



Draft Report
Seqwater
Irrigation Price Review 2013-17
Volume 1

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SUBMISSIONS

This report is a draft only and is subject to revision. Public involvement is an important element of the decision-making processes of the Queensland Competition Authority (the Authority). Therefore submissions are invited from interested parties in relation to the Authority's review of Seqwater irrigation prices for 2013-17. The Authority will take account of all submissions received.

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

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The **closing date** for submissions is **22 February 2013**.

Confidentiality

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

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

Public access to submissions

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

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

GLOSSARY OF ACRONYMS, TERMS AND DEFINITIONS

A	
ABS	<i>Australian Bureau of Statistics</i>
ACCC	<i>Australian Competition and Consumer Commission</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.
BRCI	<i>Benchmark Retail Cost Index</i>
BULK LOSSES	<i>Bulk Losses</i> are losses which include storage losses resulting from evaporation and seepage.
C	
CAB	<i>Cost Allocation Base</i>
CAPM	<i>Capital Asset Pricing Model</i>

CEO	<i>Chief Executive Officer</i>
CIS	<i>Corporate Information System</i>
CIT	<i>Central Irrigation Trust</i>
CM	<i>Corrective Maintenance</i>
COAG	<i>Council of Australian Governments</i>
COMMUNITY SERVICE OBLIGATIONS	<p><i>Community Service Obligations (CSO)</i> are obligations on an entity to do anything that:</p> <ul style="list-style-type: none"> (a) is not in the entity's commercial interests to perform; and (b) arises because of – <ul style="list-style-type: none"> (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 <i>Consumer Price Index (CPI)</i> 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	<i>Corporate Information System (CIS)</i> is a new financial system implemented by Seqwater that enabled cost and other data to be captured and budgeted by asset location.
CORRECTIVE MAINTENANCE	<i>Corrective Maintenance</i> are maintenance tasks and associated expenditure relating to maintenance that is made in reaction to events or new information/inspections.
COST ALLOCATION BASE	The <i>Cost Allocation Base (CAB)</i> 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	<i>Cost Pass-Through</i> mechanisms allow adjustments to prices during the regulatory period.
COST RISKS	<i>Cost Risks</i> 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	<i>Consumer Price Index</i>
CRC	<i>Current Replacement Cost</i>
CSC	<i>Customer Service Committees</i>
CSO	<i>Community Service Obligation</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"> • Establishment and implementation of Standing Operation Procedures and Operation and Maintenance Manuals; • Ongoing dam condition monitoring; • Regular dam safety inspections; and • Regular dam safety review.
DCF	<i>Discounted Cash Flow</i>
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</i> (Queensland Government).
DEPARTMENT OF NATURAL RESOURCES AND MINES	The Department of Natural Resources and Mines (DNRM) 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	<i>Distribution Retailers (DRs)</i> are the retail distribution water companies (Unitywater, Allconnex Water and Queensland Uran Utilities).
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	<i>The Economic Regulation Authority (ERA) is the independent economic regulator for Western Australia.</i>
EFFICIENCY CARRY-OVER MECHANISM	<i>The Efficiency Carry-Over Mechanisms (ECMs) allow the regulated firm to retain efficiency savings for a reasonable period of time.</i>
ELT	<i>Executive Leadership Team</i>
ENTERPRISE BARGAINING AGREEMENT	<i>An Enterprise Bargaining Agreement (EBA) 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.</i>
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>
ESSENTIAL SERVICES COMMISSION	<i>The Essential Services Commission (ESC) is Victoria's independent economic regulator of essential services supplied by the electricity, gas, water and sewerage, ports, and rail freight industries.</i>
ESSENTIAL SERVICES COMMISSION OF SOUTH AUSTRALIA	<i>The Essential Services Commission of South Australia (ESCOSA) is the independent economic regulator established by the State Government of South Australia to regulate prescribed essential utility services supplied by the electricity, gas, water, ports and rail industries.</i>
EXIT FEE	<i>Exit Fee or Termination Fee is a fee applied when a distribution system WAE is permanently transferred to the river (or in some cases to scheme sub-systems).</i>
F	
FAMPs	<i>Facility Asset Management Plans</i>
FACILITY ASSET MANAGEMENT PLANS	<i>The Facility Asset Management Plans (FAMPs) were developed by Seqwater for its dams and water treatment plants, 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 the basis of for these investment recommendations and references the work that established the requirement and priority.</i>

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 Water Allocation</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>
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 MODELLING	The <i>Integrated Quantity and Quality Modelling (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 tradeable water allocation. IWAs are generally a temporarily (but not permanently) tradeable 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 Modelling</i>
IROL	<i>Interim Resource Operations License</i>
IWA	<i>Interim Water Allocation</i>

J

K	
KPI	<i>Key Performance Indicator</i>
L	
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 COAG, <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 TERs (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.
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 Water Allocation</i>
MRP	<i>Market Risk Premium</i>
N	
NAMPs	<i>Natural Asset Management Plans</i>
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.
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 7 bulk water supply schemes and 2 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>
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>
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.
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>

Q

QCA	<i>Queensland Competition Authority</i>
QCCCE	<i>Queensland Climate Change Centre of Excellence</i>
QECAIPD	<i>Queensland Engineering Construction Activity Implicit Price Deflator</i>
QFF	<i>Queensland Farmers' Federation</i>
QTC	<i>Queensland Treasury Corporation</i>
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 are non-maintenance expenditure that is required to maintain the service capacity of the assets.</i>
RENEWALS PLANNING	<p><i>Renewals Planning</i> process generally comprises the following:</p> <ul style="list-style-type: none"> • Identification of asset renewals needs; • Evaluation of potential renewals works; and • 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 License</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</i> is planned maintenance on an asset, that is operational, to minimise deterioration in its condition and/or performance. The maintenance is periodic.
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</i> 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.
Sinclair Knight Merz	<i>Sinclair Knight Merz (SKM)</i> is a consulting firm specialising in strategic consulting, engineering and project delivery.
SKM	<i>Sinclair Knight Merz</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	<p><i>State Water Corporation (State Water)</i> is New South Wales' rural bulk water delivery business.</p> <p>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.</p>
STRATEGIC ASSET MAINTENANCE	<i>Strategic Asset Maintenance</i> are maintenance tasks and associated expenditure relating to asset replacements and renewals and involves a mix of operating and capital expenditure.
STRATEGIC ASSET MANAGEMENT PLAN	<i>Strategic Asset Management Plan (SAMP)</i> is the asset management that aligns customer service standards with asset objectives.
T	
TARIFF	<i>Tariff</i> is the price Seqwater charges its Customers for the supply of services.
TCV	<i>Treasury Corporation of Victoria</i>
TDC	<i>Total Direct 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	<p>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.</p> <p>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.</p>
WATER ALLOCATION	<p>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 tradeable property right separate to land providing access to water within a water supply scheme.</p>
WATER ALLOCATION SECURITY OBJECTIVE	<p>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>.</p>
WATER CHARGE (INFRASTRUCTURE) RULES (CWLTH)	<p>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.</p>
WATER GRID MANAGER	<p>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.</p>
WATER INDUSTRY REGULATION ORDER 2003	<p>The <i>Water Industry Regulation 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.</p>
WATER LICENCE	<p><i>Water License</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>.</p>
WATER PRICING CONVERSION FACTORS	<p>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.</p>
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	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</i>
WATER YEAR	The accounting period for <i>Taking Water</i> as specified in a <i>Resource Operations Plan (ROP)</i> or <i>Water Licence</i> . A <i>Water Year</i> is usually a 12-month period, 1 July to 30 June.
WCIR	<i>Water Charge (Infrastructure) Rules (Cwlth)</i>
WCRWS	<i>Western Corridor Recycled Water Scheme</i>
WEIGHTED AVERAGE COST OF CAPITAL	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. The WACC is the most common means of determining the value of the opportunity cost of capital.
WGM	<i>Water Grid Manager</i>
WHS	<i>Workplace Health and Safety</i>
WIRO	<i>Water Industry Regulation 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>
WRP	<i>Water Resource Plan</i>
WSCs	<i>Water Service Committees</i>
WSS	<i>Water Supply Scheme</i>
WTP	<i>Water Treatment Plant</i>
WWTP	<i>Wastewater (Sewage) Treatment Plant</i>

X

Y

Z

TABLE OF CONTENTS

	PAGE
SUBMISSIONS	I
GLOSSARY OF ACRONYMS, TERMS AND DEFINITIONS	II
EXECUTIVE SUMMARY	XIX
1. BACKGROUND	1
1.1 Ministerial Direction	1
1.2 Price Paths for 2006-11	2
1.3 Interim Prices for 2011-13	3
1.4 Review Process	3
2. BUSINESS OVERVIEW	4
2.1 Background	4
2.1.1 The SEQ Water Grid	4
2.1.2 Seqwater Operations	5
2.2 Services Provided and Customers	7
2.2.1 Irrigation Customers	8
2.2.2 Other Industrial and Urban Customers	8
2.3 Service Delivery Framework	8
2.3.1 Asset Classification	8
2.3.2 Supply Contracts	9
2.3.3 Water Access Entitlements	9
2.3.4 Service Standards	10
2.4 Seqwater's Urban, Industrial and Irrigation Regulated Assets and Services	10
2.4.1 Water Storages	10
2.4.2 Groundwater	11
2.4.3 Water Treatment	11
2.4.4 Morton Vale Distribution System	11
2.5 Unregulated Assets and Services	11
2.6 Prices	12
2.7 Organisational Restructure 2006-11	12
3. REGULATORY FRAMEWORK	14
3.1 Background	15
3.1.1 Relevant Risks	15
3.1.2 Forms of Price Control	16
3.2 Previous Review	17
3.3 Water Entitlements	17
3.4 Short Term Volume Risk	19

3.5	Volume Risk (Long Term)	30
3.6	Cost Risks	35
3.7	Summary	43
4.	PRICING FRAMEWORK	45
4.1	Introduction	45
4.2	Tariff Groups	46
4.3	Tariff Structures	47
4.4	Distribution and Bulk Losses	66
4.5	Termination (Exit) Fees	74
4.6	Free Water Allocations	79
5.	RENEWALS ANNUITY	85
5.1	Background	87
5.2	Opening Asset Restoration Reserve at 1 July 2013	89
5.3	Prudency and Efficiency of Forecast Renewals Expenditures	100
5.4	Treatment of Unsampled Forecast Renewal Expenditure	118
5.5	Asset Management Planning Methodology	121
5.6	Planning Period	123
5.7	Consultation with Customers and Reporting	130
5.8	Allocation of Headworks Renewals Costs	135
5.9	Allocation of Distribution System Renewals Costs	150
5.10	Calculating the Renewals Annuity	153
5.10.1	Indexed or constant (non-indexed) Annuity	153
5.10.2	Frequency of Recalculation	155
5.10.3	Recommended Renewals Annuities for 2013-17	156
6.	OPERATING EXPENDITURES	158
6.1	Background	159
6.2	Prudency and Efficiency of Direct Operating Expenditure	172
6.3	Unsampled Forecast Direct Operational Expenditure	179
6.4	Total Sampled and Unsampled Cost Savings	181
6.5	Prudency and Efficiency of Non-Direct Operating Costs	183
6.6	Allocation of Non-Direct Costs	189
6.6.1	Stage 1 Allocation of Costs to Irrigation Tariff Groups	189
6.6.2	Stage 2 Allocation of Costs between Priority Groups	193
6.7	Cost Escalation	195
6.8	Working Capital	201
6.9	Total Operating Costs (Irrigation Schemes – All Sectors)	204
7.	DRAFT PRICES	211
7.1	Background	212
7.2	Total Costs	215
7.3	Fixed and Variable Costs	220
7.4	Fixed Charges	225
7.5	Volumetric Charges	226

7.6 Cost-Reflective Fixed and Volumetric Tariffs	227
7.7 Queensland Government Pricing Policies and Draft Prices	229
7.8 Draft Prices	234
7.9 Broader Implications of Recommended Prices	237
APPENDIX A: MINISTERIAL DIRECTION	240
APPENDIX B: WACC	244
REFERENCES	260

EXECUTIVE SUMMARY

Ministerial Direction

The Authority has been directed to recommend irrigation prices for the Queensland Bulk Water Supply Authority (Seqwater) water supply schemes (WSS), for the period 1 July 2013 to 30 June 2017. The Ministerial Direction forms **Appendix A**.

Seqwater

Seqwater is a Queensland statutory authority responsible for a number of water supply assets across South East Queensland (SEQ). Seqwater took ownership of the SEQ irrigation WSS, that were previously owned by SunWater, on 1 July 2008.

In July 2012, the Authority released the *Final Report SEQ Grid Service Charges 2012-13*. In this report, of the Authority's recommended prudent and efficient total costs for Seqwater, irrigation costs comprised less than 1%. This review considers the subset of Seqwater's costs that relate to irrigation customers only.

Recommended Prices

The Authority's recommended 2013-17 draft prices for each tariff group are summarised in Table 3 below and are addressed in detail in Chapter 7: Draft Prices and in the scheme specific reports, which constitute Volume 2.

Cost-Reflective Tariffs

To establish cost reflective irrigation tariffs, the Authority assessed the prudence and efficiency of operational, maintenance and administrative costs (operating costs) and the costs of renewing and rehabilitating current assets (renewals costs).

The Authority also considered the nature of the underlying costs. Cost-reflective fixed charges reflect the Authority's assessment of fixed costs while volumetric charges reflect assessed variable costs for each tariff group.

As directed by Government, the Authority's recommended costs exclude a rate of return on existing assets, and dam safety and metering upgrade costs related to changes in national standards. The Authority has, however, allowed meter replacement costs consistent with current Queensland Government standards.

Queensland Government Pricing Policies and Draft Prices

Under the Ministerial Direction, water charges in specified 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. Over 2006-11, prices increased at an average of \$2/ML per annum (in real terms) which applied to Part A and Part B tariffs but without consideration of the nature of fixed and variable costs.

The Authority recommends rebalancing of tariffs between fixed and volumetric charges to reflect the fixed and variable nature of the underlying costs.

The Authority interpreted the Ministerial Direction to require the Authority to maintain current water revenues (rather than prices) in real terms, with the revenues to be maintained on a tariff group basis being those achieved on average to the end of the current price path (that is, 2006-12).

In all Seqwater irrigation tariff groups, current revenues are below the assessed level of efficient costs. The Authority has recommended a price path for each tariff group to transition prices to cost-reflective prices.

The Authority recommends that the cost-reflective volumetric charges be adopted for all tariff groups from 1 July 2013, on the basis that they will provide an efficient price signal to customers and manage Seqwater's short-term volume risk (as variable costs will vary with water use). To generate recommended fixed tariffs, the remaining revenue required (to maintain revenues) was divided by current irrigation WAE.

For all tariff groups, the Authority recommends a \$2/ML annual real increase in fixed tariffs for the 2013-17 regulatory period until such time as all prudent and efficient costs are recovered. At this rate of increase, Warrill Valley WSS achieves cost-reflective prices in 2013-14. The Logan River and Mary Valley WSSs reach cost-reflective prices in 2016-17. The remaining six tariff groups face longer price paths to cost-reflectivity.

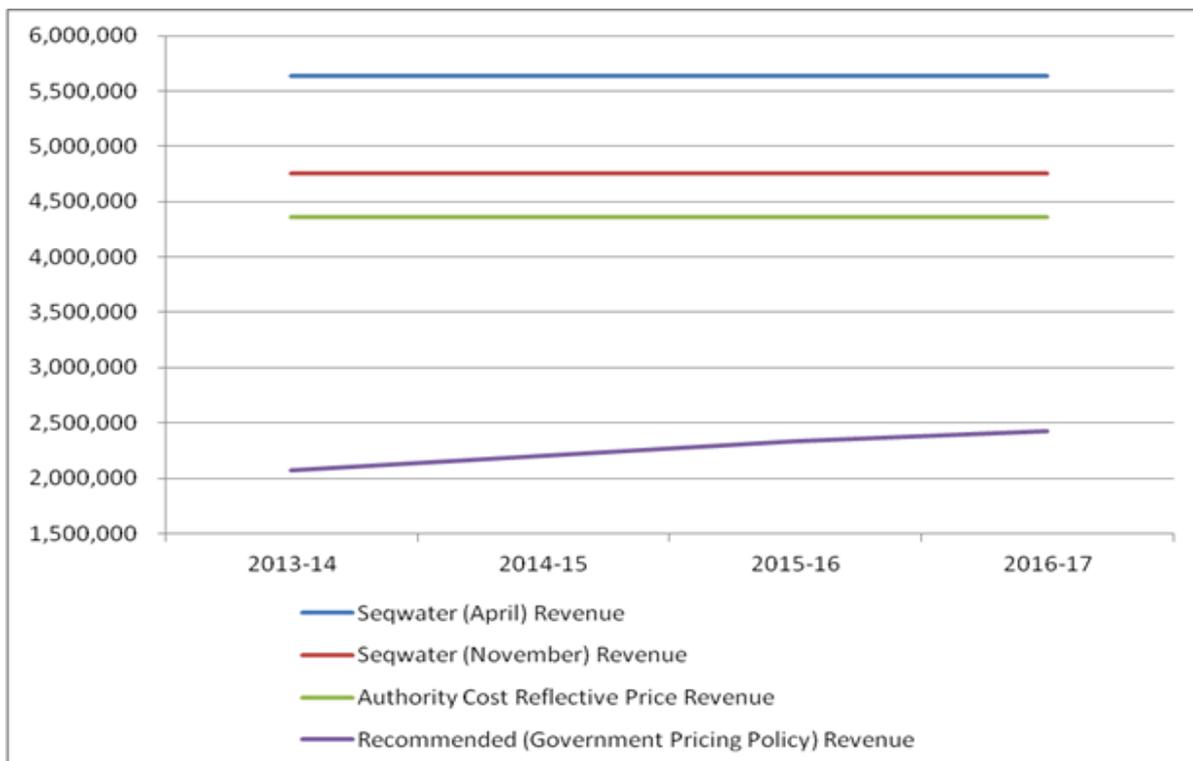
Total Irrigation Costs and Revenues

Seqwater submitted its initial estimate of costs to the Authority by the required date of 30 April 2012. Subsequently, in November 2012, Seqwater materially revised its irrigation cost estimates, which in part was a response to the Government's required bulk Grid Service Charges (GSC) cost savings announced in July 2012.

Seqwater initially submitted estimated total costs relevant to the schemes under review (all sectors) of \$25.6 million (2013-14). By comparison, the Authority's recommended total costs for 2013-14 are \$21.7 million, a reduction of \$3.9 million or approximately 15%.

Figure 1 presents Seqwater's total irrigation revenues implied by Seqwater's costs compared to those implied by the Authority's estimates of efficient costs and recommended prices.

Figure 1: Comparison of Irrigation Revenues 2013-17 (Real \$)



While the Authority has applied material cost savings to Seqwater on the basis of its investigations, the safeguards provided within the recommended regulatory framework ensure that Seqwater's legitimate commercial interests will be met, within the provisions of the Ministerial Direction.

The framework allows stakeholders (including Seqwater) to apply to the Authority for a within period or end of period adjustment to prices where uncontrollable costs change materially (relative to the forecast cost). That is, the Authority may adjust future prices on the basis of a subsequent assessment of revised costs that are found to be prudent and efficient.

Approach

To establish the prudence and efficiency of proposed costs, a regulated entity needs to demonstrate that its provision of services uses only necessary resources (prudence) in a manner that ensures the efficient operation of schemes and the maintenance of scheme assets (efficiency). The provision of documented and detailed analyses of the proposed costs is essential.

It was not possible in the time available, nor appropriate in view of the potential costs involved, for the Authority to review each of Seqwater's proposed (renewals and operating) expenditure items. The Authority therefore based its analysis on samples of Seqwater's submitted costs, as well as an assessment of the methodologies proposed by Seqwater, available cost information, stakeholder submissions and consultant reviews.

Volume 1 of the Draft Report outlines the principles and methodology adopted, and includes summary financial information. Volume 2 provides scheme-specific details in seven individual reports, one for each of Seqwater's irrigation schemes.

Findings and Recommendations

Seqwater's submissions generally aligned with the approaches recommended by the Authority and subsequently adopted by Ministers for SunWater irrigation schemes. The Authority accepts that many are relevant to Seqwater's circumstances.

At the same time, the Authority has recommended material cost savings be applied to Seqwater's submitted costs.

In addition, compared to Seqwater's submissions that only electricity pumping costs vary with water use, the Authority considers that more costs are variable with water use over the regulatory period. The Authority's cost reflective tariff structures reflect its estimates of fixed and variable costs.

Regulatory Framework (Chapter 3)

The Ministerial Direction requires that, in general, prices should recover efficient operating costs and efficient expenditure on renewing and rehabilitating existing assets.

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

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 the associated costs.

Short term volume risks are associated with existing infrastructure, while long term volume risks relate to the augmentation of supply (that is, planning and infrastructure risks). Cost risks relate to changes in market conditions for inputs (including those related to the maintenance and renewal of

infrastructure) or as a result of regulatory imposts (such as changes in legislation, taxation and technical or economic regulation).

The appropriate 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 and revenue adequacy.

Table 1 provides a summary of the key risks considered and the Authority’s recommendations.

To reduce the risks of managing water and associated costs, and to allow water to be allocated to its highest and best use, the Authority recommends that DNRM issue permanently tradable WAE for all remaining irrigation Seqwater customers by 30 June 2015.

Table 1: Summary of Risks, Allocation and Authority’s Recommended Response

Risk	Nature of the Risk	Allocation of Risk	Authority’s Recommended Response
Short Term Volume Risk	Risk of uncertain usage resulting from fluctuating customer demand and/or water supply.	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 National Water Initiative (NWI) related government decisions.	Cost variations may be immediately transferred to customers using a cost pass-through mechanism (depending on materiality).

Pricing Framework (Chapter 4)

The Authority has, in accordance with the Ministerial Direction, adopted the nine irrigation tariff groups proposed by Seqwater for the purpose of recommending irrigation prices.

The Authority’s recommended tariff structure is consistent with the regulatory framework appropriate for managing risk, as outlined above. 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.

The Authority has recommended that termination fees be applied to the distribution systems and that these reflect a multiple of 11 times (incl. GST) the relevant Part C cost-reflective tariff. This approach is consistent with that adopted for SunWater and the Australian Competition and Consumer Commission (ACCC). The Authority also notes that, while separate termination fee provisions are

detailed in the Morton Vale Pipeline Contract, this contract could be renegotiated (but that this is a matter for Seqwater and the customers in this tariff group).

The Authority has also considered submissions relating to free water in the Central Brisbane River WSS. The Authority is required to recommend irrigation prices for each of Seqwater's nine irrigation tariff groups, including Central Brisbane. Whether Seqwater is legally entitled to impose and recover irrigation charges on the Central Brisbane River WSS is a matter between Seqwater and the irrigators, in the event that the Government determines charges should apply.

Renewals Expenditure (Chapter 5)

A renewals approach requires ongoing accounting of renewals expenditure and revenue. For this purpose, Seqwater estimated an Asset Restoration Reserve (ARR) for each irrigation tariff group. Each tariff group's opening ARR balance for the 2013-17 regulatory period is based on the opening ARR balance for the current price path (1 July 2006), less renewals expenditure, plus renewals revenue and adjusted for interest over the 2006-13 period.

To establish opening ARR balances for 2013-17, Seqwater recognised the need to unbundle the ARR balances of four related bulk and distribution tariff groups (which until now have been treated as two bundled WSSs).

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 some 3% of past irrigation costs by value. The modest sample size reflects the limited availability of estimates of renewals expenditure in schemes managed by SunWater in 2006-08 and the lack of information available from Seqwater for 2008-09.

The sample of forecast items comprises over 50% of the forecast \$13.5 million irrigation renewals expenditure in real terms (2012-13), which included Seqwater's meter replacement program.

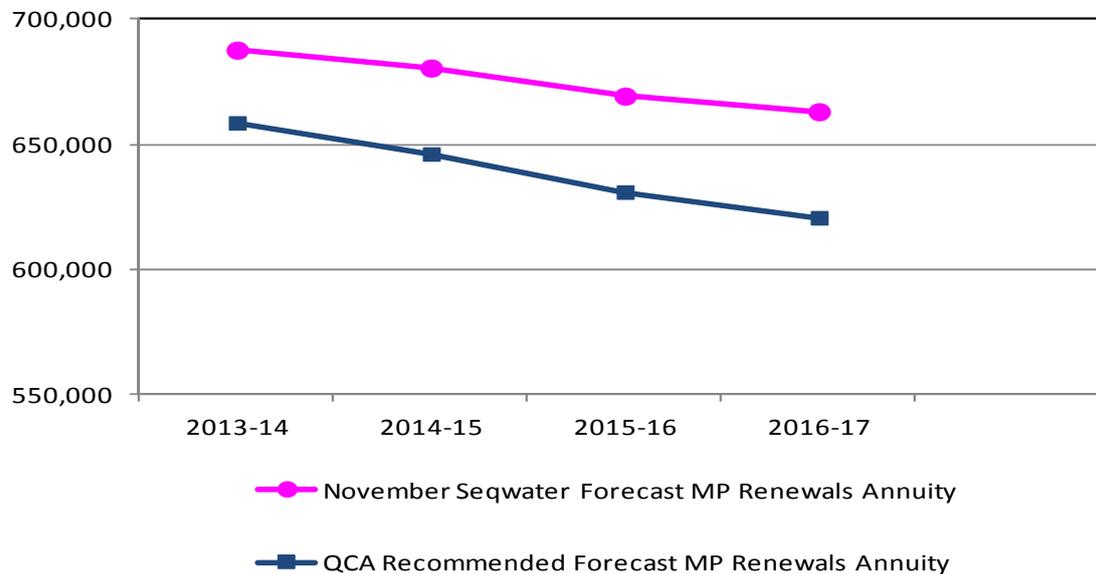
On this basis, the Authority recommends that the following direct renewals cost savings (all expressed in real terms) be applied to whole of scheme (or all sectors) renewals expenditure:

- (a) reduce by 4% all past renewals expenditure for 2006-08 (that is, when the WSSs were owned by SunWater), consistent with the Authority's findings in the SunWater review. This totals about \$0.03 million;
- (b) reduce Seqwater's initially submitted renewals expenditure for 2008-09 by 95% as Seqwater was unable to provide substantiation (due to poor data collection in the first year of Seqwater ownership). This reduction totals about \$0.81 million;
- (c) allow recovery of 2009-13 renewals expenditure on the basis that the Authority's reviews showed that the sampled items were prudent and efficient;
- (d) exclude all forecast items identified as not prudent and the portions of reviewed forecast direct renewals costs identified as being inefficient. These total about \$1.7 million; and
- (e) reduce by 13% all (remaining) unsampled direct forecast renewals expenditure within the planning period. These total about \$5.6 million.

In summary, this amounts to a reduction of about 18% (\$0.84 million) in past all sector renewals expenditure of \$4.6 million (items (a) to (c) above) and about 13% (\$7.3 million) in forecast all sector renewals expenditure of \$55.8 million (items (d) and (e) above). A portion of this total saving of \$8.14 million relates to irrigation customers.

Figure 2 presents a comparison of Seqwater's November submitted irrigation annuities against the Authority's recommended irrigation annuities. Seqwater's April submission is not presented as it did not include meter replacements, which materially increase the annuity.

Figure 2: Comparison of Seqwater and Authority Irrigation Renewals Annuity (\$ Real)



For irrigation prices subsequent to the 2013-17 regulatory period, in relation to Seqwater's forecasting of renewals costs for pricing purposes, the Authority recommends that Seqwater continue to undertake detailed options analysis for all material renewals items forecast to occur within the next five years. Moreover, to improve the rigour of Seqwater's forecasts, it should commence undertaking high-level options analysis for all other (year six onwards) material forecast items within the Authority's recommended 20 year planning period, updated annually.

Furthermore, the Authority recommends that, by 30 June 2015, Seqwater adopt modern equivalent replacement costs and/or more specific asset class indices, as appropriate, when estimating renewals costs.

The Authority also recommends that by 22 February 2013 Seqwater submit a proposal to the Authority regarding the assets to which it would be appropriate to apply a modern equivalent replacement cost, rather than a specific asset class index.

The Authority considers that there should be a legislative requirement for Seqwater to report the above information annually and to consult with its irrigation customers on the appropriateness of these proposals. These requirements should also be outlined in amendments to Seqwater's Strategic and Operational Plan to ensure the timely commencement of proposed consultation.

Seqwater should also enhance its five-yearly NSPs prior to each price review. Seqwater's annual and five-yearly NSPs should provide details on past and forecast renewals costs, changes to service standards and explain any significant variations between actual and forecast material renewals items.

The enhanced NSPs (prepared annually for each irrigation scheme, but with the data presented by tariff group) should be made public on Seqwater's website from 1 July 2014. The website should also be updated annually with related customer submissions and Seqwater's responses and decisions in relation to those submissions.

The Authority recommends adoption of Seqwater's proposed headworks utilisation factor (HUF) methodology to allocate fixed bulk renewals costs where there are medium and high priority customer

WAE (priority groups). Where there is no (material) high priority customer WAE in bulk WSSs, the Authority recommends the use of nominal WAE to allocate fixed bulk renewals costs (with adjustments to nominal WAE where required by the particular scheme circumstances).

While there are currently no high priority customers in Seqwater's distribution systems, the Authority recommends, in principle, the adoption of nominal WAE to allocate fixed distribution system renewals costs between priority groups if a conversion occurs. Fixed distribution system charges should also remain with customers converting between priority groups (for example, where a medium priority customer converts to high priority WAE).

The Authority considers that the discount rate applied in calculating the renewals annuity should reflect the opportunity cost of funds for Seqwater's irrigation activities and, accordingly, has recommended the Authority's post tax nominal weighted average cost of capital (WACC) of 5.86% for this purpose. Appendix B refers. The Authority has calculated the recommended renewals annuities using an indexed, annual rolling approach, the Authority's recommended cost escalation indices and the above WACC.

Operating Expenditure (Chapter 6)

The Authority has been directed to recommend a revenue stream that allows Seqwater to recover efficient operational, maintenance and administrative costs to ensure the continuing delivery of water services. Of Seqwater's proposed (November 2012) total operating cost of \$262.1 million in 2012-13, \$21.2 million relates to irrigation schemes.

The Queensland Government has also announced its intention to merge Seqwater, LinkWater and the SEQ Water Grid Manager on 1 January 2013. The cost impacts of the proposed merger are currently being considered by Government and further adjustments to the Authority's estimates of costs may be necessary. If so, these will be reflected in our Final Report.

Direct Operating Costs

The Authority reviewed for prudence and efficiency \$6.6 million (or 55%) of Seqwater's originally (April 2012) submitted \$12.1 million (all sectors) forecast direct operating expenditure for 2012-13 (upon which 2013-17 costs are based).

On the basis of its reviews, the Authority's concluded that directly sampled costs were \$0.6 million above prudent and/or efficient levels. Having regard to this, but excluding a non-systematic modelling error in that figure, a cost saving of 5% has been applied to Seqwater's remaining unsampled April costs (excluding local government rates and electricity costs). This results in a further \$0.2 million reduction to direct operating costs.

Therefore, the Authority recommends that Seqwater's (April 2012) total direct operating costs for 2012-13 be reduced to \$11.2 million. This is below Seqwater's revised November direct operating costs of \$11.7 million.

