumming, S. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.

Zanow, B. (2012). Submission re: Seqwater 2013-17 Irrigation Price Review (Central Brisbane River Water Supply Scheme), July.