Industry Panel

Review of the Independent Competition and Regulatory Commission's 2013 Price Direction

for Regulated Water and Sewerage Services in the ACT

Draft Report

December 2014

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The Industry Panel is established under the *Independent Competition and Regulatory Commission Act 1997*, following an application by ACTEW for the review of the Independent Competition and Regulatory Commission's Price Direction for Regulated Water and Sewerage Services, 1 July 2013 to 30 June 2019.

The Industry Panel is constituted under the Act as one President and two members.

The Panel Members are President Ms Mary Anne Hartley QC, and Members Ms Sally Farrier and Ms Claire Thomas PSM.

Correspondence or other inquiries may be directed to the Industry Panel at the addresses below:

Industry Panel
GPO Box 158
Canberra ACT 2601

The Secretariat of the Industry Panel can be contacted by telephone on (02) 6207 6128, or by fax on (02) 6207 0267 or via email at industrypanel@act.gov.au

Further details of the Industry Panel process can be found at: http://apps.treasury.act.gov.au/industrypanel.

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How to make a submission

The Industry Panel is seeking comment from interested stakeholders and the general public in relation to the contents of this report. The Panel would prefer submissions to be lodged electronically and emailed to:

industrypanel@act.gov.au

The Panel encourages interested parties to make submissions in either *Microsoft Word* format or PDF (OCR readable text format – that is, they should be direct conversions from the word-processing program, rather than scanned copies in which the text cannot be searched).

Alternatively, submissions may be faxed to the Panel on **(02) 6207 0267**, or posted to the following address:

Industry Panel
GPO Box 158
Canberra ACT 2601

Submissions on this draft report must be received by the Panel no later than **Friday, 23 January 2015**.

Public consultation is a crucial element of the Panel's review process, and all submissions it receives will be treated as public and be published on the Panel's website unless the author of the submission indicates clearly that all or part of the submission is confidential and not to be made available publicly.

Where confidential material is claimed, the Panel prefers that this be under a separate cover and clearly marked 'In Confidence'. The Panel will assess the author's claim and discuss appropriate steps to ensure that confidential material is protected while maintaining the principles of openness, transparency, consistency and accountability.

If the Panel considers, in its sole judgement, that the content of a submission is inappropriate for any reason (such as being defamatory), it may choose not to publish that submission in part or full.

Every submission is welcome, but multiple, identical submissions do not carry any more weight than a single submission.

The Panel's Secretariat may be contacted at the above addresses, or by telephone on (02) 6207 6128.

As soon as possible after the closing date, submissions will be uploaded to the Panel's website, which can be found at:

http://apps.treasury.act.gov.au/industrypanel

Name change

ACTEW Corporation Limited (using the business name ACTEW Water) registered its change of name to Icon Water Limited (Icon Water) on 28 October 2014.

The Panel understands that the brand 'Icon Water' is being implemented in stages from November 2014, with the business name 'ACTEW Water' continuing to be used into the first half of 2015.

For the sake of simplicity, the entity is referred to as 'ACTEW' for the purposes of this draft report.

Abbreviations and acronyms

ACCC	Australian Competition and Consumer Commission
ACTEW	The term ACTEW is used to refer to ACTEW Corporation Ltd, Icon Water Ltd and ACTEW Water.
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
CAPM	Capital Asset Pricing Model
CIE	Centre for International Economics
CPA	Competition Principles Agreement
CPI	consumer price index
CSO	Community Service Obligation
ECD	Enlarged Cotter Dam
ERA	Economic Regulatory Authority (Western Australia)
ESC	Essential Services Commission (Victoria)
ESCOSA	Essential Services Commission of South Australia
FCR	Fair Cost Recovery Scheme
FFO	funds from operations
GL	gigalitre
ICRC	Independent Competition and Regulatory Commission
ICRC Act	*Independent Competition and Regulatory Commission Act* 1997 (Act)
IPART	Independent Pricing and Regulatory Tribunal (NSW)
kL	kilolitre
LMWQCC	Lower Molonglo Water Quality Control Centre
M2G	Murrumbidgee to Googong Pipeline
MRP	market risk premium
NER	National Electricity Rules
NGR	National Gas Rules
NPV	net present value
Panel	Industry Panel
QCA	Queensland Competition Authority
RAB	regulated asset base
RBA	Reserve Bank of Australia
S-L CAPM	Sharpe-Lintner Capital Asset Pricing Model
SOFC	Statement of facts and contentions
UMA	Utilities Management Agreement
UNFT	Utilities Network Facilities Tax
WAC	Water Abstraction Charge
WACC	weighted average cost of capital