The Authority also considers it appropriate to reduce 2013-17 forecast direct operating costs by a general productivity gain of 1.5% per annum for each year of the 2013-17 regulatory period, applied cumulatively to reflect achievable ongoing productivity gains.

Non-Direct Operating Costs

For the GSCs 2012-13 Final Report (bulk water), the Authority reviewed Seqwater's non-direct costs and recommended cost savings. As a result, the Authority did not conduct further reviews of Seqwater's non-direct costs. The Government extended the Authority's recommended cost savings.

In November 2012, Seqwater reduced its April 2012 non-direct costs in response to the Government's extended savings. Seqwater's resubmitted all sectors non-direct costs of relevance to irrigation fell from \$11.1 million (April 2012) to \$9.5 million (November 2012) for 2012-13. The Authority recommends that this Government imposed reduction be accepted.

In addition, the Authority recommends Seqwater's November non-direct operating costs for 2012-13 be reduced by \$0.4 million or a further 4% to reflect a reallocation of non-direct costs (away from irrigation WAE) resulting from the Authority's cost reductions to direct operating costs.

Therefore, the Authority recommends that Seqwater's total non-direct operating costs for 2012-13 be reduced to \$9.1 million. This is below Seqwater's revised November non-direct operating costs of \$9.5 million.

The Authority recommends that Seqwater's forecast non-direct operating costs for 2013-17 should be further reduced by a general productivity gain of 1.5% per annum for each year of 2013-17. This saving is applied cumulatively to reflect expected achievable, ongoing productivity gains. It is consistent with our approach to SunWater's non-direct costs and is supported by productivity gains imposed by regulators in other jurisdictions.

Total Operating Costs

The forecast total operating expenditure for irrigation WSSs submitted by Seqwater in April for 2012-13 was \$23.2 million, and in November was \$21.2 million. After the Authority's cost savings outlined above have been applied, the recommended total operating costs are \$20.3 million.

The Authority recommends that non-direct costs be allocated to irrigation tariff groups using total direct operating costs (TDC) as the cost allocation base (CAB), consistent with Seqwater's submission. This varies from SunWater where the Authority accepted direct labour costs (DLC) as the basis for allocating non-direct costs. Seqwater's financial system is based on TDC and any change would impose additional costs on Seqwater and irrigators for no material gain.

Consistent with the approach adopted for SunWater, for bulk WSSs, fixed maintenance costs and 50% of fixed operations costs should be allocated between priority groups using Seqwater's submitted HUFs (or adjusted WAE where HUFs do not apply) and the other 50% of operations costs should be allocated using current nominal WAE.

Also consistent with SunWater, for distribution systems, fixed operating costs (including 100% of fixed maintenance and operations costs) should be allocated to customer priority groups using current nominal WAE.

Currently, there are no high priority customer WAE in the two distribution systems. However, if in future an irrigator converted medium priority to high priority WAE, this principle would be relevant to setting high priority irrigation water charges.

The Authority recommends that, for the regulatory period materials should be escalated at 4% per annum, labour and contractors at 3.6% per annum, and all other costs (for example, electricity and non-labour non-direct costs) at 2.5% per annum.

If allowable electricity costs increase materially, consideration should be given to an end of period adjustment only, given the relative immateriality of such costs in irrigation WSSs.

The Authority also recommends that Seqwater not be provided with an irrigation working capital allowance as most irrigation payments are received in advance through the fixed tariffs.

Table 2 presents a comparison of Seqwater's submitted operating costs (April and November) against the Authority's recommended operating costs for both 'all sectors' and irrigation only.

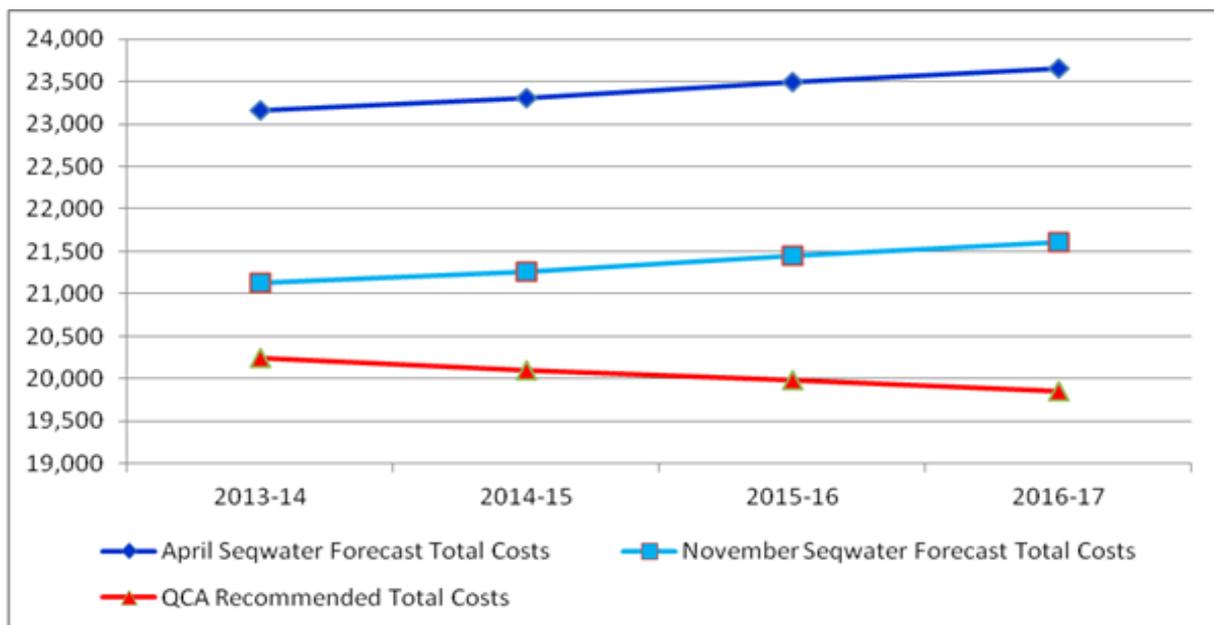
Table 2: Total Operating Costs All Sectors and Irrigation Only 2012-13

	<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	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 Recommended	11,189,312	9,111,354	20,300,666	2,363,799	1,621,980	3,985,779
Change (April vs. QCA) \$	(869,419)	(2,025,886)	(2,895,305)	(639,637)	(553,079)	(1,192,716)
Change (April vs. QCA) %	(7%)	(18%)	(12%)	(21%)	(25%)	(23%)

Note: Irrigation Only values are 2013-14, deflated by 2.5%

Table 2 indicates that all sectors (in irrigation schemes) experience different changes to irrigation only costs due to the varying proportion of irrigation WAE in each WSS (on which costs are allocated).

Figure 3 presents a comparison of Seqwater's submitted total operating costs (April and November) against the Authority's recommended total operating costs (all sectors).

Figure 3: Total All Sectors Operating Costs 2013-17 (\$'000 Real)

The Authority further recommends that Seqwater should submit proposals to the Authority, by 30 June 2014, on improving the forecasting and incurrence of operating costs.

As for renewals expenditure, the Authority recommends Seqwater should publish annually updated NSPs containing operating (and renewals) information along with stakeholder submissions and Seqwater's responses. These requirements should be outlined in amendments to Seqwater's Strategic and Operational Plan (and relevant legislation).

Draft Prices

A summary of current, Seqwater's submitted and the Authority's cost-reflective and recommended prices for 2013-14 is provided in Table 3 (below).

Table 3: Irrigation Water Prices by Tariff Group (Nominal \$/ML)

Tariff Group	Actual	Seqwater (April)	Seqwater (November)	QCA Cost Reflective	Recommended Tariffs
	2012-13	2013-14	2013-14	2013-14	2013-14
Cedar Pocket Dam					
Fixed (Part A)	15.68	271.65	306.07	221.93	9.70
Volumetric (Part B)	16.81	0.00	0.00	32.02	32.02
Central Brisbane River					
Fixed (Part A)	0.00	56.52	52.44	38.34	22.66
Volumetric (Part B)	0.00	0.00	0.00	12.31	12.31
Central Lockyer Valley					
Fixed (Part A) – Bulk River	12.37	96.15	66.53	51.71	0.00
Volumetric (Part B) – Bulk River	32.91	0.00	0.00	18.48	18.48
Fixed (Part A) Bulk Pipeline	n.a.	96.15	66.53	51.71	13.01
Volumetric (Part B) Bulk Pipeline	n.a.	0	0	9.35	9.35
Morton Vale Pipeline					
Fixed (Part C)	9.61	10.51	5.45	14.85	13.06
Volumetric (Part D)	4.77	0.00	0.00	24.84	24.84
Morton Vale Pipeline (Bundled)					
Fixed (Part A + C)	21.98	106.66	71.98	66.57	26.07
Volumetric (Part B + D)	37.68	0.00	0.00	34.19	34.19
Logan River					
Fixed (Part A)	17.50	34.54	27.85	26.37	21.87
Volumetric (Part B)	27.93	0.00	0.00	15.27	15.27
Lower Lockyer Valley					
Fixed (Part A)	24.49	124.28	125.39	103.57	25.72
Volumetric (Part B)	29.99	0.00	0.00	43.77	43.77
Mary Valley					
Fixed (Part A)	17.90	39.76	27.77	24.91	19.95
Volumetric (Part B)	11.19	0.00	0.00	8.42	8.42
Pie Creek					
Fixed (Part C)	22.73	311.34	387.49	326.86	0.00
Volumetric (Part D)	46.84	0.00	55.72	180.45	180.45
Pie Creek (Bundled)					
Fixed (Part A + C)	40.63	351.10	415.26	351.77	8.37
Volumetric (Part B + D)	58.03	0.00	55.72	188.87	188.87
Warrill Valley					
Fixed (Part A)	18.96	30.87	25.63	20.39	20.39
Volumetric (Part B)	22.37	0.00	0.00	34.52	34.52

Note: Pie Creek Part C tariff is zero due to revenue maintenance requirements.

As noted above, the Authority's recommended 2013-17 price paths are addressed in detail in Chapter 7: Draft Prices and in the scheme specific reports, which constitute Volume 2.

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 revenues 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 reason for the longer timeframe; and
 - (ii) if the Authority recommends against a price path, it must provide reasons.

1.2 Price Paths for 2006-11

Irrigation prices for 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 Dam WSS, Central Lockyer WSS, Lower Lockyer 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 Draft 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.

In 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 assumes no revenue from Central Brisbane River WSS irrigators and a continuation of the current arrangements in the Central Lockyer (where some fixed charges are temporarily suspended due to the absence of specified volumes of customer water access entitlements (WAE)).

In 2013-14, Seqwater proposes cost-reflective irrigation revenues of \$5.7 million (including revenue from Central Brisbane and Central Lockyer WSSs not included in 2012-13 forecasts), comprised of revenue from irrigation charges and CSO payments. This proposed increase of \$2.4 million (in terms of total cost-reflective revenues) is comprised of approximately a \$2.0 million increase in operating expenditure, a \$0.3 million increase in renewal annuities and \$0.1 million resulting from inflation.

By comparison, for 2012-13, the Government determined that the 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. The Authority has in this Draft Report included cost-reflective prices (Chapter 7: Draft Prices). The Ministerial Direction requires that (where current revenues exceed prudent and efficient costs) current prices are to be maintained in real terms. However, the Authority has not recommended any prices that exceed cost-reflective prices.

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

Seqwater currently recovers regulated urban and industrial costs of water supply via grid service charges (GSCs). In mixed use WSSs, irrigators have also been paying a portion of these (capital) 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 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 2013-14 bulk 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 which initially involved the establishment of the SEQ Water Grid, the amalgamation of 22 separate entities to establish entities including the WGM, two state-owned Grid Service

Providers (GSPs) (Seqwater and LinkWater) and three council-owned SEQ Distributor-Retailers (DRs) trading as Allconnex Water, Queensland Urban Utilities and Unity Water.

The merger of Seqwater and WaterSecure was announced on 5 December 2010, with the merger taking effect on 1 July 2011. The merger process involved merging the organisational structures, transferring staff, and integrating assets, systems, policies and procedures.

Subsequently, the Queensland Government (Hon M. McArdle 2012) has announced its intention to amalgamate Seqwater, LinkWater and the WGM in January 2013.

Seqwater

Seqwater was established in November 2007 under the *South East Queensland Water (Restructuring) Act 2007* and reports to the Queensland Government via the responsible Ministers, who are 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 water in SEQ and owns assets that provide Declared Water Services. Seqwater's major assets include dams, weirs and water treatment plants (WTPs) and include bulk supply assets transferred from local governments, SunWater and public water boards under the *South East Queensland Water (Restructuring) Act 2007*.

Seqwater also owns recently constructed assets such as Wyaralong Dam and manufactured water assets including the Gold Coast Desalination Plant (GCDP) at Tugun and the Western Corridor Recycled Water Scheme (WCRWS).

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

LinkWater

From January 2013, Seqwater will be merged with LinkWater which currently owns and operates the bulk transport assets that transport potable water around the SEQ Water Grid.

LinkWater's assets comprise bulk pipelines, pumping stations and reservoirs, including assets constructed as drought projects such as Southern Regional Water Pipeline (SRWP) and assets transferred from local governments and public water boards under the *South East Queensland Water (Restructuring) Act 2007*.

Water Grid Manager

The WGM, also to be merged with Seqwater, holds contracts to provide potable and purified recycled water to the DRs and power stations. To meet its customers' demand for water, the WGM contracts the water services of the GSPs (that is, Seqwater and LinkWater). The prices that the WGM pays for these services are the GSCs.

2.1.2 Seqwater Operations

In 2008-09, Seqwater began its operations after it was transferred a range of water supply assets from SEQWater Corporation (Seqwater's predecessor), local governments and SunWater.

Since, 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 (such as Wyaralong Dam which was transferred on 1 July 2011), and the recent merger with WaterSecure.

Seqwater will undergo further major changes arising from the proposed amalgamation with LinkWater and the WGM.

Consolidation

Seqwater acquired water assets in early 2008 as part of the water market reforms. Seqwater did not take operational responsibility for most of these assets until 1 July 2008.

In cases where the transfers occurred earlier, the previous owners generally continued to operate the assets under Interim Service Level Agreements until 30 June 2008. Even after 1 July 2008, some assets continued to be operated under Service Level Agreements.

Seqwater's focus in the years immediately following the acquisition of the assets was to maintain ongoing supply.

Financial Information

At the commencement of its operations 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 WSSs were transferred to Seqwater – that is, Central Lockyer (including Morton Vale Pipeline), Logan River, Lower Lockyer, Mary Valley and Warrill Valley WSSs. With them, Seqwater inherited the 2006-07 to 2010-11 SunWater price paths, which were determined in 2005-06 as part of the Tier 1 and Tier 2 SunWater irrigation pricing consultation process.

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

Seqwater also became responsible for the Central Brisbane River WSS. To date, no prices have been applied to irrigation customers of the Central Brisbane River WSS. Seqwater has not applied irrigation prices pending the outcomes of the Authority's current review.

Seqwater currently recovers regulated expenditures via the bulk GSCs. In mixed use schemes, irrigators also have been paying a portion of these (capital) costs via a renewals annuity approved by Government in 2005-06.

Seqwater, therefore, had been collecting a portion of its costs twice or over-recovering marginally. Seqwater proposed that this issue be resolved once the Authority's Seqwater Irrigation Review 2013-17 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 2013-14 bulk water prices.

2.2 Services Provided and Customers

Seqwater provides bulk treated water (drinking and recycled) to the WGM and also services irrigation and other WAE holders.

In 2012-13, Seqwater forecasts 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 assumes no revenue from Central Brisbane River WSS and reduced revenue in the Central Lockyer WSS (arising from the temporary suspension of fixed charges) irrigators.

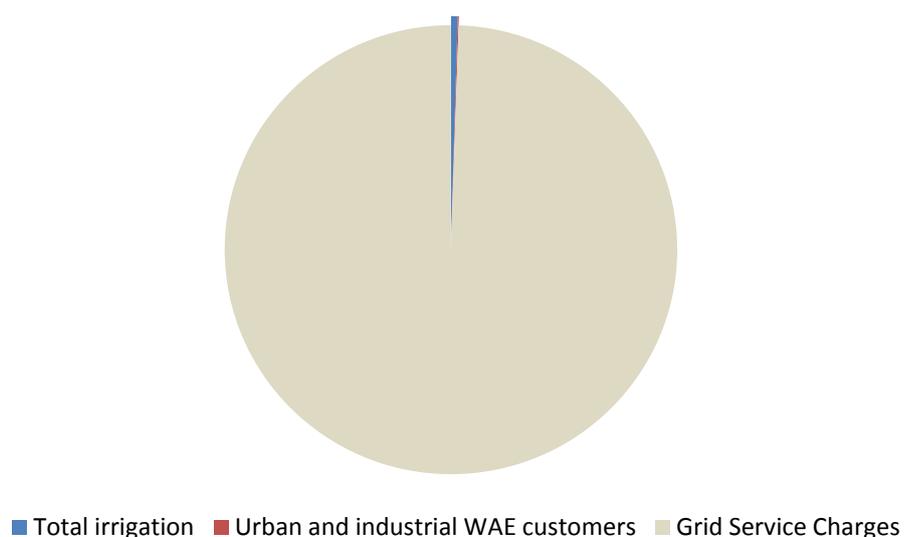
In general, the irrigation CSO represents the difference between irrigation costs and irrigation revenues, which arises due to price paths not achieving (lower bound) cost recovery levels.

In 2013-14, Seqwater proposes cost-reflective irrigation revenues of \$5.7 million (including those from Central Brisbane and Central Lockyer WSSs), comprised of revenue from irrigation charges and CSO payments. This proposed increase of \$2.4 million (in terms of total cost-reflective revenues) is comprised of approximately a \$2.0 million proposed increase in operating expenditure, a \$0.3 million increase in renewal annuities and \$0.1 million resulting from inflation (assuming CPI of 2.5%).

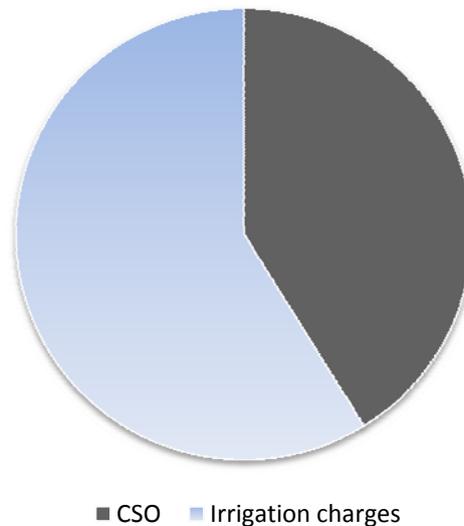
By comparison, for 2012-13, the Government determined that the WGM pay Seqwater \$685.6 million for its grid services. In 2012-13, therefore, irrigation revenues (including CSO) accounted for approximately 0.5% of Seqwater's regulated revenue with the majority of Seqwater's regulated revenues coming from the WGM (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 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 water access entitlements from dams. The revenue from these customers for 2012-13 is budgeted at \$0.6 million.

2.3 Service Delivery Framework

The irrigation customers are licensed 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 of which 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 open channels and pipelines.

Table 2.1: Seqwater's Irrigation Service Contracts

<i>Bulk WSSs</i>	<i>Associated Distribution System</i>
Cedar Pocket	
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 particular 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 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.

All Seqwater irrigation customers are subject to a relevant supply contract, which among other things, provides the basis on which Seqwater can levy the Authority's recommended water charges (once approved by Government). 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 supply supplied.

2.3.3 Water Access Entitlements

In some WSSs, where a ROP and therefore water allocations exist, customers can temporarily or permanently trade WAE in accordance with the requirements of the ROP and ROL.

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 WAE. This situation exists, for example, in the Central Lockyer 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, 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 for SunWater in consultation with customers.

Subsequently, the relevant Water Supply Arrangements and Service Targets were transferred to Seqwater for most of its irrigation schemes. However, there are no specified Service Standards in the Central Lockyer 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 WGM	44
	Desalination plants	1
	Advanced water treatment plants	3
	Recycled water pipeline network	1
	Other water treatment plants (recreation sites etc.)	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) Seqwater owns some limited land holdings beyond the flood margin as a result of acquisitions at the time of construction, but these are small percentages of the entire catchment, which is typically held for commercial activities including farming.

2.4.2 Groundwater

Seqwater manages six groundwater benefitted (supplemented) areas. Whilst the Central Lockyer WSS groundwater area supplies irrigators, 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 51 WTPs throughout SEQ, of which 44 provide services to the WGM (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 Morton Vale Distribution System

In the Central Lockyer WSS, customers of the Morton Vale Pipeline are subject to the same service contract arrangements as benefitted ground water and surface water customers of the Central Lockyer WSS (bulk) tariff group.

In addition, customers of Morton Vale Pipeline have contracts with Seqwater for a separate capital charge. This charge is not subject to the Authority's Seqwater irrigation pricing review, on the basis that it is a separate commercial arrangement.

The implications of these contracts for Morton Vale Pipeline customers are discussed in Chapter 3 - Regulatory Framework and the Central Lockyer WSS report.

2.5 Unregulated Assets and Services

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

These include Seqwater's head office at 240 Margaret Street, Brisbane, which it currently owns and occupies (also leasing to other tenants). This asset is 'unregulated' because the value of this building was excluded from Seqwater's regulatory asset base (RAB) established by Government in 2008. Seqwater includes imputed rent from this building in operating costs, but excludes owner costs such as rates.

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 a revenue offset (to benefit water users) 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. Seqwater proposes these WAE attract the same costs as other medium priority WAE in the scheme.

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).

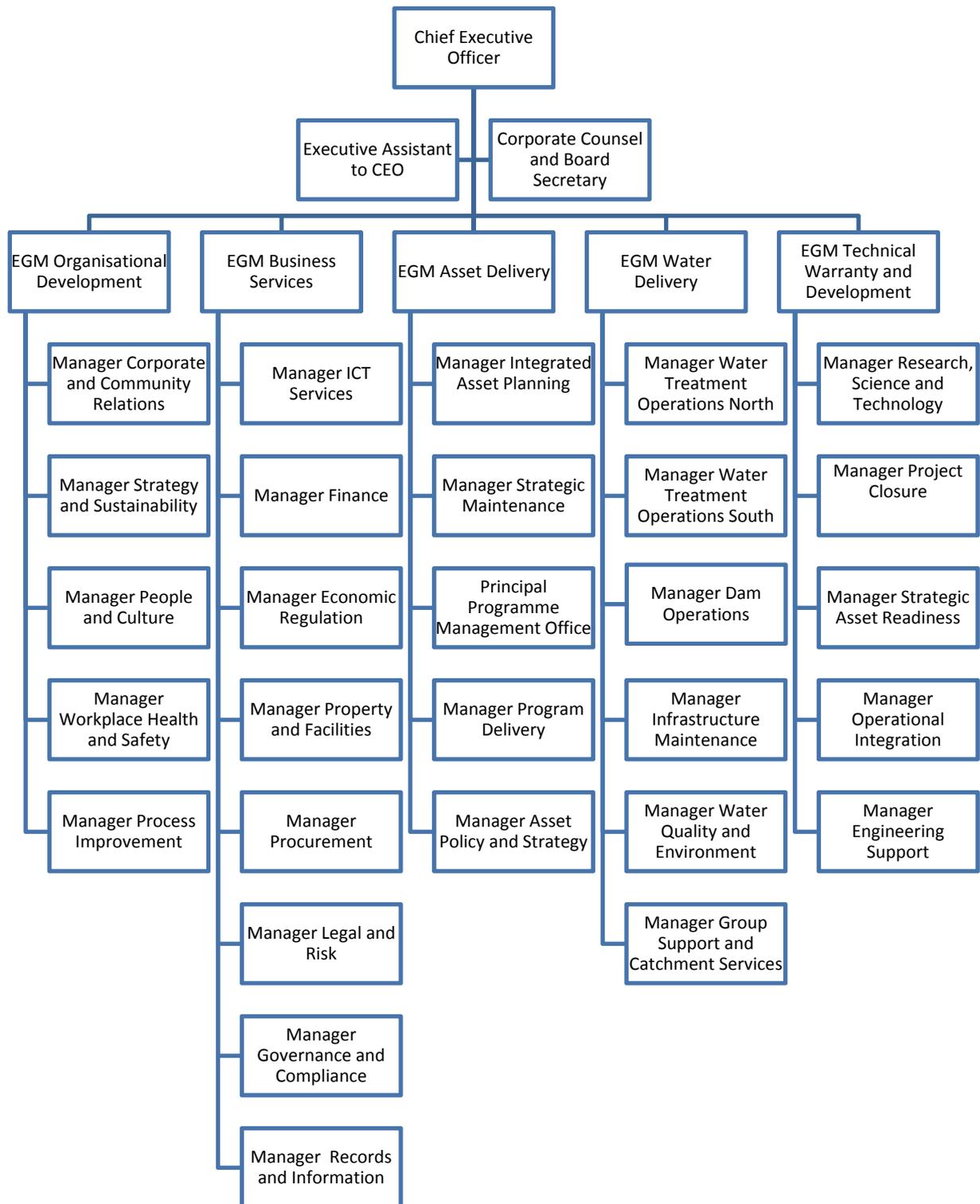
The Authority has in this Draft Report included cost-reflective prices (Chapter 7: Draft Prices). The Ministerial Direction requires that (where current revenues exceed prudent and efficient costs) current prices are to be maintained in real terms. However, the Authority has not recommended any prices that exceed cost-reflective prices.

The Ministerial Direction also requires the Authority to consider recommending price paths to mitigate the impact on irrigators of real price increases, the Authority has also provided recommended price paths that may, at least for a time, be below cost-reflective prices.

2.7 Organisational Restructure 2006-11

A summary of Seqwater's current (prior to the proposed amalgamation due in January 2013) key business units is provided in Figure 2.3.

Figure 2.3: Seqwater Organisational Chart



Source: Seqwater (2012a).

3. REGULATORY FRAMEWORK

The Ministerial Direction requires that, in general, prices should recover efficient operational costs and expenditure on renewing and rehabilitating existing assets.

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

The Authority's conclusions relating to the appropriate allocation of risk and the recommended response are summarised in Table 3.1.

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 for all remaining irrigation Seqwater customers (as recommended in the previous price review).

As electricity costs are generally not material, Seqwater should only apply for an end-of-period adjustment to address material variances between forecast and actual costs.

Under the current Ministerial Direction, capital expenditure associated with the national metering standard are to be excluded from recommended prices. The Authority would consider any Seqwater application for such costs – subject to a Ministerial Direction to do so. 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.

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

Risk	Nature of the Risk	Allocation of Risk	Authority's Recommended Response
<i>Short Term Volume Risk</i>	<i>Risk of uncertain usage resulting from fluctuating customer demand and/or water supply.</i>	<i>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</i>	<i>Cost-reflective tariffs.</i>
<i>Long Term Volume Risk (Planning and Infrastructure)</i>	<i>Risk of matching storage capacity (or new entitlements from improving distribution loss efficiency) to future demand.</i>	<i>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.</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>Risk of 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>Risk of governments modifying the water planning framework imposing costs on service provider.</i>	<i>Customers should bear the risk of changes in water legislation though there may be some compensation associated with National Water Initiative (NWI) related government decisions.</i>	<i>Cost variations may be immediately transferred to customers using a cost pass-through mechanism (depending on materiality).</i>

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, Central Lockyer, Logan River, Lower Lockyer 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 costs 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 Entitlements

Water entitlements 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 tradeable distribution system WAE (water allocation) exits from a distribution system a termination fee applies. SunWater WAE 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 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 water entitlements in each WSS.

Table 3.2 summarises the type of WAE, whether it can be traded or surrendered, and 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

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

Note # - Central Brisbane and Central Lockyer 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), remove the need for regulatory intervention and promote price stability over the regulatory period.

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.

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 tariff group as nominal volumes are not assigned. During the previous price path only the variable costs were recovered (Seqwater has foregone around or approximately \$152,000 by not collecting fixed charges in 2011-12 alone).

Seqwater submitted that a volumetric only charge should be set to recover all costs, based on an assumed level of water use. To ensure that Seqwater is not exposed to short term volume risk if actual water use is less than forecast, a revenue cap should apply to this tariff group. An adjustment should be made at the start of the next regulatory period to adjust for any identified under or over recovery of revenues.

If customer volumes are specified [by DNRM] during the regulatory period, then fixed charges should apply from the start of the following year.

Other Stakeholders

QFF (2012) acknowledged that Central Lockyer is a special case as DNRM has yet to assess individual entitlements so there is not a sufficient basis to apply a fixed charge on customers. However, in respect of Seqwater's proposal [to set a volumetric charge to recover all costs] there is a supply risk associated with water planning not keeping pace with pricing reform.

QFF proposed that fixed costs should only be passed on when at least interim entitlements have been adequately assessed and implemented and there is some opportunity to transfer water if only within defined areas.

QFF further submitted that if Seqwater's proposal or any alternative proposed by the Authority are to be considered then the impact of the proposed changes on customers should be fully investigated including capacity to pay.

To make effective on-farm investment, permanent trading (as opposed to temporary trading) is required (IA Lower Lockyer 2012 and IA Warrill Valley 2012).

Other Jurisdictions

Australian Competition and Consumer Commission

The Australian Competition and Consumer Commission (ACCC) has been responsible for developing rules to apply in regulating water service providers within the Murray-Darling Basin (MDB). Part 6 of the Water Charge (Infrastructure) Rules 2010 (WCIR) provides for price approvals or determinations for non-member owned operators that provide services in relation to more than 250 GL of entitlement.

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

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

- (a) outlines a price cap form of control whereby maximum charges are approved or determined for a defined regulatory period of up to four years; and
- (b) incorporates a demand adjustment mechanism that allows the regulator to account for unanticipated changes in demand resulting from unpredictable inflows.

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

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

Under this approach, prices are set to generate the total target revenue, in 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 (2012), 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 customer 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 regulation period. At the end of the first regulatory year (2008-09), these businesses were required to resubmit amended forecasts for the remainder of the regulatory period (2009-10 to 2012-13) accompanied by a detailed explanation of their calculations and evidence of consultation with customers.

Western Australia

In its inquiry into tariffs of the Water Corporation, Aqwest and Busselton Water, the Economic Regulatory Authority (ERA, 2009) noted that its approach differed from other jurisdictions where tariffs are calculated for a designated 'regulatory period', typically three to five years.

ERA advised that the Western Australian State Government is provided with annual updates on capital expenditure in the preceding year and forecasts of capital and operating expenditure for the coming 10 years. Any under- or over-recovery of past expenditure due to short term supply variations is accounted for by making adjustments to future prices. ERA contended that this approach removes demand risk from the utilities and places the risk associated with incorrect demand forecasts with the customers. It allows any under- or over-recovery of past expenditure to be accounted for in the following year.

Australian Capital Territory (ACT)

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

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

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

- (a) recommend irrigation prices for the regulatory period;
- (b) maintain water prices in real terms if current prices are already above the level required to recover costs;
- (c) set irrigation prices for certain schemes (or scheme segments) to increase in real terms at a pace consistent with the 2006-11 prices or until such time as prices are sufficient to recover costs; 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 limitations on Seqwater's ability to manage demand (or supply) risks by changing its storage or delivery capacity. These constraints, associated risks and the implications for the form of price control are addressed below (see Volume Risk (Long Term)).

Further, Seqwater has no capacity to impact demand through pricing changes as prices for water provided by Seqwater 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.