Glossary

biennial recalibration	Mechanism adopted by the ICRC to review the key pricing parameters of its price direction during the regulatory period
bounce back	An increase in water use following a period of reduced water demand
Breusch-Ward model	The regression model used by ACTEW to forecast water sales
building block model	The underlying cost components that sum to the allowed revenue of the regulated business (ie, the return on capital, depreciation (also known as the return of capital) the operating expenditure, and various other components such as net tax liabilities)
capital expenditure	Expenditure that a business incurs to buy fixed assets or to add to the value of an existing fixed asset with a useful life extending beyond the taxable year
consumer price index (CPI)	The consumer price index published by the Australian Bureau of Statistics
cost pass-through mechanism	A mechanism, that enables a regulated business to recover certain uncontrollable costs through over the regulatory period (eg, changes in the water abstraction charge, and changes in other government charges)
current regulatory period	The period commencing 1 July 2013 and expiring 30 June 2018
deadband	The range around water sales revenue, beyond which compensatory adjustments are made to the revenue requirement in the subsequent regulatory period
depreciation	An allowance that enables the regulated business to recover its investment in the asset over the economic life of the asset (also referred to as the return of capital)
fixed charge / fixed service fee	A charge for a service that is the same regardless of the quantity used
form of price control	The manner in which prices or revenue are regulated - for example, price caps or revenue caps
inclining block tariff	The provision of two or more prices for water used, whereby each price applies to a customer's use within a defined tier. Prices rise with each successive tier
indexation	An adjustment to take into account the effect of inflation on the regulated asset base (2.5% inflation forecast)
Millennium Drought	The name commonly given to the prolonged drought that affected south-eastern Australia between 1997 and 2009
nominal dollars	Dollars expressed in 'money of the day' terms
operating expenditure	The non-capital costs of operating and maintaining a product or service
previous regulatory period	The period commencing 1 July 2008 and expiring 30 June 2013
price cap	An imposed limit on how high a price is charged for a product
real dollars	Dollars expressed as a constant value - ie, adjusted to take account of inflation

remaining economic life	The remaining period over which an asset will be used to provide services
revenue cap	An approved maximum amount of revenue that a regulated business is allowed to collect in each year of the regulatory period
revenue requirement	The revenue required by the regulated business to cover efficient operating costs, a return on capital, depreciation and net tax liabilities
tariff structure	The way in which prices are organised, which can provide different incentives and signals to customers - for example, a two-part tariff (a fixed service charge and an inclining block tariff variable charge)
true-up	Adjustment made to take into account the over- or under-recovery of revenue as a result of adopting the ICRC's prices for 2013-14 and 2014-15
'unders and overs' mechanism	A mechanism to ensure that any under (or over) recovery in a particular year can be recovered from (or passed back to) customers
variable charge	A charge for a product/service based on the quantity used. Also known as a volumetric charge
Weighted Average Cost of Capital (WACC)	The general form of the opportunity cost (or discount rate) most commonly used and accepted in regulatory practice in Australia, and is the weighted sum of the costs of debt and equity finance

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1 Introduction and executive summary

The Industry Panel was appointed in April 2014 by the ACT Treasurer to review the price direction released by the Independent Competition and Regulatory Commission (ICRC) in June 2013 for prices applying to water and sewerage services in the ACT (see Box 1.1).

The review was initiated by ACTEW Corporation Limited (ACTEW) (now operating as Icon Water Ltd – see page v) in September 2013, under the appeal process provided for in the *Independent Competition and Regulatory Commission Act 1997* (the Act). Under the Act, the Panel must:

- either substitute a new price direction for the original price direction, or confirm the original price direction, and
- make its decision on the merits of the case, having regard to the legislation that governs the price direction.

The Panel has completed the first phase of its review and made its draft decision. The purpose of this report is to set out the draft decision and explain the Panel's reasons for reaching this decision. The Panel is now seeking feedback from the ACT community, which it will take into account before making its final price direction.

Box 1.1: Original price direction

The ICRC is responsible for regulating the prices ACTEW charges for water and sewerage services in the ACT. The ICRC's current price direction covers the six-year period from 1 July 2013 to 30 June 2019.

The ICRC determined that ACTEW's maximum prices for water services should increase by 4.9% in 2013-14, while its maximum price for sewerage services should fall by 18.1%. For 2014-15, it provided for prices to be adjusted to account for the change in the consumer price index and any pass-through events.