For schemes where WAEs are in place, the 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 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 recognises 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 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 notes 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 and Cedar Pocket WSS) where temporary trading will be preferred, even where permanent trading is available. This situation arises where the cost-reflective (particularly Part A) charges are high and demand is quite variable.

To allow customers and Seqwater to better manage demand risk, the Authority considers that permanently tradeable water allocations should be in place for every Seqwater irrigation customer. For this purpose, the Authority also recommends 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 the service provider to continue their provision. If not, in a commercial context, a service provider would cease the delivery of those services.

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

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

A standard revenue cap would provide certainty for 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 considers that other complementary arrangements are required (these are addressed in subsequent chapters).

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

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

The Authority notes the ACCC's position that volume risk may be managed through annual adjustment to prices in response to demand fluctuations. Such an approach does, however, reduce price certainty. The Authority considers that, for 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 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) which produced a wide range of potential forecasts for rainfall. The modelling indicated more periods of lower rainfall.

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

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

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

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

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

The Authority therefore concludes 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)).

Seqwater's customers have some, albeit limited, scope to manage supply risks. Users of irrigated water can manage their water supply risks by holding surplus entitlements with Seqwater, sourcing alternative supplies (e.g. groundwater) and using temporary trade markets.

Notwithstanding the above, the supply contract between Seqwater and its customers requires Seqwater to only supply water to customers to satisfy customer requirements when there is a sufficient level of water availability. Section 12.1(d) of the 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 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 (2010a) recognised the historical variation between forecast and actual supply and ascribed this risk to WAE holders through a revenue volatility allowance. The Authority does not recommend this approach as, in 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 prefers a mechanism that addresses actual variations, rather than anticipating a historical average.

Similar price control arrangements and tariff structures are available to ensure revenue adequacy for 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 it will be limited 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 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 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 IWA¹.

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 one scheme, Central Lockyer Valley WSS, there are no WAE 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. The Authority has considered several options:

- (a) Seqwater's preferred option which is to apply a revenue cap and then use the volumetric charge to recoup all fixed and variable costs. This would see volumetric charges increase from about \$30/ML to around \$300/ML;
- (b) basing the fixed costs on estimates of irrigable land held by each irrigator. No such estimates are available;
- (c) basing the fixed costs on estimates of total land holding. The ratio of irrigable land to total land holding is variable for many irrigators (and adjustments for each individual for this purpose would be administratively costly);
- (d) estimating the fixed charge on the basis of the number of ML allocated to the scheme. This would represent the charge per ML that would apply if the tradable water allocations (which the Authority recommend be put in place by 30 June 2015) were indeed put in place. In the absence of the number of MLs of WAE allocated to individual irrigators, Seqwater would have to forego this revenue until the tradable

¹ 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*.

WAE are put in place. This option is similar to what has effectively occurred in the 2006-12 price path and cost Seqwater \$152,000 in 2011-12.

Option (d) would only represent a small portion of the ensuing CSO and would minimise price changes once the tradable WAE are put in place. It is proposed to proceed on this basis.

Further details are provided in the Volume 2: Central Lockyer Valley WSS report.

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 termination fee on past contracts (on the basis that the customer is obliged to maintain their water allocation), it has chosen not to do so. This remains Seqwater's policy position. The Authority accepts 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 notes that water licences, once surrendered, are extinguished. However, a surrendered IWA is held by DNRM until such a time as it is made available to the market by DNRM for sale. At this point, 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 then, Seqwater will only bear such costs until they are re-issued to another party.

It should be noted that under the Authority's 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.

Conclusion

Seqwater does not have the ability to manage its 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 recovered through the volumetric charge with fixed costs recovered through a fixed charge based on customers' nominal volume (representing the share of capacity reflected by customer WAE).

In the absence of a nominal allocation, the fixed charge in the Central Lockyer Valley WSS should be estimated on the basis of the number of ML allocated to the scheme and should not be applied until tradable water allocations are in place. This would represent the charge per ML that would apply if the tradable water allocations (which the Authority recommend be put in place by 30 June 2015) were indeed put in place. This would only result in a small portion of the ensuing CSO and would minimise price changes once the tradable WAE are put in place. It is proposed to proceed on this basis.

The absence of permanent trading associated with some WAE 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. Seqwater cannot manage short term volume risk.

To reduce total risks for all parties, DNRM should put in place permanently (and temporarily) tradable water allocations where absent (in the Central Lockyer Valley, Lower Lockyer Valley and Warrill Valley WSSs) by 30 June 2015.

The surrender of water licences and IWA may result in declining fixed charge revenue streams. Seqwater 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 position provided the foregone revenues are not passed to other irrigators.

Recommendation:

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

Fixed costs should be allocated to customers on the basis of nominal volumes or in the case of Central Lockyer Valley WSS, the fixed charge in the Central Lockyer Valley WSS should be estimated on the basis of the number of ML allocated to the scheme and not be applied until permanently tradable water allocations are in place.

The Authority also recommends that:

- (a) DNRM should ensure that permanently tradeable water allocations be in place for every Seqwater irrigation customer by 30 June 2015;**
 - (b) to facilitate (a), DNRM should finalise relevant ROPs (or sections of ROPs); and**
 - (c) 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)

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 Queensland Water Commission (QWC).

Seqwater's holdings of distribution losses are modest. The only 'true' distribution system loss submitted by Seqwater is for the Morton Vale Pipeline, which is 184 ML. However, in effect, Seqwater also holds losses WAE for the Pie Creek tariff group.

In addition (and unlike SunWater), Seqwater hold 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.

Seqwater concludes that volume risk should be allocated to customers through a tariff structure where the fixed charge recovers fixed costs, and a volumetric charge that recovers costs that vary with demand (in this case, over the four year regulatory period).

Other Jurisdictions

South Australia

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

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, various WRPs, ROPs, ROLs and strategic asset management plans (SAMPs).

Water Act 2000

Under Section 360V of the *Water Act 2000*, the QWC (or subsequent relevant Government entity) must make a system operating plan (SOP) that specifies the desired levels of service objectives which include the maximum duration, frequency, and severity of water restrictions that may be expected by end users of the water.

The Authority notes that the levels of service objectives do not specifically refer to irrigation levels of service.

Section 360I of the *Water Act 2000* requires the QWC to provide the Minister with regional water security options for the region. Pursuant to this advice, the (then) Minister for Natural Resources, Mines and Energy and Minister for Trade made the Regional Water Security

Program for SEQ. This program specifies the water supply works necessary to achieve the (above) desired levels of service objectives.

The Authority notes 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. This is discussed further in Chapter 5: Renewals Annuities.

Strategic Asset Management Plans (SAMPs)

Section 71 of the *Water Supply (Safety and Reliability) Act 2008* requires service providers to have an approved SAMP for ensuring continuity of supply of each of the service provider's registered services. The SAMP must state the standards for appropriate levels of service. Once approved, the service provider must comply with the approved SAMP.

Seqwater's SAMP states that "the QWC has determination powers for capital works". Therefore, Seqwater is not able to independently manage long term volume risk by augmenting its bulk infrastructure.

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

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

The Authority notes, however, that the bulk transmission losses relate to channels in the bulk schemes and in that respect are not dissimilar to the nature of distribution infrastructure (though on a much more limited scale).

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 tradeable 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 they hold 426 medium priority losses WAE and 60 ML of high priority loss WAE (all are permanently tradeable 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 considers 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 recommends 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 tradeable water allocations.

Notwithstanding the above, the Authority notes 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.

Recommendation:

The Authority recommends that Seqwater 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 costs during the price path;
- (b) pass through arrangements are established that enable tariffs to be adjusted, either during or at the start of the next price path, to deal with material changes in costs; and
- (c) material changes to agreed cost items trigger a tariff change during the price path.

Option (a) was ultimately chosen and 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 (2012), 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.

Stakeholder Submissions

Seqwater

The relevant cost risks are similar for both irrigation costs and non-irrigation costs. Seqwater notes that the Authority's investigation of 2012-13 GSCs included consideration of the review thresholds for cost risks.

Assuming the Authority will continue to recommend GSCs after 2012-13, situations may arise where a single event may have implications for both irrigation prices and GSCs. 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 acknowledges 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.

Accordingly, Seqwater generally agrees 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 consider 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 submits 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 reservoirs during low flow periods. 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.

Moreover, the electricity costs associated with pumping flows from off-stream storages can be significant. For example, during the recent Queensland floods, Seqwater was required to pump a large volume of water into Lake Clarendon in the Central Lockyer 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 submit 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 propose that the Authority subsequently permit recovery of these costs through an end of period adjustment.

Seqwater consider 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 they have 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

ACCC

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

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

- (b) the total additional expenditure required during the remainder of the regulatory period to rectify the material and adverse effects of the event will exceed 5% of the value of the applicants RAB as at the beginning of the regulatory period;
- (c) the updated total forecast expenditure for the regulatory period is reasonably likely to exceed the total forecast expenditure as estimated at the start of the regulatory period for the same regulatory period; and
- (d) the operator has demonstrated that it is not able to reduce its expenditure to avoid the consequences of the unforeseen event without materially and adversely affecting the ability to comply with the regulatory or legislative obligations.

Victoria

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

The ESC considered that defining materiality thresholds would reduce businesses' and the Commission's flexibility to make appropriate adjustments for uncertain and unforeseen events. The Final Decision included a mechanism that allowed for businesses to apply for an adjustment to the scheduled prices and/or the revenue requirement to reflect increased/decreased costs incurred as a result of events that were uncertain or 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 a poor management practices that allow costs to increase beyond levels considered to be efficient. Labour costs are typically cited as such a cost.

It can be difficult to establish the source of changes in costs and whether these are controllable or not. Furthermore, a reduction in costs may be the result of a decrease in service rather than an increase in efficiency. The current service standards are described in the Water Supply Arrangements and Service Targets 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 proposes to consider an application from Seqwater for such a purpose if they arise from:

- (i) material differences between forecast costs and actual efficient costs which are unable to be managed by 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 notes 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 does not consider it appropriate to define (over 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 notes this is acceptable to Seqwater.

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

It is not 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 (b).

- (d) Efficiency Carry-over Mechanism (ECM). ECMs allow the regulated firm to retain efficiency savings for a reasonable period of time. The effectiveness 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 is considered at this stage that the costs of implementing an ECM regime through the regulatory framework may exceed the benefits. Instead, broad efficiency targets are 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 would 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 estimates of 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 are expected to be most appropriately resolved through end-of-period review adjustments.

Electricity

The Authority has 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 notes 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 is proposed that any material variations to forecasts will 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 accepts 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 accepts that actual pumping costs may vary materially from those forecast by Seqwater.

Therefore, the Authority is prepared to accept prudent and efficient forecast pumping costs (established in Chapter 6) and review them at the end of regulatory period. It is 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 does require 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.

Recommendation:

The Authority recommends that:

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

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 and Approach

Risk	Nature of the Risk	Allocation of Risk	Authority's Recommended Response
Short Term Volume Risk	Risk of uncertain usage resulting from fluctuating customer demand and/or water supply.	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

Under the Ministerial Direction, the Authority is required to recommend Seqwater's irrigation prices and tariff structures, to apply from 1 July 2013 to 30 June 2017 for each of Seqwater's proposed nine irrigation tariff groups.

The Authority has, in accordance with the Ministerial Direction, outlined and adopted the nine tariff groups submitted by Seqwater for the purpose of recommending irrigation prices.

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

However, due to the pricing requirements of the Ministerial Direction, the volumetric component of the Authority's recommended tariffs will be fully cost-reflective. The fixed component of the cost-reflective tariff will be adjusted where price paths apply.

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.

In general, it is proposed that fixed charges be allocated on the basis of nominal WAE. However, as DNRM is yet to establish individual irrigator nominal WAE for the Central Lockyer tariff group, the Authority recommends that the fixed charge should not be applied in this tariff group until the ROP is amended and tradable water allocations are in place.

There is insufficient information and therefore no evidence of inefficiency in the allocation of loss WAE to relevant tariff groups. Moreover, Seqwater cannot trade loss WAE (even if excess loss WAE were available for trade), in tariff groups other than Pie Creek. All costs associated with loss WAE are therefore allocated to customers. Nevertheless, DNRM should determine the efficient level of bulk and distribution loss WAE and amend relevant ROP sections accordingly by 30 June 2015.

The Authority has recommended termination fees be applied to the distribution systems based on its SunWater and the ACCC's approach. That is, a multiple of 11 times (incl. GST) the relevant Part C fixed cost-reflective tariff. Arrangements for the Morton Vale Pipeline are prescribed in contractual arrangements although these could be renegotiated to reflect the Authority's recommended approach.

It is noted that a lower termination fee multiple could be applied at Seqwater's discretion should it be consistent with Seqwater's commercial interests. The Authority also recommends that Seqwater should never recover the balance of any shortfall in relevant fixed cost revenue from remaining customers.

The Authority has also considered submissions relating to free water in the Central Brisbane River WSS. The Authority is required to recommend irrigation prices for each of Seqwater's nine irrigation tariff groups including Central Brisbane. Whether Seqwater is legally entitled to impose and recover irrigation charges on the Central Brisbane River WSS is a contractual matter between Seqwater and the irrigators, in the event that the Government determines charges should apply.

4.1 Introduction

Under the Ministerial Direction, the Authority is required to recommend irrigation prices (and tariff structures) to apply from 1 July 2013 to 30 June 2017 for each of 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. These water users hold WAE from seven bulk storage WSS owned and operated by Seqwater. Within these WSS, Seqwater also operates two distribution systems: Morton Vale Pipeline (Central Lockyer Valley WSS) and Pie Creek (Mary Valley WSS).

The water planning framework distinguishes between high and medium priority WAEs, reflecting the reliability of supply associated with these entitlements. However, Seqwater irrigators only hold medium priority WAE.

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 Seqwater is not proposing to develop drought tariff structures.

In setting recommended prices, the Authority takes into account the Government's pricing policies, noting that these will not be cost-reflective where price paths or the maintenance of current annual average revenues is required.

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 seven scheme NSPs.

The difference from the previous review is due to the addition of Central Brisbane River WSS (a single tariff group for which services were not charged and was therefore excluded) 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
Central Brisbane River	Central Brisbane River
Central Lockyer Valley	Central Lockyer
Central Lockyer Valley	Morton Vale Pipeline
Logan River	Logan River
Lower Lockyer Valley	Lower Lockyer
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 to apply to irrigation prices for each of the nine tariff groups within Seqwater's seven WSS. The tariff structures are to 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 as well as during the two interim years of 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 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);
- (e) ease of implementation;

- (f) simplicity: relatively simple tariff structures provide more transparent and accountable outcomes; and
- (g) fairness: the tariff structure should have the capacity to be applied across all schemes and over time (for example, drought and reliability of supply) (SunWater, 2006a).

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

The Tier 1 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 no, or little, water use. 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. Again, two-part tariff structures were generally 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 the existing (past) tariff structures and negotiations with SunWater relating to estimates of water usage.

As a result, where actual water use was less than negotiated water use forecasts, 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 refers).

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

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

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

The Part A and Part B associated with the Central Lockyer tariff group of the Central Lockyer Valley WSS, varied throughout the 2006-11 price path² (Table 4.3 refers).

Table 4.3: Seqwater's Central Lockyer Valley WSS Tariff Structures 2006-11

<i>Tariff Group</i>		<i>2006-07</i>	<i>2007-08</i>	<i>2008-09</i>	<i>2009-10</i>	<i>2010-11</i>
Central Lockyer	Part A %	0	14	23	31	37
	Part B %	100	86	77	69	63

Source: SunWater (2006a).

Seqwater has also advised that for the Morton Vale Pipeline tariff group a supply contract between irrigators and Seqwater has been in place since 1995 to secure the development of the pipeline.

The contract requires that customers pay a bundled (Part A and B) charge as well as a specified (indexed) annual fixed capital charge per ML of WAE towards the capital cost of the pipeline. In 1995, these arrangements were agreed to by customers.

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, Tier 1 group determined a preliminary set of scheme based water use forecasts based on:

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

² Seqwater submitted that although a fixed charge was nominated from 2007-08 (when water allocations were expected to be issued) for the Central Lockyer tariff group, it has not been possible to levy any fixed charge during 2006-12 as individual irrigators have not been issued nominal WAE.

- (b) subsequent data on nominal irrigation water allocations, announced allocations and water delivered to irrigators in each scheme; and
- (c) direct input and feedback from consultation with customers.

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

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 consumption charge recovers variable costs – noting that the Ministerial Direction required the Authority to have regard to the fixed and variable nature of SunWater’s underlying costs.

SunWater submitted that for all bulk and distribution schemes: 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 water and distribution cost recovery into a bundled two-part tariff. SunWater (2011i) proposed to unbundle these charges so that the recovery of distribution costs are separated from bulk water costs.

Water Use Forecasts

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

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

Stakeholder Submissions

Seqwater

Seqwater (2012a), as did SunWater, submitted that the pricing structure inherited from SunWater (from the previous review) did not signal the marginal cost of taking water.

The pricing structure inherited from SunWater also included arrangements to levy a minimum charge (which would only apply where a customer’s annual charges are less than the minimum charge).

Seqwater (2012a) proposed for 2013-17 that:

- (a) a cost-reflective two-part tariff structure should apply. That is, the volumetric charge is set to reflect those costs which vary with water use over the regulatory period and the fixed charge recovers the balance of (fixed) costs; and
- (b) the minimum charge should not continue on the basis that the above will recover all (lower bound) 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 - with the exception of Pie Creek tariff group (in the Mary Valley WSS) where Seqwater subsequently identified variable costs.

Regarding the Central Lockyer WSS, Seqwater submitted that:

- (a) in the Morton Vale Pipeline tariff group, unbundled tariff structures should apply (that is, distribution system customers should be being levied separate bulk (Part A and B) and distribution system (Part C and D) tariffs; and
- (b) given that Seqwater cannot levy a fixed charge on irrigators of the Central Lockyer 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 the recovery of 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 and QFF, 2012);
- (e) a concern that if minimum charges are no longer to apply (as is being proposed by Seqwater) larger irrigators will be subsidising smaller irrigators through an increase in scheme costs (QFF, 2012); and
- (f) there needs to be certainty associated with tariff structures prior to irrigators entering into contracts (L. Brimblecombe, 2012).

Some irrigators are not certain what combination of Part A and Part B would be beneficial and consider that the Authority's Draft Report needs to provide some insight (IA Central Lockyer, 2012).

Relative share of fixed and variable cost

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

- (a) it will increase (where permissible) the level of temporary and permanent water trading. Specifically, if the Authority is going to recommend a modest Part B charge, then an exclusive 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 and G. Rozynski, 2012).

More specifically, in the Lower Lockyer WSS, having a tariff structure with a 50% fixed charge would promote water trading from irrigators, who cannot meet these fixed costs, 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 (IA Mary Valley 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 is not supported on the basis that:

- (a) for Pie Creek, Lower Lockyer and Cedar Pocket 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);
- (b) it will cause financial hardship for irrigators 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, IA Logan 2012, IA Warrill Valley 2012, IA Central Brisbane 2012 and IA Mary Valley 2012, 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 will be a significant impost and the split instead should be either 60:40 or 50:50;

- (c) it increases water charges without a corresponding increase in levels of service or the reliability/security of WAE (Drynan, 2012);
- (d) it is inappropriate where permanent trading of WAE is not permitted, for example, current restrictions on water trading in Central Lockyer, Lower Lockyer and Warrill Valley WSSs limit irrigators' ability to respond to high fixed Part A charges (QFF 2012, IA Lower Lockyer 2012 and IA Warrill Valley 2012); and
- (e) 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, IA Logan 2012, IA Warrill Valley 2012 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 (IA Lower Lockyer 2012).

Due to full storages, it is likely that water use in the next one to two years will be higher than the past average, which included several drought followed by one flood year (IA Lower Lockyer 2012).

Other Jurisdictions

Tariff Structures

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

- (a) given that 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.

StateWater 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.

StateWater 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 (2010a) 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. More recently, IPART (2012) has acknowledged the merits of State Water adopting a 90:10 tariff structure and recommended State Water explore introducing this revised tariff structure over time.

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

In Victoria, SRW estimates that its costs are approximately 90% fixed and 10% variable, in a normal year. In two of the three pricing districts, all costs are recovered through a fixed charge. In the third district, costs are recovered by a two-part tariff which recovers approximately 80% of costs through the fixed charge and 20% through a variable charge (PwC, 2010a).

In South Australia, the Central Irrigation Trust (CIT) sets the tariff structure to reflect the cost structure. CIT employs a two-part tariff with a 15:67 fixed 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 is an effective water trading market operating, a farmer's decision to implement water efficiency measures will be

influenced by the price on the water trading market and not just the price of the water from the dams.

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

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

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

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

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

Authority's Analysis

The Case for Two (or Multi) Part Tariffs

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

In the previous chapter, the Authority concluded that, for the purpose of managing the volume risks related to 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 are additional matters requiring consideration in relation to the adoption and implementation of an appropriate tariff structure for bulk and distribution customers, as well as a number of additional pricing matters which require attention.

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

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

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

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

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

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

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

The Authority notes that other jurisdictions have in the past deviated from the approach proposed by Seqwater (and accepted by many irrigators) to setting tariffs – that is, for the fixed component of the charge to reflect fixed costs and the volumetric charge to reflect variable costs. For example, IPART previously determined that 90% of costs were fixed but the pricing structure recovers 40% of revenue through the fixed charge.

This method was used to continue past practice, give customers considerable control over the size of their bill and to address water scarcity pricing – but also incorporated higher costs in the form of a revenue volatility allowance. More recently, there is evidence in other jurisdictions of closer adherence to the adoption of tariff structures which more closely align with fixed and variable costs.

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, SunWater's submission that the ACCC considers the unbundling of tariffs to increase trading opportunities and potentially speed up trade approvals.

Seqwater submitted that distribution system tariff groups should only recover the costs of the distribution system. Customers within distribution systems will also pay bulk water charges that recover only bulk water costs.

The Authority proposes to unbundle bulk and distribution systems tariffs (as for SunWater distribution systems).

Unbundled tariffs will signal to customers the relevant bulk and distribution system costs that will encourage efficient levels of water use in the bulk and distribution systems. The

unbundled tariffs will provide an efficient price signal to customers as they consider enterprise (farming) options, levels of water use, on farm investments, permanent and/or temporary water trading, and exit from or entry into distribution systems.

That is, the Authority considers for both Morton Vale Pipeline (Central Lockyer Valley WSS) and Pie Creek (Mary Valley WSS) tariff groups distribution system costs should be recovered separately from bulk water costs.

Aligning the bulk and distribution tariff structure with fixed and volumetric costs will better manage volume risk and send efficient price signals.

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

The Authority notes customer (L. Brimblecombe, 2012) preference for certainty associated with tariff structures (prior to entering into contracts). Aligning variable costs with the variable charge and recommending fixed charges to recover the balance of costs, provides such certainty over the regulatory period to the extent that there are no subsequent changes due to within period price variations.

The Authority would expect that for Seqwater the probability of such variations is not likely to be high, if for no other reason than proposed tariff structure and that Seqwater's revenue from irrigation is relatively low compared to total revenues (and Seqwater should therefore have the ability to manage within period cost variations).

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

Volumetric Charge

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

There are, however, a number of concerns which arise from the prospectively low volumetric charge in view of Seqwater's submission (2012s) which only identifies some electricity pumping costs as being volume (usage) related.

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.

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.

In the current circumstances, a key reason for the adoption of two-part tariffs is to manage volume risks over the 2013-17 regulatory period. It is noted that the Ministerial Direction requires the Authority to recommend irrigation prices to apply over the four year regulatory period (rather than undertaking annual reviews). It is therefore considered that, to manage the 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, appears in Chapter 7: Draft 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 are:

- (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, ROP, and I/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;
- (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 providers envisages that cost per unit may decrease with increased supply, or where further cost savings are identified as being feasible.

Notwithstanding the characteristics of the variable costs in particular instances, the Authority 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 was 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 is 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) has noted that there are significant practical difficulties associated with the estimation of LRMC for rural water schemes. In particular, these relate to the collection of sufficient information to accurately calculate LRMC due to the unpredictability of future supply and demand.

Moreover, no augmentation of bulk infrastructure (related to irrigation supply) is being 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 4.4 and 4.5, 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 4.4: 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	16,541	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 4.5: 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	16,541	0.01%
Logan River	201	127	302	22	23,410	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 notes 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 (IA Mary Valley 2012). 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 I/ROL 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 has already been noted in the previous chapter (Regulatory Framework), that to increase the volumetric component above variable costs would impose volume risks that Seqwater is 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.

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

Low Supply

As noted in submissions identified above (Grassco 2012, IA Logan 2012, IA Warrill Valley 2012, IA Central Brisbane 2012, IA Mary Valley 2012, and J.B. and B.L. Keller 2012), another concern of many customers relates to circumstances where fixed costs are payable by customers but not all (and in some cases very little) water identified under the WAEs is supplied. 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 reflects 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 considers 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 notes stakeholder views (G. Drynan 2012, Grassco Pty Ltd 2012, IA Mary Valley 2012, 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 notes the support for 100% Part A bulk charges but proposes 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 recommends that to address the concerns of stakeholders about the absence of permanent trading in some WSSs, DNRM should introduce fully tradeable water allocations in the balance of Seqwater's WSSs by 30 June 2015. Accordingly, the Authority considers 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 4.6.

Table 4.6: 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: DRNM (2012).

QFF (2012) submitted, however, for Pie Creek, Lower Lockyer Valley and Cedar Pocket that having a high cost-reflective fixed Part A tariff will act as a disincentive to permanent trading. The Authority notes 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 requirement 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

The Authority notes Seqwater's submission that irrigators of the Central Lockyer tariff group have not been issued individual nominal WAE (used for determining fixed charges).

To remedy this, in absence of individual irrigator nominal WAE, Seqwater have proposed an interim tariff structure comprising of a 100% volumetric tariff.

As outlined in Chapter 3: Regulatory Framework, the Authority recommends that in the absence of a nominal allocation for individual irrigators, the bulk fixed charge should be allocated on the basis of nominal WAE currently allocated to the scheme as a whole (that is, IWA). The volumetric charge should accord with the Authority's general approach (that is, reflecting variable costs).

However, the Authority also recommends that the fixed (Part A) charge should not be applied to customers of the Central Lockyer tariff group until DNRM issues permanently tradable water allocations. Once this occurs, the Part A tariff should apply to customers of the Central Lockyer tariff group who (then) hold such WAE.

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 recommends unbundled tariffs for Pie Creek.

The Authority considers that it is appropriate to consider the Pie Creek tariff group as a distribution system to which unbundling should apply as:

- (a) Pie Creek assets comprise a series of channels and pipes used exclusively for water distribution purposes. 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 exposed channel or pipeline infrastructure;
- (c) there are 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 (not bulk / transmission loss WAE).

Accordingly, the Authority proposes 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).

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.

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>

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

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

Water Use Forecasts

The Authority notes submissions made by stakeholders (IA Lower Lockyer Valley 2012) that water use forecasting is problematic due to the changes that occur over time in cropping types and the significant variability associated with in-flow events.

Stakeholders (IA Central Lockyer Valley, IA Lower Lockyer Valley WSS) also consider that due to currently full water storages, water use is likely to be higher than historical averages for 2012-13 and 2013-14 (first year of the regulatory period). In response, however, the Authority notes that while this may turn out to be correct, significant uncertainty exists.

The application of two-part tariffs removes the need for such forecasts.

Water use data is however required, for example, to address Government's requirement that current prices (that is, revenues) be maintained. Chapter 7: Draft Prices discusses this in detail and presents the relevant water use data.

Minimum Charges

The Authority notes 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 notes 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.

Conclusions

The Authority considered stakeholder submissions on tariff structures and, for the reasons outlined above, concludes that the recommended 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 the Authority's estimate of Seqwater's revenue requirement. Variable costs should reflect those costs which are expected to vary with water usage over the four-year regulatory period.

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

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) **An unbundled tariff structure should apply to distribution systems (that is, Morton Vale Pipeline and Pie Creek tariff groups).**
 - (d) **The appropriateness of current legislative and contractual arrangements, insofar as they relate to schemes where water deliveries fall below expectations for a sustained period due to a lack of supply, is a matter for Government.**
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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 exist 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 reported that the primary sources of distribution losses are through uncontrollable factors (such as evaporation and seepage) and operational losses (such as leakages from pumps and/or pipes).

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 these entitlements. Further, it submitted that these costs should be recovered from customers of the distribution system (by including them in that system's revenue requirement) on the basis that they are required for the distribution service.

SunWater anticipated that the Authority may wish to consider whether SunWater is delivering distribution water (including losses) at least cost. SunWater submitted that it could explore holding less permanent loss WAEs and, instead, access the temporary water

trading market if additional WAEs were needed to meet loss requirements. SunWater noted that there were risks associated with this approach, particularly at times of scarcity. It submitted that this approach would come at a cost, which was not incorporated in the NSPs, and recommended that it not be adopted.

SunWater noted that if it improved water delivery efficiency in its distribution systems, reducing actual losses, it would be able to hold less WAEs for this purpose. However, SunWater 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.

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 supports 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 4.7 below identifies medium priority (MP) and high priority (HP) loss WAE.

Table 4.7: 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, 2012g 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 consider 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 analysis to demonstrate the need for the total nominal distribution loss WAE held. Table 4.8 refers.

Table 4.8: Pie Creek Loss WAE Surplus/Deficit

Period	Total Water Delivered to Pie Creek (ML)	Customers' Metered Use (ML)	Actual Losses Delivered (ML)	Total (MP plus HP) Loss WAE	Unadjusted Actual Losses as a Portion of Total Loss WAE	Basis for Adjustment: Customer Use as Portion of Customer WAE	Adjusted Actual Losses as a Portion of Total Loss WAE	Loss WAE Required (ML)	Loss WAE Deficit or Surplus (ML)
2002-03	577	346	231	486	48%	41%	115%	558	(72)
2003-04	230	137	93	486	19%	16%	117%	569	(83)
2004-05	408	338	70	486	14%	40%	35%	172	314
2005-06	261	154	107	486	22%	18%	119%	580	(94)
2008-09	64	63	1	486	0%	8%	3%	13	473
2009-10	204	206	(2)	486	0%	25%	(2%)	(7)	493
2010-11	20	17	3	486	1%	2%	32%	158	328

Source: Seqwater (2012s).

Seqwater submitted that for Pie Creek:

- (a) in 2002-03, 2003-04 and 2005-06, 100% (or more) of current nominal distribution loss WAE was required; and
- (b) in 2008-09 and 2009-10 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. When operators do not hold a distribution loss WAE, irrigators accept that part of their WAEs will be lost because of evaporation and seepage while in transit to their properties.

Irrigation schemes, particularly those in NSW, appear to have been designed around an assumption of socialised transmission losses. This means that irrigators in these schemes accept that water will be lost while in transit to their properties and that these losses will be shared equally regardless of an individual irrigator's distance from the extraction point (similar to the approach adopted in Queensland).

The ACCC recommended that a distribution loss WAE be held by the operator.

Authority's Analysis

The Authority accepts that loss WAE are a valid consideration in establishing the cost of providing distribution services as they relate to the additional storage infrastructure required to ensure the level of supply required by distribution customers.

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 notes 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 notes 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 be generating 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 water allocation security objective (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 any excess of losses WAE over actual released losses, although they may receive some (difficult to measure) benefit.

In relation to whether river customers should pay for surplus loss WAE, the Authority 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) and accordingly confers no right to this benefit to those customers.

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

There is, however, no contention on the issue of whether distribution 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 remain, however, are:

- (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 considers 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 tradeable losses WAE (water allocations) have been issued, benefit from their sale.

However, the Authority notes that in many cases on the basis of the available information it is not possible to estimate efficient loss WAE and for that reason has recommended DNRM review the loss WAE in schemes where ROP amendments are needed to make permanent water trading available.

The Authority's views on (b) are addressed below (in relation to Ensuring Least Cost Service Delivery).

High Priority Loss WAEs

For Seqwater's two distribution systems (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 accepts that their cost should be met by (medium priority) customers. Seqwater submit that if high priority loss WAE were not available when needed, water delivery could be compromised.

High priority loss WAEs 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 has been able to confirm that Seqwater's practice of using high priority loss WAEs to supply medium priority customers is consistent with the water planning framework.

However, high priority WAE (including loss WAE) are allocated a greater proportion of bulk fixed costs compared to medium priority WAE. As an example, medium priority water is estimated (based on information provided by Seqwater as at August 2012) at \$37.55/ML fixed cost compared to high priority water at \$115.57/ML fixed cost.

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

The Authority, therefore, considers 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. Specifically, Seqwater should optimise its portfolio of loss WAEs (that is, explore selling and therefore holding less loss WAEs and when needed, buying WAEs in the temporary trading market). If the use by Seqwater of temporary transfers for this purpose requires 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 WAEs, where water allocations have been issued, customers may have to, at times, accept an end-of-period adjustment to reflect the cost of temporary trades.

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

The Authority does not propose to compel Seqwater to undertake such a review, but consider that an incentive for this purpose is valid. The efficient costs of a review initiated by Seqwater would be offset by the benefits from sale.

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.

It is noted that a demand for additional WAEs would be needed for these arrangements to be effective. It is noted that DNRM, as resource regulator, has confirmed the loss volumes for Pie Creek through the water resource planning processes. However, where permanently tradeable WAE have not yet been finalised for certain Seqwater (irrigation) schemes, the Authority considers 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*. These are: amendment of the relevant ROPs; a Ministerial Direction to

Seqwater; or amendment of Water Resource Plans. The most effective is considered to be an amendment to the relevant ROPs.

Efficient Level of Losses for Cost Allocation

The Authority recommends 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 WAEs 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 tradeable loss water allocations are held.

Conclusion

The Authority recommends that prudent and efficient bulk costs associated with distribution loss WAEs should be recovered from distribution system customers.

The Authority also recommends that prudent and efficient bulk costs associated with bulk loss WAEs should be recovered from bulk customers.

The loss WAE should be reviewed by DNRM by 30 June 2015. The Authority particularly recommends that DNRM do this for all Seqwater (irrigation) schemes where permanently tradeable water allocations are not yet available.

Where permanently tradable loss WAEs exist (currently and in the future), it would be open to Seqwater to identify commercial opportunities to convert and sell any excess WAE.

In Pie Creek, the prudent and efficient costs allocated to the 60ML (100%) of high priority loss WAE and 426ML (100%) of medium priority WAE should be recovered from Pie Creek (distribution) customers.

However, DNRM should reconsider (review) the mix of medium to high priority loss WAE currently prescribed for Pie Creek and make an amendment to the ROP, if needed, also by 30 June 2015.

The most effective means of implementing such recommendations, under the Water Act, is considered to be an amendment of the relevant ROP/s.

Accordingly, the Authority recommends that, for completion by 30 June 2015, DNRM review and determines the efficient level of distribution and bulk loss WAE in Seqwater's tariff groups in the abovementioned schemes. Once the results of the reviews are known, any material impact on prices can be addressed either through a within or end of period adjustment.

Recommendations:

- (a) **DNRM review and determine the efficient level of all bulk and distribution loss WAE to ensure that bulk and distribution system customers do not pay for loss WAEs held by Seqwater in excess of requirements (including for Pie Creek tariff group). The review should be completed by 30 June 2015.**
 - (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) **The costs of (any) inefficient loss WAE identified by DNRM, should not be borne by customers and should instead be borne by Seqwater. Depending on materiality, the impact of the identified inefficiencies may be considered by the Authority (from 1 July 2015) via a within or end of period adjustment to prices in bulk or distribution tariff groups.**
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4.5 Termination (Exit) Fees

Previous Review 2006-11

SunWater's 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 by exiting customers and can act as a disincentive to exit.

Seqwater may not impose termination fees in all cases of permanent trading. For example, where permanent trades are within the same distribution system or between river customers, there is no termination fee.

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 for distribution system 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 of fixed costs 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 for any of the costs outstanding upon exit from a scheme by another customer.

Stakeholder Submissions

Seqwater

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

Morton Vale Pipeline

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

Seqwater submitted that supply contracts exist between irrigators of the Morton Vale Pipeline and Seqwater. These contracts provide for an early termination of the capital charge, where the termination fee in such a circumstance is to be calculated as the PV of outstanding capital charge payments to 2026, discounted at a nominal interest rate of 5% per annum.

In addition, the contract requires the irrigator to continue to pay ongoing (annual) water charges. These water charges constitute those prescribed for the supply of water from Lake Clarendon as determined annually under the *Water Resources (Rates and Charges) Amendment Regulations* or subsequent legislation.

Seqwater submitted that, regardless of the merits of the Authority's approach regarding the calculation of termination fees as outlined in the SunWater review 2013-17, the contracts between Seqwater and Morton Vale Pipeline customers set out an agreed approach to the calculation of termination fees.

Accordingly, Seqwater (2012a and 2012s) submitted that should the Authority recommend termination fees to apply to customers of the Morton Vale Pipeline, the conditions of the existing contract will have precedence.

Pie Creek

Seqwater's initial submissions state that Pie Creek is not a distribution system, on the basis that the 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.

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 developed guidelines on termination fees (2008a) and concluded that, from an economic efficiency perspective, 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. The ACCC noted that, in setting the termination fee, it attempts to strike a balance between the need to provide certainty for service providers and irrigators to undertake efficient investments, against encouraging service providers to achieve allocative efficiency in the provision of access services.

The ACCC also concluded that fully compensating 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 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 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 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 amended guidelines (2011) allow the addition of GST and a termination fee multiple of up to 11 times (including GST).

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

Authority's Analysis

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

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

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

In Queensland, however, 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.

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

Trading is an important mechanism to facilitate the transfer of water to its highest and best use. However, the net benefit must take into account all costs – the cost of exiting is one such cost.

It is also noted that:

- (a) after receipt of a termination fee, another user may transfer their WAE from the river to the distribution system; and
- (b) similarly, after receipt of a termination fee, where Seqwater holds a bulk WAE, Seqwater can sell the WAE to another customer seeking access the distribution system.

The Authority's recommended approach (for SunWater) recovers up to 60% of the PV of Seqwater's relevant estimated fixed costs (in perpetuity), from the exiting customer. In scenario (a) or (b), 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 considers 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.

Morton Vale Pipeline

The Authority notes that the methodology underpinning the termination fee outlined in the Morton Vale Pipeline Contract (1995) differs from that recommended by the Authority as part of the SunWater irrigation pricing review 2012-17.

The Morton Vale Pipeline Contract allows for a termination fee that consists of all outstanding (and remaining) capital contributions up to the year 2026 discounted at 5% per annum. The contract also requires irrigators to continue to meet ongoing annual water charges (assuming 100% delivery of customer WAE) for the supply of water from Lake Clarendon.

However, 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).

Pie Creek

As earlier noted, the Authority considers Pie Creek to be a distribution system. This is in contrast to Seqwater's submission to the contrary and its recommendation that, accordingly, no termination fee should be applied to a Pie Creek customer seeking to exit the tariff group.

The Authority also notes stakeholder submissions in support of establishing a termination fee for Pie Creek.

Accordingly, and to deliver to remaining Pie Creek customers the benefits of the approach recommended for SunWater, the Authority recommends that a termination fee should apply to the Pie Creek tariff group consistent with the Authority's general methodology for this purpose.

The Authority also notes the views of stakeholders that any termination fee that applies to Pie Creek could act as a disincentive to trading WAE to the Mary River WSS (exiting the Pie Creek tariff group). In response, the Authority notes that its final SunWater methodology provided for a multiple (11) equivalent to that recommended by the ACCC and that this took into consideration impacts on water trading.

Conclusion

Consistent with the approach adopted in the SunWater review, the Authority recommends that termination fees are applied as a multiple of up to 11 (incl. GST) times the cost-reflective distribution system fixed charges (Part C) in distribution systems such as the Pie Creek tariff group. The recommended termination fees are provided in Chapter 7: Draft Prices.

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).

Seqwater should not recover the balance of any shortfall from remaining customers, arising from exit by another customer or Seqwater (upon converting loss WAE to saleable bulk WAE).

In addition, the Authority acknowledges that the Morton Vale Pipeline contract specifies a termination fee for exiting customers.

However, 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).

Recommendations:

- (a) 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 also be negotiated for Morton Vale Pipeline customers.**
 - (b) A lower multiple could be applied at Seqwater's discretion should it be consistent with Seqwater's commercial interests (e.g. for example, in the interests of more efficient system management).**
 - (c) Seqwater should never recover the balance of any shortfall (in fixed cost revenue) from remaining customers, resulting from the exit of other customers (or from exit of Seqwater held WAE upon conversion from distribution loss WAE to other 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 (2006) 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) submitted that irrigation customers in the Central Brisbane River WSS currently pay no charges and that this situation has existed for some years prior to Seqwater being established. The customers currently paying no water charges in Central Brisbane River WSS (2012c) include 131 irrigators holding 6,771 ML of medium priority WAE.

Seqwater also submitted that the arrangement to provide up to 7,000 ML of water per year free of charge for the purpose of irrigation, as outlined in the regulation made under the *Water Act 2000* – i.e. the *Water (Transitional) Amendment Regulation (No.1) 2002* reflected Government policy at the time.

Seqwater submitted 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.

Upon commencement of the ROP, irrigators' historical entitlements were converted to water allocations (or other entitlements) as stated in the ROP. The provisions of the Water Act then took effect so that the conditions of supply were provided for under the Standard Supply Contract – Central Brisbane River WSS (supply contract).

The supply contract sets out the terms under which a customer is to pay water charges levied by Seqwater as the ROL holder and requires water charges to be set by Seqwater, having regard to the criteria that would be applied by the economic regulator.

Although charges have not yet been levied, Seqwater has 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 92 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.

Stakeholders submitted that no irrigation water charges should apply on the basis that:

- (a) Seqwater has no right to levy irrigation charges (W. Keller 2012);

- (b) the obligation on Seqwater in accordance with the *Water (Transitional) Amendment Regulation (No.1) 2002* to provide water for the purpose of irrigation free of charge, was not extinguished by establishing the supply contract (J.M. Craigie 2012a,b);
- (c) this would be unjust or unreasonable (R. Ryder, J. Begg, D.W. and L.N. Strong, B. Lee, L. Sippel, F.J. and E.A. Reid, R. Tudge, D.F. and J.L. Collier, A. Chambers, G. Beard, J.H. Delange, A Geiger, J.M. Craigie (2012a,b), M.S. and B.A. Kirby and QFF 2012);
- (d) the purpose of Somerset Dam and Wivenhoe Dam has been only to provide domestic water and for flood mitigation, not to provide water for irrigation (R. Ryder et al, Craigie 2012a,b));
- (e) the construction of Somerset Dam has not improved, nor was it ever intended to improve, irrigation reliability (J.M. Craigie, 2012a);
- (f) irrigators' water access has always been from natural [not supplemented] river flows and that the riparian water rights existed prior to Wivenhoe Dam being constructed (R. Ryder et al, Craigie 2012 a,b);
- (g) this would lead to financial hardship (B. Bernitt and C. Summerville 2012, and J. Harris 2012);
- (h) no costs are incurred by Seqwater in delivering water for irrigation and there is a substantial history of irrigators not paying with successive decisions or proposals to introduce metering being rescinded or not proceeding (R. Ryder et al 2012, Craigie 2012 a); and
- (i) annual fees are paid already (for water licences) to DNRM (R. Ryder et al).

In an additional more detailed submission, J.M. Craigie (2012b) submitted that Seqwater cannot levy charges on the basis that:

- (a) no formal levels of service exist and, as a consequence, it is impossible for the Authority to determine the prudent and efficient costs to be allocated to irrigators;
- (b) the *Legislative Standards Act 1992* requires that any intention to adversely affect certain rights (such as the rights of irrigators to receive free water free of charge) is to be mentioned in the explanatory memorandum to the Water Act. However, the explanatory memorandum is silent in this regard;
- (c) the effect of the *Acts Interpretation Act 1954* (when read in conjunction with the *Statutory Instruments Act 1992*) is that regardless of the *Water (Transitional) Amendment Regulation (No.1) 2002* expiring, the right of irrigators to receive water for free is not extinguished. That is, the expiry does not affect a right or privilege acquired by that regulation and that right or privilege may be enforced as if the expiry had not happened. Craigie cited a 1999 consultation document '*Converting the South East Queensland Water Board into a Joint State/Local Government Owned Company*' which stated that the riparian rights would continue under the new structure;
- (d) a letter from DNRM to irrigators in 2005 confirms that the *Water Amendment Act 2005* (which introduces the supply contract) does not affect Seqwater's obligation to supply, free of charge, up to 7,000 ML for irrigation;
- (e) the supply contract itself does not have effect as -

- (i) it is generic and does not specifically meet the needs of irrigators;
- (ii) the requirement (as outlined in S122A of the Water Act) that the supply contract be reviewed 1 year after taking effect, has lapsed; and
- (iii) although the supply contract provides for release services, no release services are provided by Seqwater as the 6,771 ML is unsupplemented supply.

Further J.M Craigie also submitted that, according to the Moreton ROP, the permitted distributions out of Wivenhoe Dam are exclusively reserved for high priority (urban and industrial) water allocations and not medium priority irrigation water allocations.

J.B. and B.L. Keller (2012) submitted that Seqwater can have their irrigation customers take water free of charge and the foregone potential revenue of \$393,400 could be absorbed either by Seqwater or the Water Grid Manager, or Government. This will benefit irrigators until water usage, timings of peak demand and losses in the delivery system of the Brisbane River are better understood and substantiated (J.B. and B.L. Keller 2012).

J.B. and B.L. Keller (2012) also submitted that during consultation to finalise the *Water Resource (Moreton) Plan 2007* and the Moreton ROP, irrigators sought unsuccessfully to obtain a response to their input regarding the treatment of free water.

S. and H. Sinclair (2012) proposed that, if the Authority agreed with Seqwater's approach to apply charges, a price path should apply with a starting price of \$21.52/ML to commence in 2013-14, escalated by CPI plus \$5 per annum over seven years, split 70-30 to promote water conservation. This will allow a full cost of recovery pricing structure over time and allow inactive WAE holders to commence water trading, thereby directing water to viable commercial enterprises (best and highest use) and also encourage local economic activity. In other submissions customers (for example, Craigie 2012a) have submitted that fixed charges should not be introduced in the absence of a properly established water trading market.

Glamorgan Vale Water Board (GVWB 2012) submitted that historically 250ML of water [classified in the Moreton ROP as High Priority A] has been received free of charge by GVWB and that the purpose of this allocation is for stock and domestic use.

Authority's Analysis

All submissions relating to free water have emanated from the Central Brisbane River WSS.

With respect to Seqwater's proposed treatment of water currently being provided free of charge, the Authority considers that, were such arrangements to exist, Seqwater should:

- (a) continue to meet legacy arrangements as these represent commercially agreed arrangements. In these circumstances, the costs are to be borne by Seqwater in the form of a diminished revenues; and
- (b) for compensation arrangements maintain the pre-existing rights to free water where they are the result of an existing agreement or as part of a current legislative or Government policy.

However, in the context of Seqwater irrigation WSSs, the Authority notes that neither of the circumstances outlined in (a) or (b) above are currently known to apply.

With respect to claims that Seqwater cannot levy charges, the Authority notes that, under the Ministerial Direction issued under section 23 of the QCA Act, the Authority has been directed to recommend irrigation prices to apply for the Central Brisbane River WSS.

The Authority has not been asked to determine whether Seqwater is legally entitled to impose and recover irrigation charges on 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.

That said, the Authority's understanding of the relevant issues is outlined below:

- (a) the provisions of the *Legislative Standards Act 1992* requiring any intention to adversely affect certain rights to be mentioned in explanatory notes do not invalidate any legislation if this requirement is not observed;
- (b) the saving provision in the *Acts Interpretation Act 1954* that provides for the maintenance of rights or privileges that existed under legislation on the repeal or expiry of that legislation does not preserve the requirement on Seqwater to provide free water allocations – the rights of irrigators were limited to a one year duration;
- (c) the 2005 letter from DNRM confirms the continuance of the practice of providing free water allocations at the time it was written. The views in that letter do not establish a legal basis for continuing free water allocations;
- (d) the generic nature of the standard supply contract does not establish that the supply contract is invalid;
- (e) the failure (if such failure occurred) of the parties to review the standard supply contract is an issue of non-compliance with the *Water Act 2000* and does not invalidate the supply contract;
- (f) as the Moreton ROP associates the reliability of the 6,771 ML of WAE with Somerset Dam, Wivenhoe Dam and related infrastructure (not natural flows), the irrigation WAE in the Central Brisbane River WSS is supplemented (that is, dependent upon the infrastructure).

Costs are therefore incurred by Seqwater in maintaining the capacity and operational services to deliver the required level of reliability associated with that WAE. In the absence of detailed levels of service, Seqwater's proposed costs are assessed against currently available information. The Authority understands that Seqwater intends to consult with irrigators to establish levels of service for this WSS.

However, it is stressed that, even if the Authority's understanding of the legal issues as to Seqwater's contractual entitlement to recover irrigation water charges is not correct, the Authority has a statutory responsibility to recommend irrigation water charges for the Central Brisbane River WSS as required by the Ministerial Direction and the preceding issues do not alter that obligation.

The suggestion by J.B and B.L Keller for the Government to absorb the foregone revenue pending further review of water usage, timings of peak demand and losses in the delivery system of the Brisbane River is a matter for Seqwater and the Government. The Authority proposes to proceed as directed on the basis of currently available information. The Authority also notes comment about the ROP process. This is beyond the scope of the Authority's Ministerial Direction.

The Authority notes and supports S. and H. Sinclair's submission that should irrigation water charges be applied, they should transition to [lower bound] full cost recovery over time to promote water trading and its benefits, including directing water to viable commercial

enterprises and higher value uses, resulting in greater local (and regional) economic activity. The lack of a current market should not preclude its future development.

In response to the GVWB submission, the Authority notes that the 250ML per annum of historically free water is classified in the Moreton ROP as High Priority Class A. Given the nature of the customer base (reticulation to rural residential blocks) and the high reliability of this water, the Authority considers it is not relevant to irrigation water charges.

The Authority's recommended charges, including the proposed price path, from which the financial impact on individual irrigators can be discerned, are detailed in Chapter 7: Draft Prices.

Conclusion

The only free water issue, as raised by stakeholders as part of this review, pertains to the Central Brisbane River WSS.

The Authority has a statutory responsibility to recommend irrigation prices to apply for the Central Brisbane River WSS.

The Authority has not been asked 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.

5. RENEWALS ANNUITY

The Authority has been directed to recommend a revenue stream to recover prudent and efficient expenditure on the renewal and rehabilitation of existing assets, through a renewals annuity approach.

A renewals approach requires ongoing accounting of renewals expenditure and revenue. For this purpose, Seqwater has estimated an Asset Restoration Reserve (ARR) for each irrigation scheme. The opening ARR balance for the 2013-17 regulatory period is based on the opening ARR balance for the current price path (1 July 2006), less renewals expenditure, plus renewals revenue and adjusted for interest over the 2006-13 period.

To establish opening ARR balances for 2013-17, Seqwater has recognised the need to unbundle the ARR balances for four related bulk and distribution tariff groups (which until now have been treated as two bundled schemes).

The Authority recommends that the unbundled opening ARR balances for 1 July 2013 be based on actual renewals expenditure and the Authority's estimate of (available) whole of scheme actual renewals revenues from 1 July 2000 to 30 June 2013, attributable to each bulk and distribution tariff group.

To establish 2006 ARR balances for each bulk and distribution tariff group, the Authority 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.

This period is consistent with the Authority's recommended 20 year planning period for the purpose of calculating Seqwater's irrigation renewals annuity balances.

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 some 3% of past irrigation costs by value. The modest sample size reflects the availability of estimates of savings on schemes managed by SunWater in 2006-08 and the lack of information for 2008-09.

The sample of forecast items comprises over 50% of the forecast \$13.5 million irrigation renewals expenditure in real terms (2012-13). On this basis, the Authority recommends that the following direct renewals cost savings (all expressed in real terms) be applied to whole of scheme (or all sectors) renewals expenditure:

- (a) reduce by 4% all past renewals expenditure for 2006-08 (that is, when the WSSs were owned by SunWater), consistent with the Authority's findings in the SunWater review. This totals about \$0.03 million;*
- (b) reduce Seqwater's initially submitted renewals expenditure for 2008-09 by 95% as Seqwater did not provide substantiation (due to poor data collection in the first year of Seqwater ownership). This reduction totals about \$0.81 million;*
- (c) allow recovery of 2009-13 past renewals expenditure on the basis that the Authority's reviews showed that the sampled items were prudent and efficient;*
- (d) exclude all forecast items identified as not prudent and the portions of reviewed forecast direct renewals costs identified as being inefficient. These total about \$1.7 million; and*

- (e) reduce by 13% all (remaining) unsampled direct forecast renewals expenditure within the planning period. These total about \$5.6 million.

In summary, the Authority recommends a reduction of about 18% (\$0.84 million) of Seqwater's submitted all sectors past renewals expenditure of \$4.6 million (real values). The Authority recommends a reduction of \$7.3 million of Seqwater's submitted total all sectors forecast renewals expenditure of \$55.8 million (real values), that is, about 13%.

In summary, the Authority recommends a reduction of approximately \$8.14 million of Seqwater's submitted total all sectors renewals expenditure (including meter replacements) of \$60.4 million (real values), that is, about 13.5%. A portion of this total saving relates to irrigation customers.

To improve the rigour of Seqwater's forecasting of renewals costs for pricing purposes, the Authority recommends that Seqwater continue to undertake detailed options analysis for all material renewals items forecast to occur within the next five years. Moreover, Seqwater should commence undertaking high-level options analysis for all other (Year 6 onwards) material forecast items within the Authority's planning period, updated annually.

The Authority recommends that by 30 June 2015, Seqwater adopt modern equivalent replacement costs and/or more specific asset class indices, as appropriate, when preparing detailed options analysis of material items forecast for Years 1-5 of the next regulatory period, high-level options analysis for material items forecast for Year 6 onwards and for all other (non-material) forecast renewals expenditures.

The Authority considers that there should be a legislative requirement for Seqwater to report the above information annually and to consult with its irrigation customers on the appropriateness of these proposals. Current provisions which enable, but do not prescribe this, have been in place since the last price review; however, they have not been implemented. These requirements, therefore, should, in addition to amended legislation, be outlined in amendments to Seqwater's SOP, to ensure the immediate commencement of proposed consultation.

Seqwater should enhance its five-yearly NSPs prior to each price review. Seqwater's annual and five-yearly NSPs should provide details on past and forecast renewals costs, changes to service standards and explain any significant variations between actual and forecast material renewals items. The enhanced NSPs (prepared annually for each irrigation scheme, but with the data presented by tariff group) should be made public on Seqwater's website from 1 July 2014. The website should also be updated annually with related customer submissions and Seqwater's responses and decisions in relation to those submissions.

The Authority recommends the adoption of Seqwater's proposed headworks utilisation factor (HUF) methodology to allocate fixed bulk renewals costs where there are medium and high priority customer WAE (priority groups). Where there is no (material) high priority customer WAE in bulk WSSs, the Authority has recommended the use of nominal WAE to allocate fixed bulk renewals costs (with adjustments to nominal WAE where appropriate).

Whilst there are currently no high priority customers in Seqwater's distribution systems, the Authority recommends, in principle, the adoption of nominal WAE to allocate fixed distribution system renewals costs between priority groups if a conversion occurs. Fixed distribution system charges should also remain with customers converting between priority groups (for example, where a medium priority customer converts to high priority WAE).

The Authority recommends that Seqwater should adopt the outcomes of the review recommended by the Authority for SunWater to determine the most appropriate means of allocating fixed distribution system renewals costs between priority groups. The Authority recommended that SunWater complete this review by 30 June 2014.

The Authority considers that the discount rate applied in calculating the renewals annuity should reflect the opportunity cost of funds for Seqwater's irrigation activities and, accordingly, has recommended the Authority's post tax nominal weighted average cost of capital (WACC) for this purpose. Appendix B refers. The Authority has calculated the recommended renewals annuities using an indexed, annual rolling approach, the Authority's recommended cost escalation indices and the above WACC.

5.1 Background

The Draft Report is generally presented in nominal terms (that is, including inflation).

However, due to the extended period over which renewals cost data is reviewed, and to ensure meaningful comparisons of changes in costs over time, the Authority has typically expressed all costs and savings in this chapter in real terms (that is, 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 to its customers.

Previous Reviews

In 1997, Ernst & Young were commissioned by the Standing Committee on Agriculture and Resource Management (SCARM) to prepare guidelines on, amongst other things, the funding of the renewal of water supply assets, the SCARM Water Industry Asset Valuation Study, Draft Guidelines on Determining Full Cost Recovery (SCARM Guidelines).

These SCARM Guidelines were subsequently submitted to, and endorsed by, the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).

SCARM considered that a renewals annuity approach is appropriate for infrastructure assets that are to be continuously renewed. According to the SCARM Guidelines, a typical renewals annuity should include all works (expenditure) needed to maintain the service potential of existing infrastructure services in accordance with the requirements of customers.

Key elements of the proposed renewals annuity approach included:

- (a) detailed asset management plans that define the timing of renewals expenditure based on asset condition;
- (b) an ARR to manage balances of unspent (or overspent) renewals annuities (including interest). [Where expenditure exceeds revenue collections the ARR balance can be negative]; and

- (c) calculating a renewals annuity based upon the present value of proposed renewals expenditure minus the ARR [or plus the ARR if it is negative].

SunWater's prices for 2000-06, including now Seqwater WSSs, reflected the renewals annuity methodology proposed in the SCARM Guidelines.

SunWater's 2006-11 renewals annuities (also applying to Seqwater WSSs from 1 July 2008) were also based on this approach (SunWater, 2006a, Working Paper No. 10) and involved:

- (a) establishing the opening value of the ARR for each WSS based on actual expenditures and revenue for 2000-06;
- (b) forecasting renewals expenditure over a 34-year period; and
- (c) calculating the present value of the forecast expenditure after adjusting it for the ARR balances for each WSS.

For the 2006-11 price paths, neither SunWater (2006-08) nor Seqwater (2008-11), maintained a separate ARR for each bulk and distribution system – rather ARR balances were prepared on a whole-of-scheme basis (i.e. bulk and distribution segments were 'bundled'). Allocations of renewals expenditures between priority groups were based upon conversion factors identified in relevant ROPs and other available information (detailed below).

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 (including the appropriate planning period);
- (e) recommended the methodology for apportioning bulk and distribution renewals costs between medium priority and high priority WAEs; 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, these being incorporated in operating expenditure). Chapter 6: Operating Expenditure refers.

Table 5.1: Seqwater's Renewals Expenditure (All Sectors) 2006-17 (Real \$'000)

<i>Cost</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>2013-14</i>	<i>2014-15</i>	<i>2015-16</i>	<i>2016-17</i>
<i>Direct</i>	412	337	663	382	619	498	1,212	1,978	1,558	1,037	949
<i>Non-direct</i>	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 (as at 1 July 2013) is 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, based on SunWater's data). These opening ARR balances relate to all sectors (reflecting the available data). 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	Whole of Scheme ARR Balances
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 includes the Morton Vale Pipeline tariff group. The Mary Valley WSS balance includes 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 corrective and preventive maintenance activities were not included in forecast renewals expenditure (SunWater, 2006a).

Since then, changes to previously proposed renewals expenditures have been made by SunWater and, subsequently Seqwater (from 1 July 2008). These reflect reviews of priorities and more detailed analysis.

Unbundling ARR Balances

For 2006-11, there was a single ARR balance for each of six Seqwater WSSs (the seventh, 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 these WSSs do not contain 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 (adjusted for medium and high priority).

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 past (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. On this basis, the Authority recommended the following cost savings be applied to past direct renewals expenditure:

- (a) exclude all past items identified as not prudent and the portion of 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.

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 of 0% between 2000-06 and 9.69% over 2006-13.

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 and Pie Creek tariff groups). This is because the distribution system tariffs were bundled with bulk tariffs.

Indec proposed a 'revenue transfer' methodology 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 and Pie Creek customers from 2000-13, to be transferred as a cash inflow to the associated bulk ARR accounts.

Past Renewals Expenditure 2006-13

In 2005-06, as part of the Tier 1 and 2 SunWater price setting process, the Government approved forecast total renewals expenditure for 2006-11, in relation to Seqwater's WSSs [all sectors - excluding Central Brisbane River, which was to pay no irrigation water charges] of \$3.2 million (nominal).

In contrast, Seqwater (2012a) advised that the total actual direct renewals expenditure for the same period was \$1.7 million (nominal). This reflects a variance of \$1.4 million (nominal) (or approximately 45%) 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><u>Bulk</u></i>			
Cedar Pocket	130	5	(125)
Central Lockyer Valley	990	178	(812)
Logan River	288	252	(36)
Lower Lockyer Valley	572	618	46
Mary Valley	508	398	(110)
Warrill Valley	475	188	(287)
<i><u>Distribution</u></i>			
Morton Vale	56	19	(37)
Pie Creek	164	84	(80)
Total	3,183	1,743	(1,440)

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	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 has reviewed Seqwater's methodology for establishing ARR balances. Subsequently, the Authority has reviewed the prudence and efficiency of past expenditure.

The scheme-specific reasons for negative balances are described in the relevant Volume 2 reports.

Methodology

As for SunWater, the 1 July 2006 opening ARR balances for each (bundled) scheme were approved by Government and are therefore accepted by the Authority.

Seqwater has submitted ARR balances based on all sector data, so that the uplift factor (adopted by SunWater) is 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.

As noted above, and consistent with the SunWater review, Seqwater has 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 (2006-13) 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 applies to Seqwater (contrary to Seqwater's submitted methodology).

The Authority also considers 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 does, however, reallocate the total renewals funds differently, also resulting in changes to the 1 July 2013 opening ARR balances.

The net impact on prices of the Authority's overall changes to opening ARR balances (including revised renewals cost savings discussed below) is presented in Chapter 7: Draft 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	(345,554)	229,141	574,695
Mary Valley	(3,844,424)	(3,681,254)	163,170
<i>Distribution</i>			
Morton Vale Pipeline (in Central Lockyer WSS)	984,581	415,426	(569,155)
Pie Creek (in Mary Valley WSS)	129,261	(25,141)	(154,401)

Source: Indec (2012). Note: Only two WSSs, or four tariff groups, require unbundling. *: The variance in linked tariff groups is not equivalent 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 notes 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 recommends, 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 remains 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: Variance between Forecast and Actual Direct Renewals Expenditure 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	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 notes that for five tariff groups (Cedar Pocket Dam, Central Lockyer, Lower Lockyer, Warrill Valley and Morton Vale Pipeline) actual renewals expenditure was less than 2008-11 forecasts. This indicates that sampling of these WSSs may not be 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 is 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 then indicated that in 2008-09 there was a corresponding \$111,000 of actual expenditure on recreation maintenance. The Authority's investigation has 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 does 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 considers that renewals expenditure that cannot be verified as being prudent and efficient cannot, therefore, be recovered from customers (in this case, in the form of irrigation prices). Therefore, the Authority recommends that no unsubstantiated past renewals expenditure for 2008-09 be recovered through irrigation prices. On this basis, the Authority has 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 recommends that Seqwater's proposed renewal expenditure for 2009-10 to 2012-13 be accepted.

On the basis of these findings, the Authority recommends 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><u>Bulk</u></i>								
Cedar Pocket Dam	0	0	6	0	0	0	0	6
Central Lockyer Valley	1	2	73	0	0	0	0	75
Logan River	2	2	56	0	0	0	0	60
Lower Lockyer	6	3	106	0	0	0	0	116
Mary Valley	4	1	337	0	0	0	0	341
Warrill Valley	2	2	89	0	0	0	0	93
<i><u>Distribution</u></i>								
Morton Vale Pipeline	0	1	4	0	0	0	0	4
Pie Creek	1	0	59	0	0	0	0	59
Total	14	12	729	0	0	0	0	755

Source: QCA (2012).

Opening ARR Balances 1 July 2013

The Authority considers 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 recommend WACC for Seqwater irrigation activities. **Appendix B** refers.

The Authority also notes 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 accepts 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)

<i>Tariff Group</i>	<i>Seqwater April</i>	<i>Seqwater November</i>	<i>QCA Recommended</i>	<i>Variance (April vs QCA)</i>	<i>% Variance (April vs QCA)</i>
<i><u>Bulk</u></i>					
Cedar Pocket	14,269	15,579	15,593	1,324	9
Central Brisbane River	0	0	0	0	0
Central Lockyer	457,940	(345,554)	229,141	(228,799)	(50)
Logan River	(932,884)	(707,153)	(700,646)	232,238	25
Lower Lockyer	(434,877)	(533,707)	(518,133)	(83,256)	(19)
Mary Valley	(5,639,636)	(3,844,424)	(3,681,254)	1,958,382	35
Warrill Valley	(563,602)	(575,422)	(567,229)	(3,627)	(1)
<i><u>Distribution</u></i>					
Morton Vale Pipeline	351,462	984,581	415,426	63,964	18
Pie Creek	325,512	129,261	(25,141)	(350,653)	(108)
Total	(6,421,816)	(4,876,841)	(4,832,243)	1,589,573	25

Source: Indec 2012 and QCA 2012.

The net impact on prices of the changes is presented in Chapter 7: Draft Prices.

Recommendation:

The Authority recommends opening ARR balances for 2013-17 as per Table 5.9.

5.3 Prudency and Efficiency of Forecast Renewals Expenditures

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

SunWater Review 2012-17

To establish the prudence and efficiency of SunWater's forecast renewals expenditure, the Authority reviewed in detail a sample comprising some 29% of all sectors 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.

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 (or contingency) 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 is now seeking to recover the cost associated with water meters. Specifically, Seqwater's business case in this regard 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 meter works 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	14	42	28	84
Central Lockyer	264	1,176	490	1,930
Logan River	132	238	154	524
Lower Lockyer	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 (i.e. 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 (IA Logan River 2012) indicated that more information on the proposed renewals items was needed to determine whether the costs were prudent and efficient.

Authority's Analysis

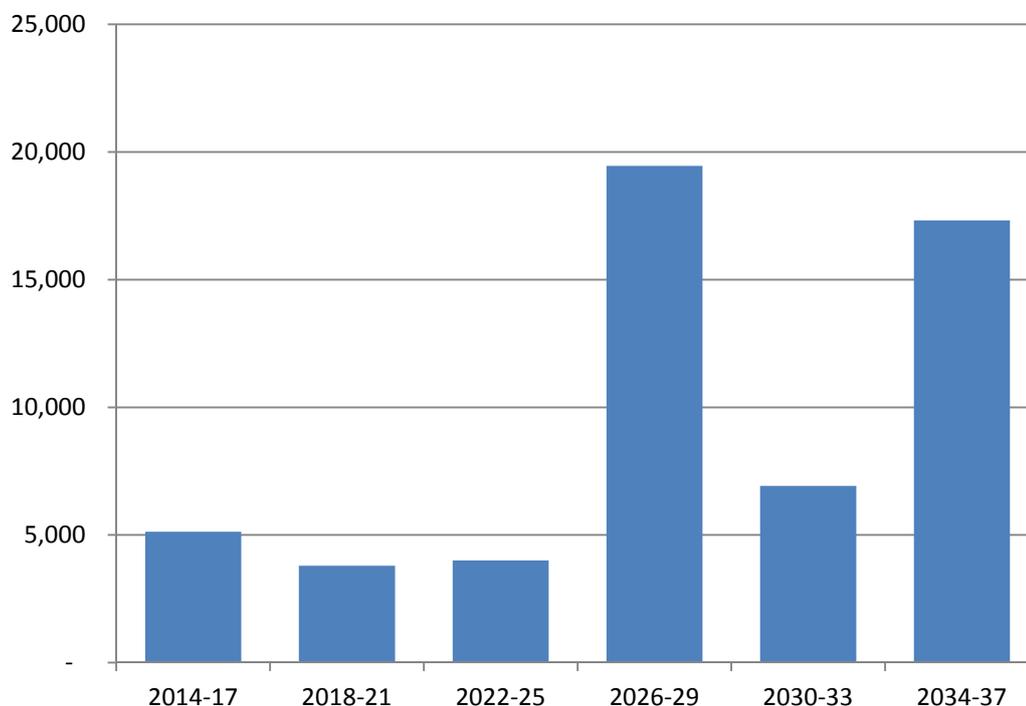
Seqwater has forecast total renewals expenditure of approximately \$56 million, comprised of approximately 500 forecast renewals projects, over the Authority's recommended (for SunWater) 20-year planning period. Of this, \$13.5 million is proposed to be assigned to irrigators.

It is therefore 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 forecast renewals items was therefore reviewed for prudence and efficiency.

Seqwater's submissions outline renewals expenditures scheduled to occur, on a tariff group basis, from 2013-36 (consistent with a 20-year planning period and the proposed rolling annuity methodology, that is, 23 years of data).

Figure 5.1 presents forecast renewals expenditure data for the nine relevant tariff groups for all sectors (not just the irrigation sector) 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 Financial Model (2013-37).

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 renewal needs are commonly identified as part of the maintenance program, either when inspecting an asset and considering future renewal needs, or when addressing an asset failure and considering whether to repair or renew the asset;
- (c) Dam Safety Management Program (DSMP) - a combination of policy, procedures and activities exist which aim to ensure that each dam remains safe. Generally this consists of: the establishment and implementation of Standing Operation Procedures and operation and maintenance manuals; ongoing dam condition monitoring (e.g. weekly); regular dam safety inspections (e.g. annually); and, regular dam safety reviews (e.g. five yearly). Asset renewal needs are commonly identified as part of the DSMP;
- (d) 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; 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 work orders. However, a limited number of 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:

- (a) assessment/consideration of risk of failure;
- (b) options assessment (considering options such as 'do nothing', defer timing of works, non-asset solutions); and
- (c) 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:

- (a) uniform organisational processes in asset management;
- (b) prudent asset investment decision-making;

- (c) a balanced approach to investment across catchments;
- (d) standardising processes for successful asset management (including project delivery); and
- (e) delivering efficient outcomes and value for money.

SKM found that Seqwater has made progress in developing robust asset management processes and procedures 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/operators, SKM considered that the plans and processes Seqwater has adopted to assess the condition of its assets will rectify this situation if carried through. These include:

- (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 the 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 considers, on that basis of SKM's findings, that Seqwater should implement its intended improvements to renewals plans and processes in relation, for example, to assessing the condition of its assets prior to the commencement of the next regulatory review

Recommendation:

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

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 doesn't 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 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 conclude 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 that the 2008 base year valuation (indexed installed cost) 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 to a regulator during a price review for the following reasons:

- (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 related groups of asset classes rather than a single composite index to cover 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 considers, on that basis of SKM's findings, that Seqwater should implement improved methods of forecasting renewals costs. Specifically, when preparing:

- (a) detailed options analysis of material items forecast 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).

Recommendation:

The Authority recommends that by 30 June 2015, Seqwater adopt modern equivalent replacement costs and/or more specific asset class indices, as appropriate, when preparing detailed options analysis of material items forecast for Years 1-5 of the next regulatory period, high-level options analysis for material items forecast for Year 6 onwards and for all other (non-material) forecast renewals expenditures.

The Authority also recommends that in response to this Draft Report, Seqwater submit a proposal to the Authority by 22 February 2013 on the assets to which it would be appropriate to apply a modern equivalent replacement costs versus specific asset class indices.

Review of Prudence 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 comprise \$5.6 million of this amount and are discussed in detail further below. The balance of reviewed items (that is, \$1.7 million) reflects 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 irrigation renewals items (excluding meter replacements), SKM was instructed to consider the application of cost savings to assets in each reviewed asset class. The sample (21% direct) 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.

Table 5.11 provides a summary of findings related to the (non-metering) renewals expenditures reviewed.

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. Table 5.11 refers.

The implications of these findings for overall cost savings is noted further below.

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	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	3,251	2,922	(329)	(11%)	Prudent and Efficient
Embankment	Central Lockyer	312	288	(24)	(8%)	Prudent and Efficient
Control Equipment	Central Lockyer	174	164	(10)	(6%)	Prudent and Efficient
<i>SKM’s Estimate Exceeded Seqwater’s (Seqwater’s Cost Accepted)</i>						
Trash Screen	Central Lockyer	50	58	8	14%	Prudent and Efficient
Telemetry	Cedar Pocket	68	87	19	22%	Prudent and Efficient
Gauging Stations*	Central Lockyer	120	143	52	30%	Prudent and Efficient
Access Road	Central Lockyer	192	375	183	49%	Prudent and Efficient
Total		5,079	4,426	(652*)	(14.7%)	

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 Gauging Stations from \$120,000 to \$143,400 – SKM concluded that \$143,000 was also prudent and efficient.* 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 is \$0.65 million. That is, Seqwater’s costs are 14.7% 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 12.8% 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 (that is, as distinct from the replacement of existing meters, which 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 purposes. Seqwater has advised that they have 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 ROL or IROL.

For example, the Mary Valley 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 WSS's 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 able to be verified].

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 before 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 with manufacturer's 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 finds 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 is 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 supports 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 0ML 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>0ML</i>	<i>0-10ML</i>	<i>10-50ML</i>	<i>50-100ML</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)

Customers in the Central Lockyer Valley WSS were [up to 30 June 2013] required to pay minimum charges regardless of water usage. This is equal to approximately 8 ML usage (\$258). Therefore customers owning approximately 350 of the 468 meters in the scheme paid a bill based on minimum charges rather than water usage.

In addition, Seqwater has stated that reliable information regarding 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 understands 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 has 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 WH&S 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 understands 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 understands that these meters were particularly problematic and were Seqwater's highest priority to rectify. This work was procured through a competitive tender process.

Seqwater anticipates that not all meters will 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] is considered adequate. Seqwater has 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 quotations, and the other cost components have been estimated by SKM from historic costs for similar projects.

Seqwater propose 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 (Real 2012/13 \$'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 be 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 have to be tailored to meet site specific conditions, so there will be minor variations in the costs incurred at some sites.

SKM considers 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 are 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	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 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	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 notes that no cost savings are proposed by SKM for Phase 1 (first three years). During Phase 2 (next seven years), however, SKM proposed \$0.42 million cost savings on the basis that Seqwater did not provide an explicit justification for year seven meter replacements (that is, up to 70 meters were found not to be prudent). Approximately 700 meters only are to be replaced in Phases 1 and 2.

In Phase 3 (2022-23 onwards), SKM proposed cost savings in the order 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 supports this finding and has removed these costs from irrigation prices.

Findings on Prudence and Efficiency of Seqwater's Reviewed Forecast Renewals

The Authority has 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 has 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 eleven reviewed items are summarised in Table 5.18.

Table 5.18: Summary of Reviewed Forecast (Non-Metering) Renewal Items (\$'000 Real)

<i>Sampled Item</i>	<i>Scheme</i>	<i>Year</i>	<i>Seqwater</i>	<i>Authority</i>	<i>Saving</i>
Access Road	Central Lockyer	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	143	143	0
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	2014,2024, 2034	105	70	35
Trash Screen	Central Lockyer	2015,2020, 2025,2030, 2035	50	50	0
Total			5,079	4,575	571

Source: SKM 2012. Note*: Seqwater revised the Central Lockyer Gauging Station cost from \$120,000 to \$143,000, which SKM and the Authority accepted.

The Authority will reduce 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 (that is, the Warrill Valley access road and Logan telemetry). The Authority accepts Seqwater's lower revised costs for these two items.

In response to L. Brimblecombe, the Authority will only allow 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 typically applies a cost saving to forecast renewals expenditure (refer to discussion of unsampled items below).

In response to QFF, the Authority notes 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 notes 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 notes, 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.

Moreover, in a subsequent regulatory review, Seqwater's proposed ARR balances (including all latterly included 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.

Conclusions

The Authority generally proposes to accept the findings of the consultant on prudence and efficiency (or the lower revised costs provided by Seqwater). In summary, the Authority has reduced four of the eleven 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 accepts SKM's proposed cost savings of \$0.98 million over the life of the program. The Authority also accepts 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 Authority notes that Seqwater may submit such costs prior to the Final Report.

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 accepts 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.

5.4 Treatment of Unsampled Forecast Renewal Expenditure

SunWater Review 2012-17

Based on the SunWater review findings, 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 the costs implied under this approach, SunWater can apply for a within or end of period adjustment to prices.

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 raises the issue of how best to address forecast and past expenditure that was 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) have been 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.

The direct (non-metering) forecast renewals cost savings identified by SKM are summarised in Table 5.19.

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	-652	12.84%

Notes: Number of items sampled excludes sampled items for which insufficient information was available to reach a conclusion. Present Value terms based on a real post-tax WACC of 5.86%.

The 11 (non-metering) forecast renewals items reviewed, account for an average across the schemes of some 20% of the total forecast irrigation renewals expenditure being directly reviewed with SKM's findings also applying to similar asset, taking the sample size to approximately 30%.

The reviews of Seqwater's 11 forecast 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 considers it likely that the unsampled renewals expenditure proposed by Seqwater will be 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 \$0.65 million is the appropriate basis for the Authority's cost savings to be applied to unsampled items.

The net variance of \$0.65 million, expressed as a portion of Seqwater's initially submitted sampled forecast irrigation renewal expenditure of \$5.08 million, results in a 12.8% implied cost saving that the Authority will apply to unsampled items.

On this basis, the Authority therefore proposes 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 acknowledges, 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 12.9%. This further supports 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 a within or end of period adjustment.

Extrapolation within Asset Classes and Exclusions

The findings of SKMs direct sampling are, 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 and Warrill Valley WSSs (that is, \$56,000 combined). Accordingly, the Authority has applied a 25% or \$14,000 reduction to the unsampled air valve costs in these WSSs.

Such unsampled items, to which an SKM finding has been applied, are 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 has:

- (a) excluded from meter-replacement renewals expenditure the \$0.98 million identified by SKM as not prudent and \$0.18 million of metering costs withdrawn by Seqwater in November 2012. This totals approximately \$1.16 million (Real 2012-13);
- (b) excluded from (non-metering) renewals expenditure the item identified by SKM as not prudent. This totals approximately \$0.34 million (Real 2012-13);

- (c) incorporated all identified specific efficiency savings. This totals approximately \$0.23 million (Real 2012-13);
- (d) incorporated the extrapolated asset class specific efficiency saving of 25% to other air valve replacements. This totals \$14,000 (Real 2012-13); and
- (e) reduced by 13% all unsampled direct forecast renewals expenditure within the planning period. These savings total approximately \$5.6 million (Real 2012-13).

Summary of Past and Forecast Renewals Cost Savings

The Authority, therefore, recommends a reduction of \$7.34 million of Seqwater's submitted total all sectors forecast renewals expenditure of \$55.84 million (real values), that is, about 13.2%.

The Authority also recommends 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 recommends a reduction of approximately \$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 costs implied under this approach, Seqwater can apply for a within or end of period adjustment to prices.

Recommendation:

The Authority recommends that:

- (a) **cost savings identified by the Authority (see Volume 2) be incorporated in cost-reflective prices; and**
 - (b) **for unsampled forecast renewals expenditure items, a cost saving of 13% be applied to Seqwater's proposed costs.**
-

5.5 Asset Management Planning Methodology

SunWater Review 2012-17

The Authority recommended that, in forecasting renewals expenditure, 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).

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 these projects to determine if other options existed, and if so, 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. comms. March 8, 2011).

Victoria

In Victoria, both GMW and SRW apply the asset planning methodology, Assetlife, when considering the timing and extent of future capital expenditure (P. Byrnes, pers. comms. 29 November, 2010; G. Coburn, pers. comms. December 3, 2010).

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 considers that, when forecasting renewals expenditures, Seqwater should undertake high-level options analysis on material renewals expenditures expected to occur throughout the recommended planning period due to the potential magnitude of the impact of such expenditures on prices.

In the context of forecasting renewals expenditure over the Authority's recommended planning period, the Authority considered the expenditure to be material when its forecast cost exceeds 10% (the upper limit of most definitions of materiality) of the total forecast renewals expenditure for that period, for each 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 considers that, when forecasting renewals expenditures, Seqwater should undertake a detailed options analysis for all material items in accordance with the consultation and reporting arrangements recommended further below. Such analysis should include (but not be limited to) consideration of the impacts (including trade-offs) of renewals project options on operating expenditures and as noted further below, customer considerations.

In the context of forecasting renewals expenditure over the next five-year regulatory period, the Authority 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 recognises that Seqwater has undertaken much of this analysis for the purpose of preparing its NSPs. Nevertheless, the Authority considers that this analysis should be ongoing.

Recommendation:

The Authority recommends that, in forecasting renewals expenditure, Seqwater undertake:

- (a) high-level options analysis for all material renewals expenditures expected to occur over the Authority's recommended planning period, with a material renewal expenditure being defined as one which accounts for 10% or more in present value terms of total forecast renewals expenditure; and**
 - (b) detailed options analysis (which also take into account trade-offs and impacts on operational expenditures) for all material renewals expenditures expected to occur within the 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.**
-

5.6 Planning Period

To calculate a renewals annuity, it is necessary to determine the length of the planning period, that is, the period from which forecast renewals expenditures are to be drawn into the calculation of a renewals annuity.

In setting the 2006-11 price paths, SunWater and its customers agreed to adopt a 30-year planning period.

SunWater Review 2006-11

The Authority recommended that a 20-year planning period be adopted.

The Authority also recommended that the length of the planning period be revisited in subsequent price reviews (or as a result of a price trigger) should problems of intergenerational equity arise as a result of significant capital expenditure proposals.

Stakeholder Submissions

Seqwater

Seqwater (2012a) prepared a forecast of renewals expenditure over 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 (2012a) 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 refurbishment 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 RAB based approach.

In 2001-02, SRW (2007b) reduced the renewals planning period associated with distribution assets from 100 years to 40 years to provide a balance between price stability and inter-generational equity. Given that the expenditure profile associated with headworks tends to be more variable, a 90-year period was adopted by SRW to buffer customers from the pricing impacts of large individual projects.

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 has been directed to adopt a renewals approach, which intrinsically incorporates proposed forecast capital expenditure. However, the Government has not provided guidance on the appropriate length of planning period.

A forward-looking approach conforms to general pricing principles. For example, the Authority (2000) previously noted that prices should:

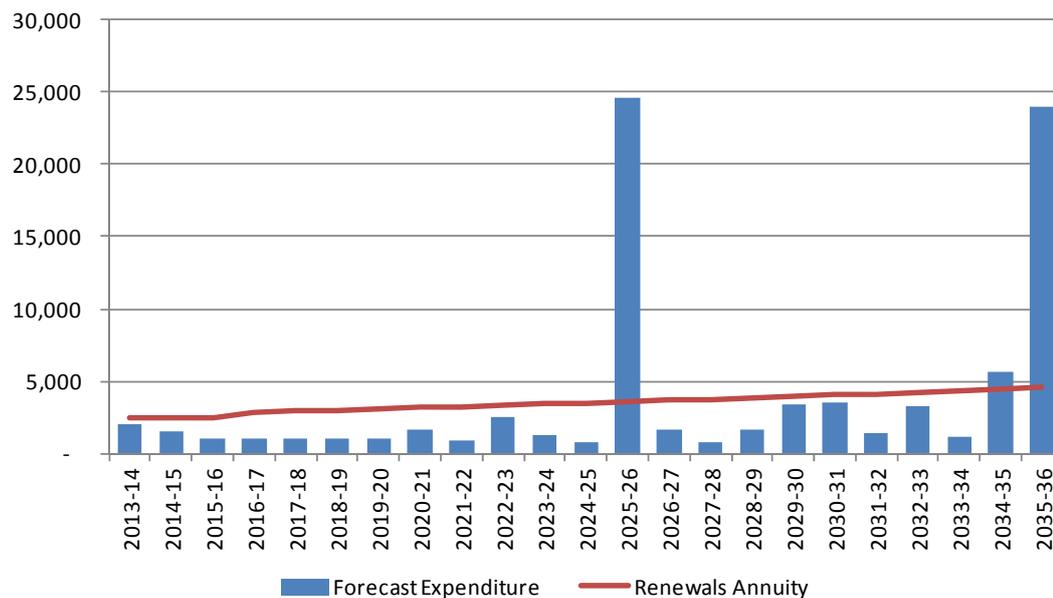
- (a) be cost-reflective in that they should reflect the costs of providing the service;
- (b) be forward looking in that they represent the least cost which would be incurred in providing the requisite level of service over the relevant period; and
- (c) promote sustainable investment.

According to the SCARM Guidelines, a typical renewals annuity should include all works required to sustain existing infrastructure services, maintaining their current service potential in accordance with the requirements of customers.

Several factors are relevant to determining the appropriate length of the planning period.

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 to asset funding. The SCARM Guidelines indicate that the choice of the planning period should be such that it secures a reasonably stable level of renewals annuity revenue over time.

Price volatility can and does increase where renewals expenditures are lumpy and a relatively short planning period (relative to asset life) is adopted. For example, while many smaller water assets have lives of five to 20 years (pump-motors, switch boards), the majority of large or lumpy capital expenditure relates to assets with long lives (typically 30 to 100 years for concrete channel linings, pipes, and storages). The Authority 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 or greater.

The Authority is concerned that if the planning period was shortened, price volatility may become unacceptable to customers. Such concerns have been expressed in other jurisdictions.

In summary, the Authority's analysis indicates that an unacceptable significant level of price volatility is likely to occur in subsequent price reviews where a planning period of less than 20 years is adopted and where the years beyond year 20 include significant lumpy capital expenditure items.

The Authority noted that the price volatility associated with a 20-year planning period is dampened by adopting an annual rolling annuity (discussed in further detail below), as it includes data up to year 23 as an input to 2013-17 prices.

Notwithstanding this, there may be a case for extending the planning period for smoothing purposes to include projects forecast for Years 24 to 33 as part of the development of 2014-17 prices. That is, a 30-year rather than 20-year planning period would be preferred on the basis of price smoothing considerations alone.

Materiality

Materiality must also be taken into account when determining the appropriate length of the planning period.

GHD (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 WSS's 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 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.

It is noted that Seqwater's proposed renewals expenditure profile varies significantly from scheme to scheme and over time. However, recommending different planning periods for groups of WSSs, to accommodate variable expenditure patterns, would overly increase administrative costs.

Therefore, if a single period is to be chosen, it is noted that in the different expenditure profiles above, either the planning period makes no material difference to the percentage of the required revenue recovered over the planning period or a 20-year period will result in a material proportion of the required revenue not being recovered.

Though marginal, on balance a 30-year period is preferred on this criterion.

Intergenerational Equity

Intergenerational equity is generally considered to be achieved when the contribution of each generation reflects the benefits it receives from that infrastructure. In this regard, the Authority notes that:

- (a) Frontier Economics (2005), in their review of pricing policies prepared for GMW, considered that fairness and desirable inter-temporal price effects are achieved when customers pay only the efficient cost of services that they receive; and
- (b) IPART (2009) proposed that intergenerational equity is achieved where the costs of capital projects are recovered from users in proportion to the benefits they receive over time.

Seqwater proposed that all renewals expenditure be recovered from customers over the 20-year period in which it is incurred. Seqwater does not propose any apportionment of these costs to other periods, to reflect the ongoing service capacity of long life assets. For example, if an asset such as a concrete channel-lining (with a life of 40 years) is replaced within the 20-year planning period, then the recovery of this cost would substantially take place over that 20-year period (not over the life of the asset or a 40-year period). This could

be considered to impose a potentially inequitable burden on customers paying the annuity from Year 1 to 20.

The Authority notes that Seqwater's proposed annual recalculation of the renewals annuity or annual rolling annuity methodology – discussed further below – mitigates this impost to some (relatively minor) extent.

Nevertheless, the apparent inequity remains and is accentuated the later the expenditure is incurred in that period. For example, long life assets replaced in (say) year 19, while paid for by customers over Years 1 to 20, would not provide benefit until constructed towards the end of the period.

Therefore, Seqwater's proposed methodology means that customers in future periods receive the benefit of these long-life assets without contributing (substantially) to their capital costs in subsequent periods (after year 20). However, the longer the planning period, the lesser is the impact on inter-generational equity.

Effectively all cohorts of customers under the proposed renewals annuity approach are benefiting from previously installed assets at some stage, the costs of which were recovered from customers in the previous generation.

Moreover, effectively all cohorts of customers under the proposed renewals annuity approach instead pay for future assets. Neither the SCARM Guidelines nor other evident regulatory decisions explicitly address this matter.

Aurecon (2011) advocated that a 30-year rolling annuity be retained as it would:

- (a) provide farmers with more information and assurance when undertaking intergenerational planning of family operations; and
- (b) provide additional cost data when examining individual scheme/asset viability.

The Authority considers 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-rating approach is not consistent with the generally accepted approach to renewals annuities. In addition, changing to such an approach could create a bias in favour of the current cohort of customers who currently benefit from significant assets for which they may not have paid. In addition, even if a pro-rata approach was selectively applied to material (large) assets only, significant complexities could arise in

subsequent periods (and price reviews) as a result of attempting to ascribe the benefits to various cost recovery periods;

- (c) 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 is considered more appropriate to address intergenerational equity and is 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 are an indicative rather than a definitive estimate of project expenditure.

Moreover, the timing of expenditures can have a material impact on ARR balances – and a commercial trade-off between engineering and financial considerations is required; 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 notes, 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 concludes 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 is concerned that adopting a 30-year planning period may result in substantial increases in renewals annuity payments that are based on highly uncertain project costs and scope. The appropriate response to such uncertainty is not to reduce the planning period but to improve the reliability of the projects' costs and scope – and the Authority has made recommendations in this regard.

However, a 30-year planning period cannot be justified at this time. While the uncertainty is such that a planning period shorter than 20 years could be rationalised, the Authority is concerned that the volatility of renewals expenditure is such that any shorter period could lead to too much volatility from one pricing period to the next.

The Authority notes that it may be necessary to reconsider this matter should problems of intergenerational equity arise as a result of very significant capital expenditure proposals (such as those relating to metering or dam spillway expenditures).

Recommendation:

The Authority recommends that a 20-year planning period be adopted, as proposed by Seqwater.

The Authority also recommends that the length of the planning period be revisited in subsequent price reviews (or as a result of a price trigger) should problems of intergenerational equity arise as a result of significant capital expenditure proposals.

5.7 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.

Stakeholder Submissions

Other Stakeholders

QFF (2012a) noted that although Seqwater has evaluated potential projects against criticality and other criteria, conducted workshops with local staff and site, and inspected sites, they [Seqwater] have yet to consult with irrigators about forecast renewals expenditures.

QFF (2012a) 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 (IA Logan River 2012) 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 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 (IA Cedar Pocket and Mary Valley 2012) submitted that communication with customers needs to be improved by Seqwater. Irrigators seek increased consultation similar to a customer council.

IA Warrill Valley 2012 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 outlined in, and is a condition of, State Water's operating licence. Importantly (and not inconsistent with the approaches adopted by GMW and SRW in Victoria), the advice and input provided by CSC is not binding on State Water.

Victoria

In Victoria, the *Water Industry Regulatory Order 2003* (WIRO), a statutory instrument setting out the economic regulatory framework for utilities in Victoria, was amended in 2005 to allow the economic regulator the ability to specify standards and conditions of services and supply to apply to certain water businesses (ESC, 2008). One ESC imposed requirement is that these water businesses establish and maintain formal Customer Charters that inform customers about a range of topics associated with service provision.

In Victoria, (Frontier Economics, 2005) GMW's water service committees (WSCs) have been established to represent customer groups on a regional basis. The WSCs have an important role in defining customer service standards and asset maintenance and infrastructure replacement priorities. WSCs are appointed in accordance with section 108 of the Victorian *Water Act 1989*.

In response to this requirement, GMW established a WSC Charter that outlines the functions of WSCs (GMW, 2009). These functions are to advise and assist GMW:

- (a) in the preparation and monitoring by GMW of a Customer Service Charter;
- (b) in decisions regarding service level and price trade-offs and local operational matters;
- (c) in the monitoring and implementation by GMW of costs and services and its identification of potential system, service and delivery improvements and efficiencies;
- (d) in the development of its asset management plans, maintenance and capital programs;
- (e) in the development and implementation of water resource management plans;

- (f) in the preparation of annual area plans, annual budget estimates, asset management plans and responses to Government on policy; and
- (g) in the development of GMW's policies, procedures, tariff structures and billing arrangements.

GMW report that, although input from WSCs is highly valued and reflected in the decision making process, ultimately, the authority for decision making lies with GMW and its Board.

Also in Victoria, SRW (2007a) have established a Customer Charter that outlines the functions of Customer Consultative Committees which include having important liaison, consultative, collaborative and feedback roles in the operation of (SRW's) business.

Specifically, SRW's Customer Charter aims to facilitate a collaborative relationship with Customer Consultative Committees on topics such as identifying areas of service level deficiency, establishing priorities for undertaking works to address these deficiencies and considering the impact on prices of these works.

Similar to GMW's approach, although the input of Customer Consultative Committees is acknowledged, decision making regarding long-term asset management planning ultimately resides with the SRW Board.

Australian Capital Territory

In the ACT, the reporting of performance information is a utility's obligation under the conditions of its license. Each year, the ICRC prepares a report summarising the compliance of all utilities with their statutory obligations and performance functions under the *Utilities Act 2000*.

The ICRC report details customer numbers, consumption volumes and overall trends in each sector, and covers issues a range of issues including:

- (a) customer service performance, with a focus on customer complaints and network service quality;
- (b) network reliability, serviceability and maintenance, including planned and unplanned interruptions to services, as well as utilities' responses to those interruptions; and
- (c) the performance of utilities in relation to environmental issues that are a direct responsibility of the ICRC (e.g. water losses, greenhouse gas emissions and consumption efficiency).

The report also updates compliance issues that were discussed in earlier reports and provides a summary of compliance against the minimum service standards set out in schedules to the Consumer Protection Code.

In addition to being the principal means by which statutory compliance is monitored, the ICRC notes that, by identifying underperformance or non-compliance, the report serves to provide utilities and consumers with a signal about the need for performance improvements.

Authority's Analysis

The Authority recognises that Seqwater, like SunWater, has substantial technical and financial data and a wealth of experience on which to plan its activities. Seqwater also has a statutory responsibility to deliver WAEs and thus, as a minimum, maintain the capacity of its bulk assets.

While Seqwater has the final statutory responsibility for WSSs, the Authority values the inputs of customers into asset management planning as an indicator of its prudence and efficiency.

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 other stakeholders, the Authority recommends that Seqwater strengthen its direct consultation with irrigators in regards to actual (past) and proposed renewals expenditure.

In response to QFF's submission that further consultation (including its costs) should be considered, the Authority notes that support (by irrigators for consultation with Seqwater regarding expenditure) varies between WSS, with cost implications being the major concern.

Accordingly, the Authority considers 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 consider to be appropriate.

The Authority does 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 considers 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 recognises Seqwater's right to make operational business decisions in this context.

To ensure adequate information and transparency as a basis for future consultation, however, the Authority is not proposing to allow irrigators to negotiate a standard of consultation that is lower than the recommended minimum (annual information) requirements as such information is 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 the high-level options analysis for all material renewals expenditures expected to occur over the Authority's recommended planning period and detailed options analysis for all material renewals expenditures expected to occur within the subsequent 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/s (as is the case for the ICRC on ActewAGL), the Authority considers that, as a minimum, the above requirements should be incorporated into Seqwater's SOPs and relevant legislation should be amended to enshrine such requirements.

Recommendation:

The Authority recommends that Seqwater's Strategic and Operational Plans and relevant legislation be amended to require Seqwater to consult with customers in relation to, and publish annually on its website, updated NSPs commencing prior to 30 June 2014.

The 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 Seqwater'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 Seqwater's website alongside Seqwater's responses and related decisions.

5.8 Allocation of Headworks Renewals Costs

Background

Seqwater customers hold WAE specifying the reliability of priority group of the entitlement, for example, medium or high priority WAE. The term priority group is defined under the *Water Act 2000* (Qld) to mean water allocations that have the same WASO. A WASO represents the probability of being able to obtain water in accordance with the nominal volume granted with a WAE.

Holders of high priority WAE can usually rely on being able to access their nominal volume more often than the holder of a lower priority WAE (e.g. medium priority). The types and numbers of priority groups differ between schemes, reflecting the arrangements that have developed over time to suit local requirements or conditions.

It is often the case that the water sharing rules include a requirement to set aside or reserve a volume of water in order to provide for the future supply of water for high priority WAE. This reserve is not generally available to medium priority WAE. In this way, the reliability of high priority is usually significantly better than medium priority.

A high priority WAE does not provide a 100% guarantee that the holder will always get access to water. Rather, high priority means that the holder can expect to be given higher priority when available water supplies are being shared between customers of all priorities. When water supplies are low, high priority WAE holders tend to be allocated a larger share of their WAE than lower priority WAE holders. Medium priority customers often do not get any water until high priority customers have received 100% of their nominal volume (SunWater, 2006).

It is therefore necessary to establish a methodology to allocate costs to these differing priority groups of water entitlements.

Previous Review

For the 2006-11 price paths, renewals (and all other) costs were apportioned between medium and high priority customers according to 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 take into account a range of factors such as critical water supply arrangements or the likelihood of actually receiving an entitlement.

Therefore, a cost allocation methodology based on this approach, while possible in the few schemes where conversion factors have been established, may not be feasible or appropriate.

SunWater and customers agreed that the appropriateness of WPCFs be reviewed for the next price path (that is, the 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 the holding high priority WAE per ML is greater than the storage-related infrastructure costs per ML linked to storing medium priority WAE.

The Authority 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:

- (a) the maximum volume of high priority water entitlements that can exist under the ROP rules (denoted HPA_{max}); and
- (b) the volume of medium priority water entitlements corresponding to the maximum volume of high priority water entitlements (as determined in (a), denoted 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:

- (a) the capacity volume of the bottom horizontal storage layer reserved for exclusively supplying high priority water entitlements (HP_1) – the ‘bottom’ level;
- (b) the capacity volume of the middle horizontal storage layer available for exclusive use by medium priority water entitlements (MP_1) – the ‘middle’ level; and
- (c) the capacity volume of the top horizontal storage layer to be shared between medium and high priority entitlements – the ‘top’ level. 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.

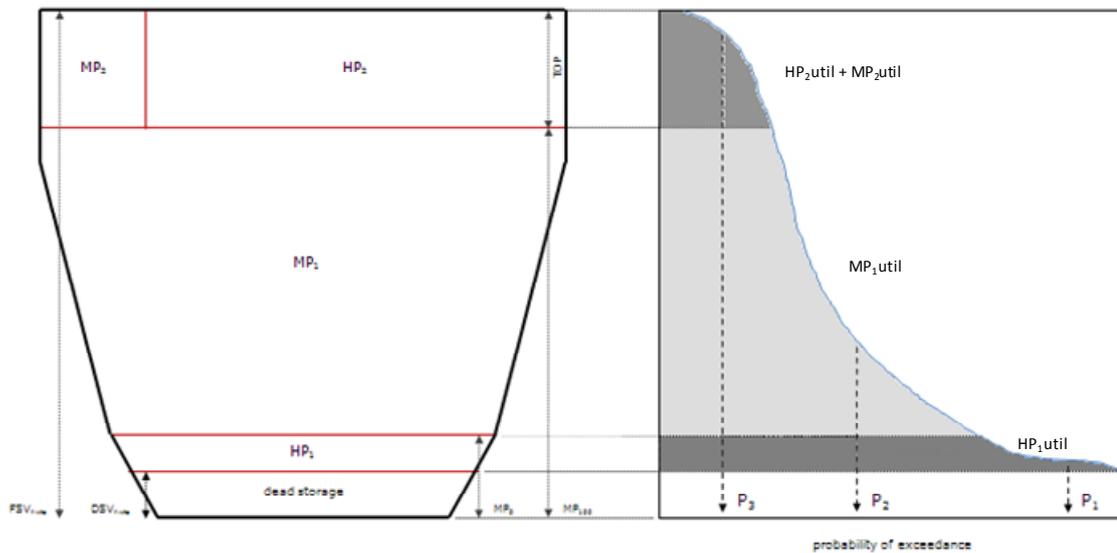
Step 4 – Assess the hydrologic performance of each component of headworks storage

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 storage storing water. Subsequently, high priority water entitlements effectively have access to – and therefore are able to utilise – headworks storage capacity more often and with less restriction than medium priority water entitlements.

Figure 5.3: 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:

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

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.

Stakeholder Submissions**Seqwater**

Seqwater commissioned Parson 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

Whilst 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 WSSs.

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 7,041ML of medium priority (irrigation) WAE. By contrast the 279,000ML 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 and Lower Lockyer 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, whilst Cedar Pocket 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 nominal WAE.

Table 5.20 outlines Seqwater's proposed bulk renewal cost allocation method and results.

Table 5.20: 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 (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 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 (2010a) noted that an inequity had arisen between high and general security entitlement charges under this approach. Entitlement charges were rebalanced to better equate the respective costs and benefits. Charges for high security were calculated by equating high security to the general security entitlement charge multiplied by a conversion factor and a high security premium. The high security premium was based on the average actual allocation to high security over the last 20 years divided by the average actual allocation to general security over the last 20 years (each defined as a percentage of the full entitlement). The conversion factor was determined by the resource regulator as being representative of the units of general security water required to secure one 'unit' of high security water [the same concept as DERM's ROP conversion factors].

The new approach for setting charges was driven by State Water's belief that conversion factors no longer accurately reflected the costs and benefits of general and high security entitlements. State Water argued there was a need to increase high security charges to correct this, as a number of general security licence holders tried to convert their entitlements to high security (albeit an embargo on conversion prevented the majority of these applications). Hence, this new high security premium aims to better reflect the benefits that high security customers enjoy from a secure water supply under varying degrees of water availability.

Victoria

In Victoria, water entitlements are categorised as high reliability water shares or low reliability water shares with urban high reliability entitlement charges greater than irrigation high reliability entitlement charges.

To date, the ESC has not been directly involved in assessing the mechanisms applied by GMW in allocating headwork costs across different water user. According to GMW, different costs are calculated on the basis of a hydrological yield relationship, which is used to identify the relative share of storage. However, no details are available.

Western Australia

In the state's South West, bulk water storages are owned by the Water Corporation, while the distribution network, the water within the storages and delivery are the responsibility of Harvey Water, a private irrigators' cooperative. Under this arrangement, Harvey Water pays to the Water Corporation the cost of water storages, and passes this bulk cost through to its customers.

Harvey Water's storage charges are shared between two main classifications of customers: industrial customers, who receive a guaranteed level of reliability, and irrigators, who do not have the same reliability guarantee. Irrigators are subject to fixed charges which apply to each ML of entitlement and a variable charge (water delivery component). Industrial users pay a variable charge (per ML) with no fixed charge component. The variable charge for industrial users incorporates all capital-related costs, and a premium associated with the level of reliability they receive.

Authority's Analysis

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 accepts that the storage capacity required to deliver the priority of water required is an appropriate driver of costs. Such capacity cost drivers have been adopted by the Authority in other instances such as for GAWB (QCA, 2005) although in no instances has the quality differential related to delivery been attempted to be measured.

The Authority also considered HUFs to be more suitable in a headworks context than ROP conversion factors which represent the rate and extent to which entitlements can be converted from medium to high priority and vice versa, usually within very restrictive limits for a limited number of schemes⁵.

In response to Riverside Farming and QFF, the Authority agrees that expenditure related to assets that do not confer an irrigation benefit (for example, urban domestic supply) should not be allocated to irrigators. Consequently, the Authority has 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:

- (a) appropriateness of quantitative input data and assumptions;
- (b) calculation accuracy;
- (c) rigor of methodology;
- (d) robustness of methodology;
- (e) appropriateness of methodology; and
- (f) cost-recovery performance.

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 noted that the methodology effectively apportions “slices” of storage to specific user groups depending on their ability to access that water. Put simply, a probability of utilisation is calculated as the average proportion of storage available in each of the “slices” over the 15-year period.

G&S concluded that, in general:

- (a) while the values may vary (for example, exact WAE volumes), input data and model sources were appropriate and applicable to the methodology and any noted variations were not considered to be significant in terms of the calculated HUFs;
- (b) the 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. An improvement in conditions for medium priority users is reflected by an increase in the utilised volume in the middle storage layer (MP_{1(utilised)}). Yet, due to the nature of the HUF_{mp} formula

$$HUF_{mp} = \frac{MP_{1(utilised)} + MP_{2(utilised)}}{MP_{1(utilised)} + HP_{1(utilised)} + MP_{2(utilised)} + HP_{2(utilised)}} (\%)$$

- (f) an increase in MP_{1(utilised)} effectively results in a decrease in the overall capacity utilised by medium priority users; hence a lower HUF_{mp} value. In turn, this implies that medium priority users receive less benefit from the headworks;
- (g) the methodology for the calculation of HUF_{mp} may result in overly conservative estimates of benefit derived from the assets by medium priority users. The following assumptions, to a greater or lesser extent, have a conservative effect on the HUF calculations:
 - (i) in schemes 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} value skews the implied measure of probability of access and does not provide an objective measure of projected 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 medium and high priority be modified to reflect the ratio of nominal volumes rather than ratio of $MP_1:HP_1$; and
- (d) HUFs be calculated on the basis of the existing levels of high and medium priority entitlements rather than the maximum volume of high priority entitlements that can exist under the ROP rules), with updates to HUFs to be undertaken with conversions as they occur.

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 have calculated the HUF on this basis.

Table 5.21 below presents a comparison of the relative share of capital costs for different priority groups under the previously adopted water pricing conversion factors, Seqwater's proposed HUFs (or adjusted WAE where HUFs do not apply) and the Authority's recommended approach.

Table 5.21: 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), PB (2012). Note: Central Brisbane did not have a water pricing conversion factor (WPCF), so nominal WAE has been substituted in the WPCF column.

Critical Water Sharing Arrangements (CWSAs)

The Authority notes that the CWSAs were established to provide a transparent strategy for determining how water will be shared amongst users when water supplies are critically low. They aim to ensure that water is available for essential supplies such as urban water, hospitals, power supplies, fire-fighting and sewage systems.

The CWSAs were developed in consultation with the scheme operators and community, including water supply customers. Section 41 of the *Water Supply (Safety and Reliability) Act 2008* requires water service providers to have such arrangements in place. Additional powers reside with the Minister to apply restrictions in the event of emergency water shortages (section 22, 23 of the *Water Act 2000*).

The CWSAs are activated only in genuine emergency water shortage circumstances and relate to the intended use of the water rather than the allocation itself. Under the CWSA, the intended use, rather than the priority specified on the allocation, is the ultimate factor in prioritising the supply of water to customers.

Therefore, the Authority considers that it is appropriate that not all high priority WAE and customers will be treated equally during such times. That is, during CWSA some high priority users (such as urban customers) will receive a benefit of the headworks when other high priority customers will not (such as irrigation customers holding high priority WAE).

As earlier noted, 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 does 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 the chapter on Draft Prices.

Water Meters

Seqwater's submitted water 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 considers 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 recommends 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 administratively simplicity, and to avoid price shocks, under this proposal the full cost of all meters in each tariff group will be recovered over the full 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 5.22 (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 5.22: 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	312	6.92
Central Lockyer	265	5.23
Logan River	155	1.70
Lower Lockyer	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

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 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, 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 methodology (adjusted nominal WAE) was proposed by Seqwater, which was based on the ‘adjusted’ proportion of medium to high priority nominal WAE. This approach allocated approximately 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 customers in the Central Brisbane River WSS. Volume 2 refers.

Cedar Pocket Dam, Central Lockyer and Lower Lockyer WSSs

As the three remaining WSSs (Cedar Pocket Dam, Central Lockyer and Lower Lockyer 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 and Lower Lockyer, and 98.9% to customers in Central Lockyer).

Summary

Table 5.23 outlines the Authority’s recommended (non-metering) bulk renewal cost allocation method and results for each of the bulk WSSs.

Table 5.23: Recommended (non-metering) Bulk Renewal Cost Allocation

<i>Tariff Group</i>	<i>Method</i>	<i>Proposed Allocation to Medium Priority (%)</i>
Cedar Pocket	None required – MP only	100
Central Brisbane River	Adjusted Ratio of MP to HP	1.6
Central Lockyer	Nominal WAE %	98.9
Logan River	HUF	16
Lower Lockyer	None required – MP only	100
Mary Valley	HUF	26
Warrill Valley	HUF	11

Source: Seqwater (2012a)

The Authority's further detailed considerations are outlined in the Volume 2 scheme reports.

Recommendation:

The Authority recommends that, consistent with Table 5.23, for the allocation of fixed bulk (non-metering) renewals costs:

- (a) Seqwater's HUF methodology be adopted for Logan, Mary Valley and Warrill Valley WSSs;**
- (b) the Authority's estimate of adjusted nominal WAE, in Central Brisbane River WSS; and**
- (c) nominal medium priority WAE be adopted in Cedar Pocket Dam, Central Lockyer Valley and Lower Lockyer Valley WSSs.**

The Authority also recommends that 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 nominal irrigation customer WAE.

5.9 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.

It was also noted that Tier 1 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.

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 (3,470ML) rather than the maximum WAE indicated in the IROL (3,507ML), on the basis that Seqwater holds the additional 37 WAEs.

Table 5.24 below presents a comparison of the relative share of capital costs for different priority groups under the previously adopted water pricing conversion factors and the recommended WAEs.

Table 5.24: 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), 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 proposes 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 incentive 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 will be allocated on the basis of total WAE (not contracted WAE) to ensure that Seqwater bears the holding costs of its WAE. As a result Seqwater will be responsible for the cost associated with its 37ML of nominal WAE.

Consistent with the Authority's recommended approach to allocating headworks renewal expenditure (above), and with the Authority's SunWater recommendations, the Authority considers that distribution system costs should be allocated according to their relevant cost drivers.

In principle, the Authority considers that distribution system capacity is the relevant cost driver for fixed renewals expenditure. In general, the best measure of capacity share is the instantaneous or peak flow rate. However, neither 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 notes 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, considers current WAE (in the absence of original WAE) to be the most appropriate cost allocator.

Accordingly, the Authority considered three options below, each of which is based on current WAE.

Options

Current WAE

This approach allocates renewals on the basis of current WAE held, irrespective of priority type. High and medium priority WAE would, under this approach, be allocated the same costs per ML. This reflects the view that medium and high priority users have the same share of distribution system capacity per ML of nominal WAE.

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 (Morton Vale) or Mary Valley (Pie Creek).

Therefore, the Authority considers that using ROP conversion factors is not practicable for Seqwater.

Water Pricing Conversion Factors

Where ROP conversion factors are not available, WPCFs may serve as an option. However, the basis of these WPCF's is not clear and are understood to reflect negotiated outcomes which took into account a number of factors including hydrological data where available. They were used to allocate all fixed costs as part of 2006-11 prices.

They therefore do not represent customer's share of distribution capacity. Moreover, they are confidential.

Conclusions

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 current (nominal) WAE is the only measurable estimate of customers' share of distribution system capacity. Establishing the most appropriate means for allocating such costs requires substantial further consideration and development and can be expected to require considerable resourcing and consultation if it is to be effectively defined and implemented. 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 by the Authority for SunWater, Seqwater should, for subsequent regulatory periods, adopt the relevant outcomes.

Recommendation:

The Authority recommends that nominal WAEs be used for the allocation of fixed distribution system costs between priority groups. Fixed distribution system charges should remain with customers if they convert to between priority groups.

The Authority recommends that, at the conclusion of the review recommended by the Authority for SunWater, Seqwater should, for subsequent regulatory periods, adopt the relevant outcomes.

5.10 Calculating the Renewals Annuity

5.10.1 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.

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 Final SunWater report

Other Stakeholders

QFF (2012a) 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 notes that:

- (a) a 20 year constant annual annuity would generate, on average, 12.9% more revenue during the first five years of the regulatory period than an annuity indexed by the inflation rate; and
- (b) a 30 year constant annual annuity would generate, on average, 16.8% more revenue during the same period.

In principle, the Authority recommends 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 has assumed an escalation rate of 4% for 2013-17. This rate is consistent with the Authority's 4% escalation rate for materials; however, for the labour and contractors component, it exceeds the Authority's estimate of 3.6% (refer Chapter 6: Operating Expenditure). 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 has therefore adopted 4% to ensure Seqwater's costs are recovered.

The Authority notes 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 concludes that, for the purpose of estimating future renewals costs, the cost escalation factor for renewals costs beyond the regulatory period (that is, the balance of the Authority's recommended 20 year planning period) be the general inflation rate of 2.5% per annum.

The Appropriate Annuity Index

The factor used to index the annuity through time can be different to the factors used to escalate cost components. The main criterion is that the present value of the indexed annuity is equivalent to the present value of the forecast costs. There are many equivalent indexed annuities that can give rise to this result.

The Authority recommends that renewal annuities be calculated in real terms using a real discount rate which 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.

Recommendation:

The Authority recommends that Seqwater calculates its renewals annuities indexed annually by the general rate of inflation.

The Authority also recommends that 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.**
-

5.10.2 Frequency of Recalculation

SunWater Review 2012-17

The Authority recommended renewals annuities be calculated using an indexed, annual rolling approach.

Stakeholder Submissions

Seqwater (2012) 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. However:

- (a) GMW reported that the rolling annuity approach was subsequently adopted to enable a better [earlier] understanding of the price implications of longer-term renewals expenditure (G. Coburn, 2010); and
- (b) SRW reported that the rolling annuity approach was subsequently adopted to avoid price spikes associated with lumpy renewals expenditure (P Burns, 2010).

Authority's Analysis

The Authority 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.

Recommendation:

The Authority recommends that Seqwater's annual rolling annuity calculation be applied.

5.10.3 Recommended Renewals Annuities for 2013-17

Based on the findings in this chapter, the Authority has calculated recommended renewals annuities for each of the WSSs, as summarised in Table 5.25.

Recommendation:

The Authority recommends the adoption of the proposed all sectors (including urban, industrial and irrigation) renewals annuities presented in Table 5.25.

Table 5.25: Authority's Final Recommended All Sectors Renewals Annuities for 2013-17 (Nominal \$)

<i>Water Supply Scheme</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	113,352
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 and in Chapter 7: Draft Prices.

Table 5.26: Authority's Recommended Irrigation Renewals Annuities for 2013-17 (Nominal \$)

<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	12,448	12,298	12,149	12,003
Central Brisbane	16,384	16,198	17,543	24,479
Central Lockyer	209,470	211,165	211,420	211,126
Logan River	38,509	38,944	38,936	38,940
Lower Lockyer	165,662	166,136	164,790	163,840
Mary Valley	106,925	106,342	106,680	106,681
Warrill Valley	65,113	65,865	66,271	66,486
<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).

6. OPERATING EXPENDITURES

The Authority has been directed to recommend a revenue stream that allows Seqwater to recover efficient operational, maintenance and administrative costs to ensure the continuing delivery of water services.

Of Seqwater's proposed (November 2012) total operating cost of \$262.1 million, \$21.2 million of all sectors costs is allocated to irrigation schemes.

The Queensland Government has also since announced its intention to merge Seqwater, LinkWater and the SEQ WGM by January 2013. The Authority understands that the impacts of the Government's proposed merger are currently being considered and further adjustments to the Authority's estimates of non-direct costs may be necessary. If so, these will be reflected in our Final Report.

The Authority reviewed for prudence and efficiency \$6.6 million (or 55%) of Seqwater's originally (April 2012) submitted \$12.1 million (all sectors) forecast direct operating expenditure for 2012-13 (upon which 2013-17 costs are based).

On the basis of this review, the Authority concluded that directly sampled costs were \$0.6 million above prudent and/or efficient levels.

Having regard to the implications of the above review, and excluding a non-systematic modelling error, a cost saving of 5% has been applied to Seqwater's remaining unsampled April costs (excluding local government rates and electricity costs). This results in a further \$0.2 million reduction to direct operating costs.

Therefore, the Authority recommends that Seqwater's (April 2012) total direct operating costs for 2012-13 be reduced to \$11.2 million. This is below Seqwater's revised November direct operating costs of \$11.7 million.

The Authority also considers it appropriate to reduce 2013-17 forecast direct operating costs by a general productivity gain of 1.5% per annum for each year of the 2013-17 regulatory period, applied cumulatively to reflect expected, achievable, ongoing productivity gains.

For the GSCs 2012-13 Final Report (bulk water), the Authority reviewed Seqwater's forecast non-direct costs and recommended cost savings. As a result, the Authority did not conduct further reviews of Seqwater's non-direct costs. The Government further extended the Authority's recommended cost savings.

In November 2012, Seqwater reduced its April 2012 non-direct costs in response to the Government's extended savings. Seqwater's resubmitted all sectors non-direct costs of relevance to irrigation fell from \$11.1 million (April 2012) to \$9.5 million (November 2012) for 2012-13. The Authority recommends that this reduction be accepted as it reflects a Government decision.

In addition, the Authority recommends Seqwater's November non-direct operating costs for 2012-13 be reduced by \$0.4 million or a further 4% to reflect a reallocation of non-direct costs (away from irrigation WAE) resulting from the Authority's cost reductions to direct operating costs.

The Authority recommends that Seqwater's forecast non-direct operating costs for 2013-17 should be further reduced by a general productivity gain of 1.5% per annum for each year of 2013-17. This saving is applied cumulatively to reflect expected achievable, ongoing

productivity gains. It is consistent with our approach to SunWater's non-direct costs and is supported by productivity gains imposed by regulators in other jurisdictions.

The forecast total operating expenditure for irrigation WSSs submitted by Seqwater in April for 2012-13 was \$23.2 million, and in November was \$21.2 million. After the Authority's cost savings above have been applied, in all nine tariff groups, the recommended total operating costs are \$20.3 million.

The Authority recommends that non-direct costs be allocated to irrigation tariff groups using total direct operating costs (TDC) as the cost allocation base (CAB), consistent with Seqwater's submission. This varies from SunWater where the Authority accepted direct labour costs (DLC) as the basis for allocating non-direct costs. Seqwater's financial system is based on TDC and any change would impose additional costs on Seqwater and irrigators for no material gain.

Consistent with the approach adopted for SunWater, for bulk WSSs, fixed maintenance costs and 50% of fixed operations costs should be allocated between priority groups using Seqwater's submitted HUFs (or adjusted WAE where HUFs do not apply) and the other 50% of operations costs should be allocated using current nominal WAE.

Also consistent with SunWater, for distribution systems, fixed operating costs (including 100% of fixed maintenance and operations costs) should be allocated to customer priority groups using current nominal WAE.

Currently, there are no high priority customer WAE in the two distribution systems. However, if in future an irrigator converted medium priority to high priority WAE, this principle would be relevant to setting high priority irrigation water charges.

The Authority recommends that, for the regulatory period: labour and contractors costs should be escalated at 3.6% per annum, materials at 4% per annum, and electricity and other non-direct and direct costs should be escalated at 2.5% per annum.

If allowable electricity costs increase materially, consideration should be given to an end of period adjustment only, given the relative immateriality of such costs in irrigation WSSs.

The Authority also recommends that Seqwater not be provided with an irrigation working capital allowance as most irrigation payments are received in advance through the fixed tariffs.

The Authority further recommends that Seqwater should submit proposals to the Authority, by 30 June 2014, on improving the forecasting and incurrence of operating costs.

The Authority also recommends Seqwater also should publish annually updated NSPs containing operating (and renewals) information along with stakeholder submissions and Seqwater's responses. These requirements should be outlined in amendments to Seqwater's SOP (and relevant legislation) to ensure timely commencement of consultation with customers in relation to operating costs (as for renewals expenditures).

6.1 Background

Ministerial Direction

The Ministerial Direction requires the Authority to recommend a revenue stream that allows Seqwater to recover efficient operational, maintenance and administrative (that is, 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 to its customers. The Authority must also have regard for the legitimate commercial interests of Seqwater and the requirement for Seqwater to operate as a commercial entity.

Seqwater's Total Operating Costs

In 2012, as part of the Authority's review of bulk water GSCs, Seqwater identified total operating costs for 2012-13 of \$285.5 million, including \$235.6 million of fixed operating costs and \$39.3 million of variable operating costs. These relate to all services provided by Seqwater (including for the seven schemes and nine tariff groups relating to irrigation 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:

- reducing the QWC Levy by \$6.9 million (from \$10.7 million to \$3.8 million);
- removing fixed (staff) operating costs of \$6.5 million (62.5 full time equivalent (FTE) employees); and
- increasing the Authority's bulk water efficiency target by \$0.9 million (from 2.5% to 3.0% per annum).

The implications of the proposed merger of Seqwater, LinkWater and the SEQ WGM in January 2013 are currently being considered by Government. Further adjustments to the Authority's estimates of non-direct costs may be necessary for the Final Report, which is due for release on 30 April 2013.

Issues for 2013-17 Review

Operating expenditure issues for consideration in the 2013-17 review include:

- (a) consideration of 2006-11 operating costs
- (b) reconciliation with Seqwater's bulk urban and industrial costs;
- (c) Seqwater's direct operating expenditure forecasting methodology;
- (d) the prudence and efficiency of Seqwater's proposed direct and non-direct operating expenditures;
- (e) appropriate allocation of non-direct operating costs to irrigation tariff groups;
- (f) the appropriate method/s of allocating total (direct and non-direct) operating costs (for a tariff group) between different priority WAEs (where they exist);
- (g) the most suitable cost escalation rates; and
- (h) opportunities to improve Seqwater's budgeting and consultation with irrigators in relation to operating expenditure.

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

Of the Seqwater's proposed \$262.1 million of total operating costs submitted in November for 2012-13, \$167.3 million (64%) are direct operating costs and \$94.9 million (36%) are 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 is allocated to the seven schemes relevant to the current review. These include sales to urban, industrial and irrigation customers.

The Central Brisbane River WSS accounts for 69% of the direct operating costs allocated to these schemes. In this WSS, however, irrigators will pay approximately 1.7% of this amount (refer to Volume 2).

Non-Direct Operating Costs

Of Seqwater's total non-direct operating costs of \$86.0 million, \$9.5 million is attributed to the seven schemes.

The Central Brisbane River WSS accounts for 74% of the non-direct operating costs allocated to these schemes. As for direct operating costs, in this WSS, irrigators will pay approximately 1.7% of this amount (refer to scheme specific Volume 2 report – cost allocation sections).

Total Operating Costs

In summary, of Seqwater proposed total operating costs of \$262.1 million, \$21.2 million (about 8%) are allocated to the seven schemes.

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 were to apply. In November 2012, Seqwater revised this figure to \$4.2 million of total operating costs.

2013-2017

Seqwater's total forecast operating costs for 2013-17 appear in Figure 6.1 below.

While it is noted that for comparative purposes these are typically contrasted with past forecasts and actual (not all currently available), such comparisons are not possible in this instance.

For comparability, a portion of the costs have been 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.

Notwithstanding this adjustment, 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's corporate structure and the regulatory regime at the time).

Further, Seqwater argues that, while comparisons with the 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, since Seqwater provided no input to these forecasts. Seqwater did not have the financial systems to gather and report against them due to the circumstances surrounding its acquisition of the WSSs in July 2008.

Moreover, Seqwater considers 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 the Indec 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 (for example, the Cedar Pocket and Pie Creek forecast costs for 2006-11 were bundled with Mary Valley WSS costs).

The Authority also notes that forecasts for 2006-11 do not include revenues from Central Brisbane.

Figure 6.1: Forecast Total Operating Expenditures (\$'000 Nominal)



Source: SunWater (2006b, Seqwater (2012s) and Seqwater (2012ba). Note: 2011-12 forecast total operating costs were not available – instead, for continuity, the Authority has applied a CPI to 2010-11 forecasts.

The Authority accepts that comparisons of past 2006-11 with forecast total operating costs are therefore inappropriate. The basis of Seqwater's forecasts for 2013-17 and the Authority's assessment of their prudence and efficiency are 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:
 - (i) requirements set out in the relevant IROLs, ROLs and ROPs;
 - (ii) dam safety obligations including under the *Water Act 2000*;
 - (iii) the *Environmental Protection Act 1994*; and
 - (iv) land management, workplace health and safety and other reporting obligations.

Operating cost classifications

Seqwater defines its operating costs as either direct or non-direct. Direct costs are those directly attributed to particular irrigation schemes, whereas non-direct costs are those common to all schemes, and therefore need to be allocated to tariff groups 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, which relate to 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, which include 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, which relate to maintaining assets that support irrigation water supply including:
 - (i) scheduled maintenance generated by the corporate information system (CIS);
 - (ii) planned maintenance, which comprises scheduled inspections and strategic maintenance; and
 - (iii) reactive maintenance, which results 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' includes scheduled and planned maintenance activities.

Contractors deliver most maintenance activities. Contractors 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:
 - (i) local government rates payable on Seqwater's land including storages. Forecast rates are included for Logan River, Central Brisbane River, Warrill Valley and Lower Lockyer Valley WSSs; and
 - (ii) detailed dam safety inspections conducted every five years, in addition to the costs of routine (annual) dam safety inspections (included in operations expenditure).

Direct costs by type

Seqwater also disaggregates its direct operations costs into the following cost types: labour, contractors and materials, and other.

- (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 categorises 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 are costs associated with project planning and managing the delivery of projects [where not capitalised into as renewals expenditure];
- (c) corporate costs include 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 include the North Quay facilities and flood control centres.

Seqwater categorises 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 and 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 industrial special risks, 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 have been 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 proposed 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 costs.

Table 6.3: Seqwater's Forecast Operating Costs for the 2012-13 Base Year (\$ Nominal)

<i>Cost</i>	<i>April 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).

Stakeholder Submissions

Seqwater

Budget Process 2012-13

Seqwater (2012s) has 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 costs variances from 2006-11 data as Seqwater 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 provides 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 the management of irrigation assets. 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 each 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 is documented as its *Operational Cost Report*, which itemises 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 includes all direct and non-direct operating costs forecast for 2012-13. It also details direct costs on an asset-specific basis according to whether the assets are used exclusively for urban water supply or whether they are operated 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 Strategic and Operational Plans.

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 (2012a) submitted that:

- (a) Seqwater has highlighted significant data limitations with operating costs, which are a major component of costs in all schemes. Examples include:
 - (i) non-direct costs cannot be separately attributed to schemes; and
 - (ii) 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 or one-off items) and then escalating these costs forward for the four year regulatory period will provide accurate assessment of the efficient operations of irrigation services; and
- (c) it was questionable whether a number of operating costs should be apportioned to irrigation schemes. For example, the costs of regionally significant recreational facilities; compliance costs associated with 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 safety inspections on dams that pose risks primarily to urban users.

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 2012 and C.D. Summerville 2012, J. Harris 2012, GRASSCO 2012);
- (b) Seqwater cannot identify any costs of any service that they supply to irrigators, and irrigators have no need for the infrastructure or higher water quality. Seqwater cannot measure irrigation use as it is lost in environmental flow estimations (S. Sinclair and H. Sinclair 2012b, J.B. Keller and B.L. Keller 2012, GRASSCO 2012, Riverside Farming Pty Ltd (RFPL) 2012, MBRII 2012);
- (c) costs attributed to irrigators should be limited to the provision, maintenance and monitoring of water meters and minimal bookkeeping costs associated with the rendering of accounts. Irrigators can save Seqwater money by reading meters themselves and reporting the volume taken each quarter (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 (IA Mary Valley 2012);

- (d) as farmers have had to become more cost efficient, so should Seqwater (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 2012, L. Brimblecombe 2012);
- (f) Seqwater indicated that some on ground or regional office 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, not Seqwater. QFF clarified that this was a legacy issue relating specifically to ROP matters, that DEWS is not involved with customer service and pricing issues. QFF stated that Seqwater should be the contact for irrigation customer service related issues (IA Warrill Valley 2012); 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 (IA Warrill Valley 2012).

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 aligns with good industry practice.

Nevertheless, the Authority considers 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 acknowledges Seqwater's view that the lower bound cost benchmarks developed for the 2006 price review by SunWater 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;
- (b) non-direct costs for irrigation schemes are 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 makes 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 allocations of non-direct costs to irrigation schemes should be undertaken as part of the budgeting process.

In order to address these concerns and carry out this bottom-up reasonableness test, it is appropriate for Seqwater to:

- (a) upgrade its policies, procedures, and information systems to better focus on the incurrance and management of costs in its irrigation sector; and
- (b) ensure that the cost estimation methodology is appropriate and consistent 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 is noted that as irrigation comprises a very small portion of Seqwater's total revenue (and costs), costly system changes are not warranted. The Authority recommends, however, that the information presented for future irrigation reviews be enhanced to allow better establishment of prudent and efficient irrigation costs.

The Authority specifically proposes 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, also 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 recommends 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 recommends 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 (2012a), the Authority:

- (a) agrees 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 agrees 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) accepts 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) considers 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) recognises the contribution of irrigators in reducing some operating costs and notes that these contributions do reduce costs incurred in operating and maintaining irrigation schemes (to the benefit of irrigators);
- (b) does 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 in some cases results in a relatively small share of the total costs involved;
- (c) notes that Seqwater is required by regulation to carry out meter reading. The costs associated with any proposed national metering standard is excluded from this review by the Ministerial Direction;
- (d) acknowledges that one of the objectives of this investigation is to establish the efficient cost base for pricing purposes;
- (e) recognises that a number of data issues have arisen during the investigation. However, since its initial submissions, Seqwater has provided more detailed data for the Authority's review. An assessment of Seqwater's costs is discussed in the sections that follow;
- (f) understands that Seqwater is responsible for consultation with customers; and
- (g) agrees that a more effective consultation process between Seqwater and irrigators should be established, and has recommended accordingly.

Recommendations:**The Authority recommends that Seqwater:**

- (a) **upgrade its policies, procedures, and information systems for the budgeting, incurrence and management of operating costs in its irrigation sector. In particular, the gathering, recording, documentation and analysis of operating cost information relevant to Seqwater's irrigation sector needs to be improved;**
- (b) **publish on its website annually updated NSPs containing operating (and renewals) information along with stakeholder submissions and Seqwater's responses. 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; and**
- (c) **should submit its proposals, in relation to the above matters, for consideration by the Authority by 30 June 2014 and implement the agreed improvements by 30 June 2015.**

As for renewals costs, the Authority also recommends that Seqwater's Strategic and Operational Plans (and relevant legislation) be amended to require Seqwater to consult with customers in relation to forecast and actual operating expenditure.

6.2 Prudency and Efficiency of Direct Operating Expenditure

Seqwater forecast its direct operating costs for the 2013-17 regulatory period 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 a minimum of 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%).

Stakeholder Submissions

Seqwater

Seqwater initially (April 2012) forecast total direct operating expenditure of \$12.06 million.

Subsequently, as a result of an initial review by the Authority, Seqwater (November 2012) resubmitted forecast direct operating expenditure of \$11.65 million. That is, \$0.41 million or 3.4% 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 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 (in some instances); 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 amount of staff time required in each operational area across asset locations. As such, 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

For the purposes of preparing its 2012-13 budget Seqwater separated its maintenance costs into three types as follows:

- (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 percentages are based on industry standards, and are targeted by Seqwater in its pursuit of best practice in repairs and maintenance.

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

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.

Electricity costs for irrigation supplies largely relate to pumping water into off-stream storages. The duration and frequency of these events and consequently their costs are very difficult to forecast as they are influenced by streamflow events and storage levels. Indeed in some years no pumping may occur, while in others there may be significant pumping events and costs.

For example, in Central Lockyer WSS, Seqwater forecast pumping costs for Clarendon Dam are based on pumping 50% of the Dam’s capacity each year. The total electricity cost to completely fill Clarendon Dam was \$188,000 across 2010-11 and 2011-12. Allowing for electricity price increases (and assuming only 50% of the dam’s volume is pumped) Seqwater forecast electricity costs of \$103,000 in 2012-13.

Given the difficulties associated with forecasting electricity costs, Seqwater proposed that electricity costs be escalated by CPI (2.5%) for the regulatory period (from 2013-14) with adjustment required to account for the actual pumping and electricity costs at the end of the regulatory period. Seqwater propose to maintain a running balance across the price path 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 business (including metropolitan, regional urban and rural businesses) are reflective of efficient operating expenditure and that the planning horizon extends beyond the five-year regulatory period. The WIRO also requires that the manner in which prices are determined provide incentives for the business to pursue efficiency improvements over the regulatory period.

To this end, the ESC must ensure that expenditure forecasts contained in an entity's Water Plan reflect the efficient delivery of the proposed outcomes, as well as demonstrating that the proposed prices provide the regulated entity with incentives to pursue efficiency improvements.

The ESC engaged independent consultants to review forecast operations expenditure, including whether the proposed trend in operating expenditure over the regulatory period was reasonable and consistent with existing obligations and service standards. Consultants were to have regard to expected productivity improvements, trends in input prices and the impact of growth on operating expenditure needs and any other relevant factors.

Authority's Analysis

The Authority 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

On the basis of the April Seqwater data, SKM noted that 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 WSSs between tariff groups.

SKM then 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 notes though, that for some WSSs, unplanned maintenance significantly outweighs planned maintenance suggesting that asset management procedures for those assets are in need of review.

Where detailed reviews were undertaken, SKM has 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 the scheme specific reports (Volume 2).

Material and Other Costs

SKM reviewed in detail 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 therefore considered to be reasonable (that is, it falls within the range which was 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 concludes 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 considers that this method is likely to result in an efficient outcome.

Electricity

Unlike for SunWater, the Authority notes that electricity is a relatively small cost for Seqwater.

SKM's review of electricity costs found electricity costs to be efficient. SKM notes that the electricity prices may be underestimated in the 2013-14 budget, given the approximately 10% increase in energy costs arising from the implementation of the Carbon Tax.

In the context of the GSC review, Seqwater received advice from the Queensland Government to discontinue all existing state-based carbon reduction schemes to ensure agencies were not subject to overlapping of State and Federal obligations when the carbon tax was introduced on 1 July 2012.

Accordingly, for the irrigation review, Seqwater did not include costs associated with the purchase of green energy from forecast operating expenditure. Accordingly, the Authority concludes that Seqwater's proposed electricity expenditure is prudent and efficient and will not apply a reduction to Seqwater's proposed costs.

Refer Volume 2 for scheme specific discussion.

In the event that electricity costs vary from those forecast, the Authority recommends 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 considers 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 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	216	248	14%
	Mary Valley	404	224	(44%)
	Morton Vale Pipeline	24	36	50%
Sub Total		4,103	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 recommends that SKMs estimate for sampled operating expenditure be adopted except where Seqwater submitted costs lower than SKMs estimate, in its subsequent November submission. This occurred in Central Lockyer WSS and Warrill Valley WSS. Refer to the scheme specific 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.

6.3 Unsampld Forecast Direct Operational Expenditure

SunWater Review 2012-17

In circumstances where direct operating expenditure was not reviewed, the Authority extrapolated estimated cost savings (of approximately 4.5%) across all unsampled service contracts.

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 is 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 unsampled operating expenditure, or apply the specific findings to each operating expenditure sub-component.

The Authority proposes to apply a single reduction to all unsampled 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 does not propose to include the large reduction in Repair and Maintenance Costs in the Central Lockyer WSS that arose due to a recording error in relation to the Mt Crosby WTP (bulk) cost.

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. When this item is excluded, the overall average reduction identified by SKM is approximately 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)</i>	<i>SKM Recommended</i>	<i>Variance</i>
	Cedar Pocket	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	276	(10%)
TOTAL		6,191	5,888	(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 forecast planned repairs and maintenance was \$47,000, but its total cost was \$66,000.

Therefore, the Authority recommends that unsampled operating costs (except for rates, insurance and fixed electricity) be reduced by 5% to Seqwater's April NSP costs (adjusted for the five tariff groups substantially re-allocated by Seqwater – see scheme specific reports).

6.4 Total Sampled and Unsampled Cost Savings

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: Proposed Direct Operating Expenditure for 2012-13 (\$ Nominal)

<i>Direct Operating Costs</i>	<i>Seqwater Initial (April)</i>	<i>QCA 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	(876,190)	(8.1%)
Electricity	450,967	452,558	1,591	0.4%
Rates	836,066	836,066	0	0.0%
Dam Safety	0	0	0	0.0%
Total	12,058,731	11,184,133	-874,599	(7.3%)

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.

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: Total Direct Operating Expenditure (All Sectors \$ 2012-13)

<i>Tariff Group</i>	<i>Seqwater Initial (April)</i>	<i>Seqwater Final (November)</i>	<i>QCA Recommendation</i>	<i>Variance (April vs. QCA) \$</i>	<i>Variance (April vs. QCA) %</i>
<i>Bulk</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	(188,599)	(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	(110,317)	(10.9%)
<i>Distribution</i>					
Morton Vale Pipeline	24,496	53,417	45,994	21,498	87.8%
Pie Creek	95,226	152,306	148,231	53,005	55.7%
Total	12,058,731	11,659,368	11,184,132	(874,599)	(7.3%)

Source: Seqwater (2012a) and Seqwater (2012aj)

Further Productivity Gains

In addition to the above adjustments for the 2012-13 year, the Authority considers it appropriate to apply a productivity adjustment to the established efficient cost base for anticipated future efficiency gains.

For this purpose, the Authority considers 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 balance of the regulatory period.

IPART (2010) required State Water Corporation to achieve continuing operating expenditure efficiency improvements of 0.8% per annum, for comparable 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 considers that in Seqwater irrigation WSSs scope remains for ongoing productivity gains in the order of 1.5% per annum.

The Authority's higher estimate of savings for Seqwater reflects the extent of underutilised labour and further improvements in the budget planning process and cost control envisaged to be achievable.

Recommendation:

The Authority recommends that:

- (a) Seqwater's prudent and efficient direct operating costs for 2012-13 should be reduced to \$11.2 million; and
 - (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 subsequent 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.

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, monitor 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 flood control centres and are attributable to Central Brisbane 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 for each of the schemes;
- (b) costs of flood control centre services were assigned to the Central Brisbane 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 their 2012-13 forecast directly attributable operating costs. For example, finance costs were considered relevant across all irrigation and grid 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 6.9 refers.

Table 6.9: Seqwater's Forecast Non-Direct Costs (All Sectors) for 2012-13 (\$ Nominal)

Cost Category	April 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	9,030,606	7,576,692	(1,453,914)	(16)
Non-Infrastructure Assets	534,751	533,269	(1,482)	(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	(1,613,729)	(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. The balance of these costs is allocated between Seqwater's urban, industrial and other non-irrigation customers.

Other Stakeholders

During the first round of irrigator consultations (IA 2012), 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

- (b) 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 (2012a) 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 (2012a) 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 (IA Mary Valley 2012). 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.

The implications of the proposed January 2013 merger are currently being considered by Government, and further adjustments to the Authority's estimates of non-direct costs may be necessary for the Seqwater Irrigation Review 2013-17 – Final Report, which is due for release on 30 April 2013.

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 6.10.

Table 6.10: 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 adjustments (exclusions) are appropriate as the nature of the costs is not related to irrigation activities. 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 the various stakeholders who commented that recreation costs should not be passed on to irrigators, 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 (reduced) total 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 that are 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 in irrigation schemes. Further, the Authority has reduced non-direct costs when direct costs are reduced (refer below).

Table 6.11 shows the impact of the Authority's recommendations.

Table 6.11: Non-Direct Operating Expenditure by Tariff Group (\$ 2012-13)

<i>Tariff Group</i>	<i>Seqwater April</i>	<i>Seqwater November</i>	<i>QCA Recommendation</i>	<i>Variance (April vs. QCA) \$</i>	<i>Variance (April 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 the regulatory period (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 recommended as recent regulatory precedent suggests that a real general productivity improvement of around 1.5% per annum is a reasonable expectation for regulated rural water entities.

Recommendation:

The Authority recommends that Seqwater's :

- (a) forecast prudent and efficient non-direct operating costs for 2012-13 should be reduced to \$ 9.1 million; and**
 - (b) non-direct operating costs 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

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.

6.6.1 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 DLCs 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 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 WSS 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 (2012a) 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, GMC utilised a number of CABs for corporate/shared costs. These are summarised in Table 6.12.

Table 6.12: 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	
Records and reception	Service share of total expenditure
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 notes Seqwater’s submission to allocate insurance costs the basis of the replacement value of insured assets, and considers this approach to be appropriate.

Recommendation:

The Authority recommends that Seqwater should allocate non-direct operating costs (excluding insurance) to irrigation tariff groups on the basis of total direct costs (TDC).

Insurance costs should be allocated on the basis of the replacement value of the insured assets (as recommended by Seqwater).

6.6.2 Stage 2 Allocation of Costs between Priority Groups

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 usage.

Stakeholder Submissions

Seqwater

In general, Seqwater (2012a) has proposed the same approach to stage 2 cost allocation as that proposed by the Authority for the SunWater investigation. For SunWater, for bulk schemes, fixed maintenance costs were allocated to priority groups using headworks HUFs, and fixed operations costs (including insurance premium costs⁶) were allocated 50% using HUFs and 50% using current nominal WAEs. For distribution schemes, all fixed operating costs (including insurance premium costs) were allocated on the basis of current nominal WAEs.

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 are required as all water allocations in these tariff groups are medium priority. For Central Lockyer Valley, all water allocations are treated as medium priority because high priority allocations are immaterial (1.1%) and WAE have not yet been formalised for the scheme.

⁶ Email from Colin Nicolson to Angus MacDonald dated 23 August 2012 refers.

Other Stakeholders

QFF (2012a) 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. Additionally attributing 2% of volume to irrigation use is not correct when taking into account environmental purposes.

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 agrees 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 agrees that the price of water should reflect different supply reliabilities, where relevant, and has recommended accordingly (for example, between medium and high priority WAE). The costs of meeting compliance obligations (including environmental management) are a legitimate cost of supplying water for irrigation purposes, and are required to be included in Seqwater's irrigation costs under the Ministerial Direction.

In response to S. Sinclair and H. Sinclair (2012b), the Authority has taken 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 is consistent with the SunWater approach.

The Authority notes that application of the HUF in Central Brisbane fails to account for flood mitigation and as an alternative, the Authority has relied upon an alternative methodology (see Central Brisbane scheme specific report).

Recommendation:

The Authority recommends, that 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.**

The Authority also recommends that for Central Lockyer Valley, Lower Lockyer Valley, Morton Vale Pipeline, Pie Creek, and Cedar Pocket Dam tariff groups, fixed operating costs should be allocated on the basis of current nominal WAEs as recommended in Chapter 5: Renewals Annuity.

The Authority further recommends adoption of the approach outlined for the Central Brisbane River WSS (outlined in its scheme specific report).

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.

This section assesses Seqwater's proposed escalation rates for direct and non-direct operating costs.

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, are yet to be negotiated⁷.

In the meantime, Seqwater proposes that labour costs continue to be escalated by 4% per annum (nominal) for the 2013-17 regulatory period.

⁷ 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).

This escalation rate is 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 5 and 10 years as shown in Table 6.13 submitted by Seqwater below.

Table 6.13: 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 6.14.

Table 6.14: 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 years⁸.

⁸ Queensland Major Contractors Association, 2012, *2012 Major Projects Report*, February.

Electricity

In April 2012, Seqwater (2012a) advised that its energy costs accounted for approximately 1.9% of total operating costs allocated to irrigation schemes. In November, Seqwater's (2012aj) revised total (fixed and variable) electricity costs represent 2.2% of total operating costs \$21,182,879.

Electricity usage for irrigation supplies arises mainly from pumping water into off-stream storages. The duration and frequency of these events (and consequently electricity usage) are very difficult to predict as they are influenced by streamflow events and storage levels. In some years no pumping may occur, while in others there may be significant pumping events and costs.

Seqwater also submit 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 introduces further uncertainty. 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 has proposed that electricity costs associated with the assumed pumping 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 a revenue neutral 'unders and overs' adjustment applied to prices for the next price path to account for the difference between forecast and actual electricity costs.

Seqwater maintains 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. In particular, the Authority in its SunWater report 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 (once it has occurred) are unambiguous.

Other Direct Costs

Seqwater has proposed that other direct operating cost categories (that is, other than direct labour and contractors and materials), be escalated from the 2012-13 base year in line with inflation.

Non-direct Costs

Seqwater has proposed that all its non-direct costs be escalated from the 2012-13 base year in line with inflation.

Other Stakeholders

QFF (2012a) 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) QCA will include new energy costs/tariffs or adopt the approach used in the SunWater analysis.

Central Brisbane River irrigators asked whether the rate of indexation that Seqwater has applied to cost forecasts is appropriate (IA, Central Brisbane River 2012).

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 were to occur in line with a separate index—the Maintenance Cost Index (MCI)—developed by QR to reflect changes in its central Queensland maintenance costs. QR was also required to publish changes in its MCI each year, with the release of its annual maintenance report (QCA 2010b).

Subsequent to the 2010 decision, the Authority approved adjustments to QR's allowable revenues, to reflect the difference between forecast and actual CPI and MPI levels (QCA 2011d).

Decisions by Interstate Regulators

Melbourne Metropolitan Water Price Review 2009-10 to 2012-13 – Essential Services Commission

In reviewing Melbourne metropolitan water prices, the ESC (2009) applied CPI for operating inputs such as electricity and chemicals, but allowed a 1.5% real increase in labour costs over the regulatory period.

Water and Wastewater Price Review 2008 – Independent Competition and Regulatory Commission

The ICRC (2008) adopted a more conservative wages growth forecast of 4.7% nominal per year compared to ACTEW's proposed 5.45%. The ICRC noted that ACTEW's wages rates were already higher than industry-related market rates.

State Water

Although IPART has noted that there is no individual inflation measure that accounts for all industry price determination factors, CPI is considered to be the simplest option, as well being relatively timely in its release and carrying a high degree of credibility and familiarity with the public. However, in some instances, price increases may be approved above the CPI due to other factors (PwC, 2010a).

Authority's Analysis

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 notes recent Queensland Treasury forecasts. Refer Table 6.15.

Table 6.15: 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, State Budget 2012-13, September 2012.

The Authority considers it appropriate to have regard to the most contemporary forecasts. Accordingly, the Authority recommends 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 considers 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 believes 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 (as per Seqwater's submission) 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.

Notwithstanding these issues, the Authority considers 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 has 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 6.16.

Table 6.16: 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%

** 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. Source: ABS (2012a) and ABS (2012c).*

The Authority considers 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 adjustments may apply.

For Seqwater, however, given the immateriality of electricity costs, the Authority’s recommends 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 considers 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 (2012a) and IA Central Brisbane River, the Authority considers that:

- (a) it is appropriate to adopt the same escalation indices for direct labour and contractors and materials costs as for the SunWater investigation because the same principles apply. Updated estimates of these indices do not indicate any change is warranted; and
- (b) the approach used to escalate electricity costs differs from that used for SunWater given the relative size of the costs involved.

Recommendation:

The Authority recommends that for the regulatory period 2013-17:

- (a) **the costs of direct labour and contractors should be escalated by 3.6% per annum in nominal terms;**
 - (b) **the costs of materials should be escalated by 4% per annum in nominal terms;**
 - (c) **other direct costs and non-direct costs should be escalated by 2.5% per annum in nominal terms; and**
 - (d) **electricity should be escalated by 2.5% per annum in nominal terms. However, should Seqwater sustain material electricity cost changes above the escalated level, consideration should be given to an application by Seqwater to the Authority for an end-of-period adjustment.**
-

6.8 Working Capital

The Authority has interpreted the Ministerial Direction to allow for SunWater's revenue stream to include an appropriate allowance for working capital.

Stakeholder Submissions

Seqwater

While noting the Authority's approach to setting a working capital allowance for the SunWater investigation (QCA 2012a), Seqwater (2012a) has 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 sum has been allocated to irrigation schemes based on the proportion of forecast revenue attributable to the schemes as set out in Table 6.17 below.

Seqwater maintains that its approach is 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 6.17: 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	194,840

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 Supply Scheme, SKM advised the Authority that the industry average for working capital was equal to 5.08% of sales revenue. The Authority noted that this proportion was consistent with previous 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 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 Grid Service Charges 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 has 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 is justified in this instance.

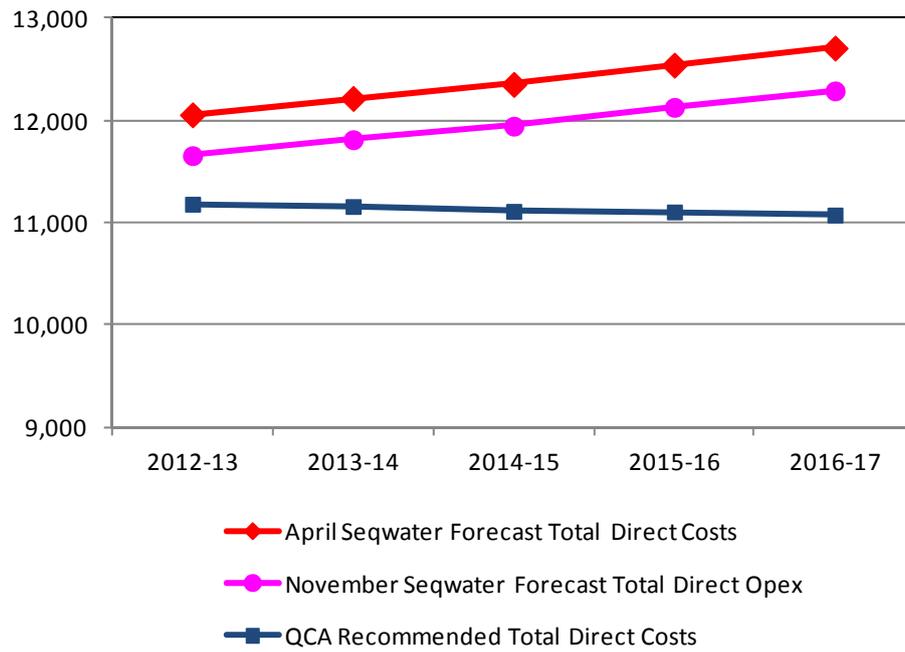
Recommendation:

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 (2012a)j 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 6.18.

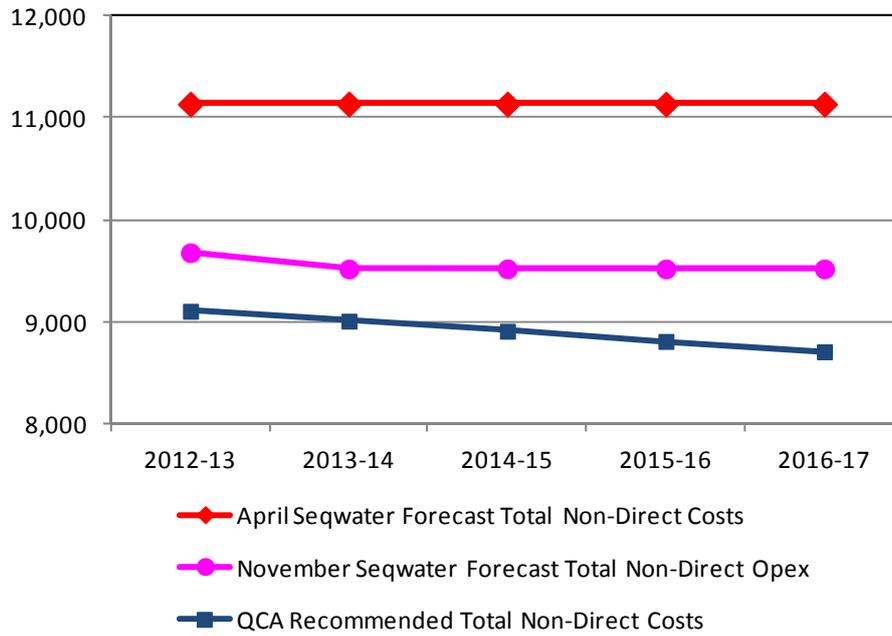
Table 6.18: Direct Operating Costs by Tariff Group 2012-13 (All Sectors)

<i>Tariff Group</i>	<i>Seqwater Initial (April)</i>	<i>Seqwater Final (November)</i>	<i>QCA Recommendation</i>	<i>Variance (April vs. QCA) \$</i>	<i>Variance (April 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	(188,599)	-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	(110,317)	(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	148,231	53,005	55.7%
Total	12,058,731	11,659,368	11,184,133	(874,600)	(7.3%)

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).

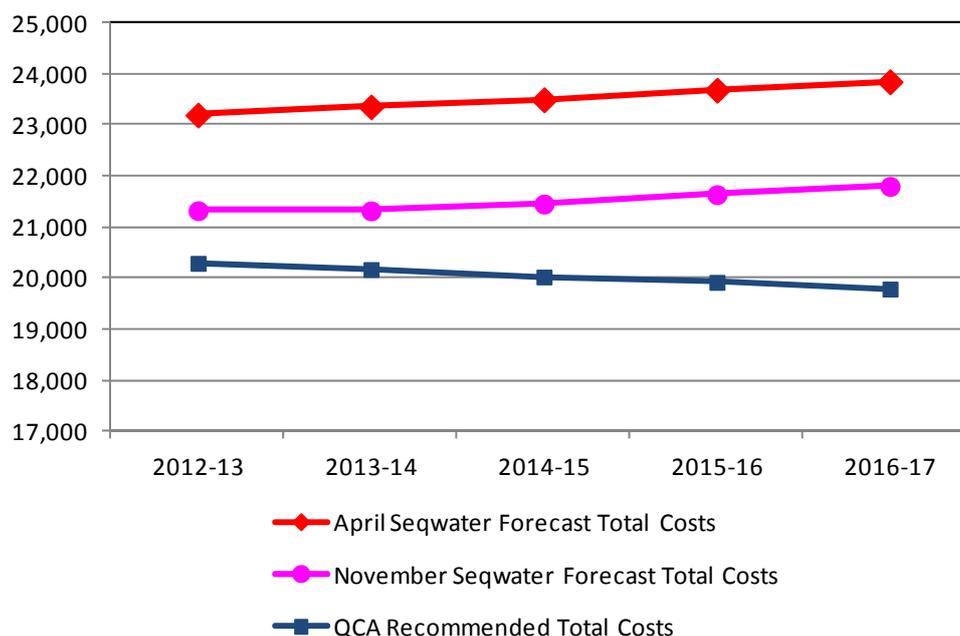
The total impact on each irrigation tariff group, of the Authority’s recommended reductions to 2012-13 non-direct operating expenditure (all sectors costs), is presented in Table 6.19.

Table 6.19: Non-Direct Operating Costs by Tariff Group 2012-13 (All Sectors)

<i>Tariff Group</i>	<i>Seqwater April</i>	<i>Seqwater November</i>	<i>QCA Recommendation</i>	<i>Variance (April vs. QCA) \$</i>	<i>Variance (April 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	634,240	364,627	350,816	(283,423)	(45%)
Logan River	572,001	456,598	434,553	(137,449)	(24%)
Lower Lockyer	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).

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 (2012).

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 6.20.

Table 6.20: Total Operating Costs by Tariff Group 2012-13 (All Sectors)

Tariff Group	Seqwater April	Seqwater November	QCA Recommendation	Change (April vs. QCA) \$	Change (April vs. QCA) %
<i>Bulk</i>					
Cedar Pocket Dam	113,418	126,191	104,449	(8,969)	(8%)
Central Brisbane River	15,841,633	15,108,090	14,470,101	(1,371,533)	(9%)
Central Lockyer	1,380,912	761,871	741,682	(639,230)	(46%)
Logan River	1,272,960	1,082,732	1,036,316	(236,644)	(19%)
Lower Lockyer	1,176,362	1,160,939	1,134,911	(41,451)	(4%)
Mary Valley	1,531,756	1,137,907	1,096,733	(435,022)	(28%)
Warrill Valley	1,669,718	1,476,590	1,399,064	(270,656)	(16%)
<i>Distribution</i>					
Morton Vale Pipeline	42,509	84,255	72,921	30,412	72%
Pie Creek	166,704	244,304	244,838	78,134	47%
Total	23,195,971	21,182,879	20,300,666	(2,895,305)	(12%)

Source: Seqwater (2012a), Seqwater (2012aj) and QCA (2012).

Comparisons of all sectors and irrigation only operating costs are presented in Table 6.21.

Table 6.21: 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	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 Recommended	11,189,312	9,111,354	20,300,666	2,363,799	1,621,980	3,985,779
Change (April vs. QCA) \$	(869,419)	(2,025,886)	(2,895,305)	(639,637)	(553,079)	(1,192,716)
Change (April vs. QCA) %	(7%)	(18%)	(12%)	(21%)	(25%)	(23%)

Note: Irrigation Only values are 2013-14, deflated by 2.5%

The Authority presents further details of irrigation only costs in Chapter 7: Draft Prices.

7. DRAFT PRICES

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

The Authority estimated total efficient costs for each tariff group, including renewals, operating, maintenance and administration costs. These are offset by revenues received from property leases, recreation fees and town water supplies.

Seqwater's updated November 2012 revenue offset forecasts for 2013-17 were based on past average actual revenues with appropriate adjustments, which the Authority accepts.

In bulk WSSs with high and medium priority customers, 100% of the renewals annuity, 100% of repairs and maintenance operating costs and 50% of other operating costs are allocated between priority groups on the basis of the Authority's recommended HUFs (or equivalent). The balance (50%) of other operating costs is allocated on the basis of current nominal WAE.

In the distribution systems, there are no high priority customers, so all fixed costs are allocated on the basis of current nominal WAE.

Seqwater had proposed that all costs were fixed and should be recovered through fixed charges. However, the Authority has concluded that some costs vary with water use over the four-year regulatory period, and recommends that such costs be recovered through volumetric charges.

To estimate volumetric charges, the Authority divided total variable costs for each tariff group by an estimate of water use in a typical year.

The Authority's cost-reflective fixed tariffs are derived by dividing the total fixed costs by current irrigation WAE.

The Authority has published its estimates of prudent and efficient cost-reflective volumetric and fixed tariffs (prices) for each tariff group.

The Authority recommends that its cost-reflective volumetric charges be adopted for all tariff groups from 1 July 2013, on the basis that they will provide an efficient price signal to customers and manage Seqwater's short-term volume risk (as variable costs will vary with water use).

To reflect the Government's pricing policies (outlined in the Ministerial Direction), however, the Authority has adjusted its cost-reflective fixed tariffs to arrive at its recommended fixed charges.

The Authority interprets the Ministerial Direction to require the maintenance of current water revenues (rather than prices) in real terms. The revenues to be maintained, on a tariff group basis, are those achieved on average during the current price path 2006-12.

The revenue expected from volumetric tariffs is estimated on the basis of the past ten years of irrigation only water use in each tariff group. The Authority's recommended fixed charges are derived by dividing the remaining required revenue by current irrigation WAE.

In all Seqwater irrigation tariff groups, current revenues are below the assessed level of efficient costs (that is, charges are below cost-reflective levels). The Authority has recommended a price path, for each tariff group, to transition prices to cost-reflective levels.

Under the Ministerial Direction, water prices in specified 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. Over 2006-11, prices increased at an average of \$2 per ML per annum (in real terms) which applied to fixed and volumetric charges.

For all tariff groups, the Authority also recommends a \$2/ML annual real increase in fixed tariffs for the 2013-17 regulatory period until such a time as all prudent and efficient costs are recovered. At this rate of increase, Warrill Valley WSS achieves cost-reflective prices in 2013-14. The Logan River and Mary Valley WSSs reach cost-reflective prices in 2016-17. The remaining six tariff groups face longer price paths to cost-reflectivity.

While the Authority has applied material cost savings to Seqwater on the basis of its investigations, the safeguards provided within the recommended regulatory framework ensure Seqwater's legitimate commercial interests will be met, within the provisions of the Ministerial Direction.

The framework allows stakeholders (including Seqwater) to apply to the Authority for a within period or end of period adjustment to prices where uncontrollable costs change materially (relative to the forecast cost). That is, the Authority may adjust future prices on the basis of a subsequent assessment of revised costs that are found to be prudent and efficient. As this is a four year regulatory period, however, and given the relative immateriality of irrigation revenue to Seqwater, within period adjustments to prices are not expected – avoiding price volatility during 2013-17.

7.1 Background

Ministerial Direction

The Authority is required to recommend irrigation prices for nine Seqwater tariff groups. These prices are to apply from 1 July 2013 to 30 June 2017 and are 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 allowable costs, water prices are to be maintained in real terms using an appropriate measure of inflation (as recommended by the Authority). For certain schemes 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 then set reference irrigation tariffs for consideration by the Scheme Irrigation Pricing Working Groups (Tier 2) working groups.

In the second stage, which involved the Tier 2 working groups, scheme-specific issues were taken into account and the irrigation tariffs to apply for the next five-year price path were negotiated (within the context of the recommendations made by Tier 1 and Government policy).

The maximum real tariff increases were capped at \$10 per ML over the five-year price path, prior to annual indexation (based on the Brisbane – All Groups CPI).

The Government policy required that all SunWater WSSs achieve lower bound pricing by the end of the price path (however, some SEQ schemes were granted a six- or seven-year price path). No reduction in the tariffs was permitted if the current tariff was above the lower bound costs. There was also to be no additional rate of return achieved by SunWater and no customer funding of priority spillway upgrades for the duration of the price path.

For schemes comprising bulk and distribution systems, the prices were bundled together, that is, the lower bound costs were established for the combined bulk and distribution activities.

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:

- (a) 2011-12 irrigation prices increase by CPI based on 2010-11 prices; and
- (b) 2012-13 irrigation prices would (the following year) increase by CPI based on 2011-12 prices (as calculated in (a)).

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: Previous and Current Review

<i>Issue</i>	<i>2006-11 Review</i>	<i>2013-17 Authority 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 variable)– 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 variable) – 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>
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 MP 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 - Fixed renewals, maintenance and 50% of operations costs allocated by HUF (or equivalent – refer Volume 2); 50% of operations by WAE (where different priority groups exist);</p> <p>(b) Distribution systems – Fixed costs all allocated by nominal WAE; and</p> <p>(c) Only variable costs reflected in volumetric tariffs – all allocated by water use.</p>

<i>Issue</i>	<i>2006-11 Review</i>	<i>2013-17 Authority Recommendation</i>
Distribution/Bulk Losses	Costs associated with distribution losses were allocated to distribution customers. Costs associated with bulk losses were allocated to bulk customers.	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.	For the Morton Vale Pipeline, the same approach as for 2006-11, unless 11 times the cost-reflective fixed distribution system tariff is negotiated. For the Pie Creek Distribution System, the Authority recommends termination fees of 11 times the cost-reflective fixed distribution system tariff.

Source: QCA (2012).

7.2 Total Costs

Based on the methodology outlined in previous chapters, the Authority has 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) 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 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 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>
<u><i>Bulk</i></u>					
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	2%
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%
<u><i>Distribution</i></u>					
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 has compared Seqwater's November 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 is less than 10% greater than average historical revenue offsets.

In eight tariff groups Seqwater has submitted higher revenue offsets than average past revenue, and in Logan WSS Seqwater submitted a revenue offset \$700 (3%) lower than the historical average.

As Seqwater's revised revenue offsets are consistent with, but slightly 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 November data. Total revenue offsets for each tariff group are detailed in the Volume 2 Draft Reports.

Recommendation:

The Authority recommends that Seqwater's (November) estimates of revenue offsets be accepted.

Summary of Total Costs

Base year costs for 2012-13, and forecasts for 2013-17 are presented in Table 7.3 in real terms.

Table 7.3: 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.	2,067	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). Note: Seqwater's April costs are the basis for this comparison, however, due to Seqwater's late inclusion of metering costs (after April), renewals costs are compared with Seqwater's November data.

Base year costs for 2012-13, and forecasts for 2013-17 are presented in Table 7.4 in nominal terms.

Table 7.4: 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.	2,118	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 recommended costs for each tariff group for 2013-14.

Table 7.5: 2013-14 Total Scheme Costs by Components – All Sectors (Nominal \$'000)

<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).

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 7.6 refers.

Table 7.6: 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	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 reduce 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 7.7 and Table 7.8 presents the average findings for both bulk and distribution systems by activity and then by expenditure type.

Table 7.7: 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 7.8: 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 7.7).

Stakeholder Submissions

Seqwater

Seqwater (2012s) submitted that all operations, maintenance and renewal costs do not 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 from the Mary River to Pie Creek irrigators.

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) support 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 considers 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, Mary Valley and Cedar Pocket Dam).

Other Jurisdictions

In Chapter 4: Pricing Framework it was noted that:

- (a) IPART (2010a) set a two-part tariff comprising a fixed and a usage charge (at a ratio of 70:30) for all metered users, and a one-part tariff for users without a meter for unregulated charges;
- (b) Murray Irrigation Limited (MIL) (NWC, 2010) set a fixed to variable charge ratio of approximately 78:6 with the balance (16%) collected through an infrastructure access and other charges;
- (c) in Victoria, 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 notes 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 has applied the Indec findings to Seqwater schemes.

In response to Seqwater's concerns about this application, the Authority considers 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 considers 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 considers that constant costs, with constant water use, are due to the incurrence of variable (and fixed) costs in a consistent manner. The Authority considers, 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 proposes 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 7.7 and 7.8 above. Table 7.9 refers.

Table 7.9: 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 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.

Recommendation:

The Authority recommends the application of fixed and variable tariff structures as presented in Table 7.9.

7.4 Fixed Charges

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 usage of water.

The Authority has identified in earlier chapters its preferred approach to allocating costs between medium and high priority WAE. This approach is summarised in Table 7.10.

Table 7.10: Authority’s Recommended Fixed Cost Allocation different Priority WAE

<i>Cost Category</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 7.11.

Table 7.11: Authority's Recommended Allocation of Fixed Revenue Requirement between High and Medium Priority WAE 2013-14 (\$'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><u>Bulk</u></i>				
Cedar Pocket Dam	0	119	0	119
Central Brisbane River	14,964	305	0	293
Central Lockyer Valley	9	956	9	952
Logan River	710	433	0	433
Lower Lockyer Valley	0	1,332	0	1,316
Mary Valley	818	626	5	542
Warrill Valley	977	588	0	491
<i><u>Distribution</u></i>				
Morton Vale Pipeline	0	54	0	54
Pie Creek	0	315	0	315
Total	17,477	4,728	14	4,515

Source: QCA (2012).

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 total 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 issue then becomes to find the volume consistent with a typical year.

Unfortunately, usage in each Seqwater scheme has been highly variable over the last decade with no discernible year to year consistency. Furthermore, usage is more variable than for SunWater where the Authority adopted the highest five of the eight years of usage as a basis for establishing the per ML volumetric charge.

As the notion of typical costs relates to management practices which seek to ensure services are made available when required, the Authority has adopted a water use estimate based on the average of those years that exceed the ten year average for each tariff group. A longer term estimate (say the past 15 years) would 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.

Total variable costs (all sectors), the estimate of typical all sectors water use and the resulting volumetric charge for each tariff group are presented in Table 7.12.

Table 7.12: Derivation of Cost-Reflective 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.

7.6 Cost-Reflective Fixed and Volumetric Tariffs

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 of the tariff is based on WAE in each tariff grouping, while the variable (Part B) charge reflects the Authority's estimate of typical water use for the scheme as a whole.

Current 2012-13 tariffs, Seqwater's (April and November) proposed tariffs for 2013-14 and the Authority's cost-reflective tariffs for 2013-14 are presented in Table 7.13.

Bundled prices set out below allow a comparison with existing bundled prices.

Table 7.13: Cost-Reflective Tariffs by Tariff Group (Nominal \$/ML)

<i>Tariff Group</i>	<i>Actual</i>	<i>Seqwater (April)</i>	<i>Seqwater (November)</i>	<i>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).

7.7 Queensland Government Pricing Policies and Draft Prices

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.

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 7.14.

Table 7.14: 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>Bulk</i>				
Cedar Pocket	11.6	116.6	105.0	10%
Central Brisbane River	0.0	291.8	291.8	n.a.
Central Lockyer	249.9	709.3	459.3	35%
Logan River	317.9	397.3	79.5	80%
Lower Lockyer	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>Distribution</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 the determining the revenue the Government wants to be maintained), it would necessarily result in low revenues from the volumetric charge, with the balance of the revenue required to be maintained in real terms coming from the fixed charge.

If conditions returned to normal, 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 7.15 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 7.15: 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 7.14) 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 7.14 further above). The increase is calculated as current revenue plus the Authority's \$2/ML real increase to Part A 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 7.16 refers.

Table 7.16: 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 Brisbane River	Mary Valley
Central Lockyer	Warrill Valley
Lower Lockyer	
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 scheme reached 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 found to be 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 7.14). 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 7.14). 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 7.14). 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 is 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 has considered a price path that 'moderates the price impacts on irrigators' and has 'regard for Seqwater's legitimate commercial interests'.

For reasons specified above, the Authority recommends that the cost-reflective volumetric charge (Part B) of \$12.31/ML apply from 1 July 2013.

The cost-reflective Part A charge is \$38.34/ML in 2013-14. The Authority does not consider it appropriate for prices to start at this level, as the Ministerial Direction requires a moderation of price impacts.

Applying the Authority's general approach to setting fixed charges would result in an opening Part A charge of \$2/ML. However, such an approach does not have sufficient regard for Seqwater's legitimate commercial interests and is unlikely to promote water trading. As no charge has previously applied, the Authority expects that introduction of charges to result in increased water trading as some irrigators who do not use their WAE may seek to avoid the fixed charge.

The Authority considers that water should move to its best and highest value use, and the trading from an unproductive owner, to a productive owner will increase agricultural output and economic activity. Accordingly, the Authority considers that the fixed charge should promote trading.

The starting Part A charge should balance Seqwater's commercial interest and the promotion of trading with the need to allow irrigators the time to adjust. Therefore, the Authority has given consideration to charges faced by (competing) irrigators in neighbouring WSSs. Under such an approach, the initial Part A tariff for the Central Brisbane River WSS is the simple numerical average of recommended 2013-14 Part A tariffs in the Logan River, Lower Lockyer Valley and Warrill Valley WSSs.

Central Lockyer WSS is also relevant geographically but no Part A charge applies until 1 July 2015, so it has been excluded from this calculation.

The average of the recommended Part A tariffs for 2013-14 is \$22.66/ML. This starting price in the Central Brisbane River WSS moderates the price impact on irrigators and accommodates Seqwater's legitimate commercial interests (compared to a starting Part A of \$2/ML).

Moreover, a Part A of \$22.66 would better promote permanent and temporary water trading in the scheme than a starting Part A of \$2/ML. That is, with a higher (Part A) holding cost associated with WAE, water trading will likely increase, moving WAE to higher value uses.

The Authority considers that the real increase of fixed charges by \$2/ML of WAE per annum, that the Authority has applied to other tariff groups, is appropriate to apply to the Central Brisbane River WSS from 2014-15 to 2016-17.

7.8 Draft Prices

On the basis of the above analysis and principles, and the Ministerial Direction to at least maintain real (2006-12) revenues, the Authority recommends the prices outlined in Table 7.17 and Table 7.18. The Authority's prices are presented in nominal terms for 2012-17.

Table 7.17: Recommended Bulk WSS Prices 2006-17 (Nominal \$/ML)

Scheme	Past Prices							Recommended Prices			
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Cedar Pocket Dam											
Fixed (Part A)	8.20	9.72	11.52	13.27	14.94	15.48	15.68	9.70	11.99	14.39	16.91
Volumetric (Part B)	8.78	10.41	12.34	14.21	16.01	16.59	16.81	32.02	32.82	33.64	34.48
Central Brisbane River											
Fixed (Part A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.66	25.28	28.01	30.86
Volumetric (Part B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.31	12.62	12.94	13.26
Central Lockyer Valley											
Fixed (Part A) #	0.00	2.92	5.84	8.87	11.79	12.21	12.37	0.00	0.00	17.87	20.47
Volumetric (Part B)	27.36	28.16	29.51	30.44	31.35	32.48	32.91	18.48	18.94	19.42	19.90
Logan River											
Fixed (Part A)	14.56	14.96	15.68	16.19	16.67	17.27	17.50	21.87	24.47	27.18	28.40
Volumetric (Part B)	23.22	23.90	25.05	25.84	26.61	25.57	27.93	15.27	15.65	16.04	16.45
Lower Lockyer Valley											
Fixed (Part A)	15.88	17.52	19.60	21.50	23.33	24.17	24.49	25.72	28.41	31.23	34.16
Volumetric (Part B)	19.41	21.43	24.00	26.32	28.57	29.60	29.99	43.77	44.87	45.99	47.14
Mary Valley											
Fixed (Part A)	10.44	10.76	12.68	14.84	17.06	17.67	17.90	19.95	22.49	25.16	26.83
Volumetric (Part B)	6.53	6.72	7.92	9.27	10.66	11.04	11.19	8.42	8.63	8.84	9.06
Warrill Valley											
Fixed (Part A)	5.20	16.42	17.00	17.54	18.06	18.71	18.96	20.39	20.90	21.42	21.96
Volumetric (Part B)	18.60	19.14	20.06	20.69	21.31	22.08	22.37	34.52	35.39	36.27	37.18

Source: QCA (2012). Note: The Authority recommends that Central Lockyer tariff group bulk customers do not pay Part A in 2013-14 and 2014-15 as no nominal WAE have been issued at the customer level.

Table 7.18: Recommended Distribution System Prices 2006-17 (Nominal \$/ML)

WSS	Past Prices							Recommended Prices			
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Central Lockyer Valley – Morton Vale Pipeline Only Bulk Charges											
Fixed (Part A)*			-	-	-	-	n.a.	13.01	15.39	17.87	20.47
Volumetric (Part B)			-	-	-	-	n.a.	9.35	9.59	9.83	10.07
Morton Vale Pipeline											
Fixed (Part C)-		-	-	-	-	-	n.a.	13.06	13.38	13.72	14.06
Volumetric (Part D)-		-	-	-	-	-	n.a.	24.84	25.46	26.10	26.75
Morton Vale Pipeline (Bundled)											
Fixed (Part A + C)	14.60	15.96	17.76	19.38	20.94	21.69	21.98	26.07	28.77	31.59	34.53
Volumetric (Part B + D)	24.99	27.39	30.47	33.23	35.90	37.19	37.68	34.19	35.05	35.93	36.82
Mary Valley											
Fixed (Part A)	-	-	-	-	-	-	n.a.	19.95	22.49	25.16	26.83
Volumetric (Part B)	-	-	-	-	-	-	n.a.	8.42	8.63	8.84	9.06
Pie Creek											
Fixed (Part C) #	-	-	-	-	-	-	n.a.	0.00	0.00	0.00	0.00
Volumetric (Part D)	-	-	-	-	-	-	n.a.	180.45	184.96	189.58	194.32
Pie Creek (Bundled)											
Fixed (Part A + C)	29.64	31.60	34.28	36.52	38.71	40.10	40.63	8.37	10.63	12.99	15.47
Volumetric (Part B + D)	42.36	45.15	48.96	52.18	55.30	57.29	58.03	188.87	193.59	198.43	203.39

Source: QCA (2012). Note* Bulk Part A prices apply only to Morton Vale Pipeline (not river and groundwater) customers of Central Lockyer WSS in 2013-14 and 2014-15. # Pie Creek Fixed Part C is zero due to revenue maintenance requirements.

Termination Fees

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 current contractual arrangements continue to have effect, but has presented the outcome of the Authority's method to establish an indicative termination fee.

The Authority also considers that a termination fee should apply in Pie Creek.

The Authority recommended termination fees for 2013-17, based on the cost-reflective fixed tariff and not the recommended fixed tariff. The recommended price is not used because the

published recommended price may not be cost reflective for a number of years. However termination fees need to recover fixed costs from 1 July 2013 and avoid any perverse incentive for customers to exit tariff groups early in the 2013-17 regulatory period.

The termination fees for the 2013-17 regulatory period are shown in Table 7.19.

Table 7.19: Termination Fees

Tariff Group	2013-14	2014-15	2015-16	2016-17
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

Source: QCA (2012)

7.9 Broader Implications of Recommended Prices

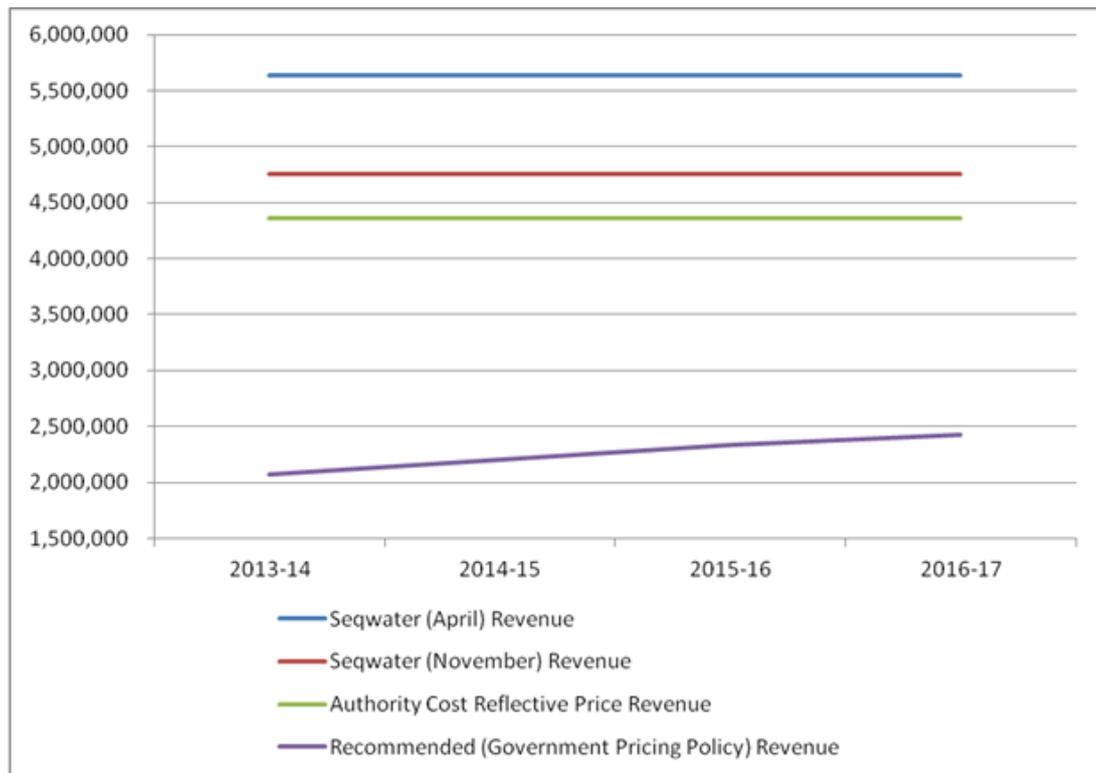
As a result of the rebalancing of the tariff structures from those prevailing in 2006-11, the implications of the final prices are best assessed in terms of their impact on the total revenues implied for SunWater or, for a customer, on the basis of individual water bills.

Together with the safeguards provided within the regulatory framework being recommended, the Authority considers Seqwater's legitimate commercial interests have been taken into account within the context of the provisions of the Ministerial Direction.

Seqwater (or a customer) can apply for within or end of period adjustments for material uncontrolled cost increases. Combined with the revised tariff structures (ensuring Seqwater receives a higher proportion of all revenue as fixed income); this supports the view that the Authority has provided an appropriate regulatory and pricing framework.

The impact of the cost-reflective prices and the recommended prices which reflect Government pricing policy on Seqwater's forecast total revenues (irrigation only) for 2013-17 are outlined in Figure 7.1. They are compared with the Authority's estimate of Seqwater's forecast revenues in its NSPs.

Figure 7.1: Comparison of Irrigation Revenues 2012-17 (Real \$)



Key components of the differences between Seqwater and the Authority’s recommended approach are presented in Figures 7.2 and 7.3. Some differences reflect cost savings while others reflect differences in methodology (which allocate costs to non-irrigation customers).

Figure 7.2: Differences between Seqwater (April) and QCA Cost-Reflective Irrigation Revenues (2012-13)

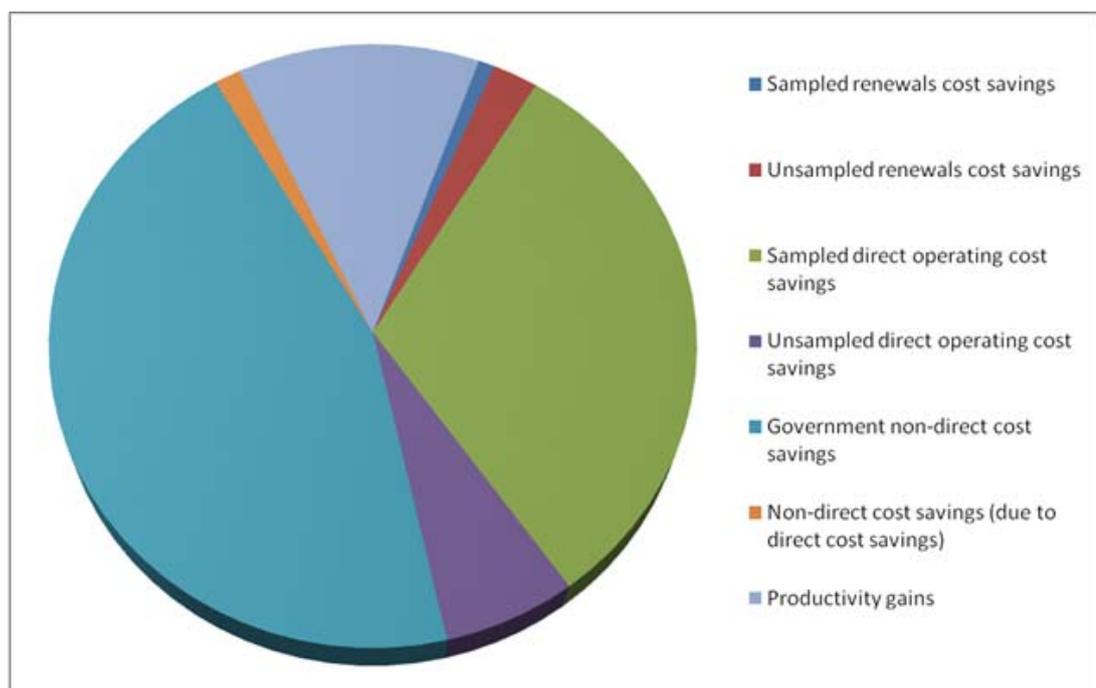
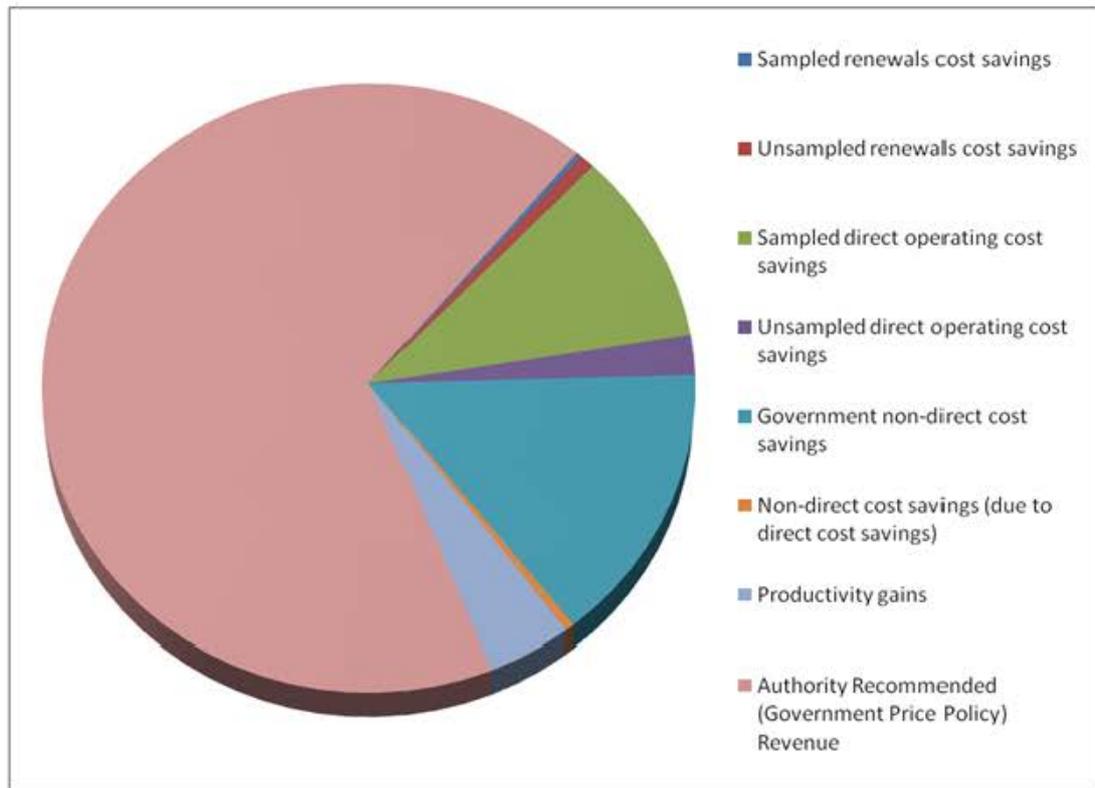


Figure 7.3: Differences between Seqwater’s April Proposed Revenues and QCA Recommended (Government Pricing Policy) Irrigation Revenues (2012-13)



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

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- 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*.

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6 January 2012]

QUEENSLAND GOVERNMENT GAZETTE No. 2

19

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 recommends 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 will recalculate the discount rate (with updated market parameters) for the Final Report (due 30 April 2013), subject to consideration of stakeholder submissions.

The Authority is researching WACC issues generally and findings will be available for public comment, however, this research will not likely be 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 Asset Pricing Model (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 notes 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 considers 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 credits⁹. 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).

⁹ 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 market risk premium (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 Water Grid Manager. 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)¹⁰. 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).

¹⁰ 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 considers 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 acknowledges that firms subject to a fixed regulatory cycle may issue longer-term debt, due to concerns about refinancing risk. However, refinancing risk is not a matter to be resolved through in-principle argument but with reference to empirical evidence of market comparators.

To address the issue of refinancing risk, the Authority accepts that it is efficient debt policy for a firm to undertake swaps to convert the firm's schedule of debt to one that aligns with the regulatory cycle. Estimates of allowances for these costs are discussed further below.

Consequently, the Authority retains its position that, even in the presence of refinancing risk, the term of the risk-free rate in both the cost of equity and the cost of debt should be set equal to the regulatory cycle, with other adjustments to be made to accommodate refinancing risk.

The new 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 is 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 is 2.55% per annum.

Market Risk Premium

In the CAPM model, the market risk premium (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 proposes 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 considers 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 considers 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 proposes 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 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 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 considers 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 has 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 considers 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 proposes 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 proposes 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 considers 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 its other recent decisions¹¹.

For the Seqwater investigation, the Authority has 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 4-year debt margins where the 10-year debt margin is estimated using the AER's current approach¹².

In summary, the Authority's estimate of Seqwater's cost of debt is 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 October 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 October 2012 of 5.861% per annum.

¹¹ For example, see GAWB (2010), QR (2010), SEQ Interim Price Monitoring (2011).

¹² 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 October 2012, the indicative cost of debt is 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 notes 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 proposes 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 has 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 has applied this approach to calculate an indicative nominal post-tax WACC of 5.86% per annum as at 2 October 2012, as outlined in Table 1. As stated previously, the Authority proposes to update this estimate for its Final Report.

For comparison purposes, the interim parameter values and WACC proposed by Seqwater are also provided along with the Authority's final parameter values and WACC for SunWater's irrigation activities.

Table 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 has 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).

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