To deal with uncertainties about ACTEW's expenditure and customer demand over the regulatory period, the ICRC did not set prices for the entire length of the period. Instead, it made provision for prices in later years to be established through two 'biennial recalibrations', to be conducted in 2015-16 and 2017-18. This process was to involve examining the key parameters in its price setting approach.

1.1 The Panel's draft decision is to substitute a new price direction

Based on its review, the Panel's draft decision is to substitute a new price direction that sets prices until 30 June 2018, without the need for a recalibration process. The draft substitute price direction that would give legal effect to this decision is appended to this report.

In reaching this draft decision, the Panel has conducted analysis and modelling and sought expert advice to form its own view on the costs of providing ACTEW's water and sewerage services, and the forecast demand for these services, over the regulatory period.

The Panel considers that its draft price direction will provide more stability and greater certainty for ACTEW and its customers, and greater incentives for ACTEW to pursue efficiencies. It also considers its draft direction will reduce regulatory costs over the regulatory period.

1.2 The Panel's draft direction covers a five-year regulatory period without a biennial recalibration process

The Panel's draft price direction sets prices for the five-year period ending on 30 June 2018.

Although the original pricing direction covers the six years to 30 June 2019, the ICRC determined maximum prices for the first two years of this period only. It introduced a biennial recalibration process to determine prices for 2015-16 and 2017-18.

In deciding whether to retain the biennial recalibration process or set prices for the full regulatory period, the Panel considered:

- the risks and uncertainties facing ACTEW and its customers in this period, and the options for managing these risks
- the relative costs and benefits of the biennial recalibration process
- whether these benefits can be achieved through other less costly measures, and
- the appropriate length of the regulatory period, taking account of its findings on the above matters and the information available to it.

The main risks facing ACTEW and its customers in this regulatory period are the risks that prices will be set either too low or too high due to uncertainties about actual expenditures and demand. The Panel recognises that, as a result of these uncertainties, actual expenditure and demand are likely to deviate to some extent from the forecasts used to set regulated prices. However, in the Panel's view, the risk of significant deviations over the current regulatory period can be dealt with effectively and proportionately by adopting the following form of regulatory control and risk allocation tools:

- A hybrid price and revenue cap form of control with individual price caps for water and sewerage charges and a demand volatility adjustment mechanism that will be triggered if deviations between actual and forecast water sales revenue fall outside a 7% deadband.
- A consumer price index (CPI) escalation mechanism, which will provide ACTEW with some protection against changes in inflation over the period.
- An annual cost pass-through mechanism, which will provide ACTEW and customers with some protection against changes in government charges and other material changes (positive and negative) in ACTEW's uncontrollable costs over the period.
- An *ex post* capital expenditure review, which will allow the ICRC to assess the prudence and efficiency of the capital expenditure actually incurred by ACTEW over the current regulatory period before rolling it into the regulated asset base in the next determination.
- A price variation trigger event mechanism, which will be used to deal with any major unforeseen event that may occur in the period.

Table 1.1 compares the Panel's draft decision on the regulatory period, form of control and other risk allocation measures, with the ICRC's final decision and ACTEW's proposal as outlined in its Statement of Facts and Contentions (SOFC).

Table 1.1: Comparison of regulatory period, form of control and other risk allocation measures

	Panel's draft decision	Original price direction (ICRC's final decision)	ACTEW's SOFC proposal
Length of regulatory period	Five years (1 July 2013 to 30 June 2018) with no biennial recalibrations.	Six years (1 July 2013 to 30 June 2019) with two biennial recalibrations during in the period.	Five years (1 July 2013 to 30 June 2018) with no biennial recalibrations.
Form of control	Hybrid price and revenue cap, with individual price caps for water and sewerage charges and a demand volatility adjustment mechanism to account for deviations between actual and forecast volumetric water sales revenue in excess of a 7% deadband over the full five year regulatory period (2013-14 to 2017-18).	Individual price caps, with maximum prices for water and sewerage.	Revenue cap with an 'unders and overs' mechanism to ensure that any under (or over) recovery in a particular year can be recovered from (or passed back to) customers.
Measures to deal with demand risks	If this mechanism is triggered then the ICRC will be required through a reset principle to include any under or over recovery of revenue (measured in NPV terms) in the calculation of ACTEW's revenue requirement for water for the next regulatory period.	Biennial recalibrations of water sales and customer numbers. Conservative water sales estimate used in setting the tier 1 and tier 2 prices for the volumetric water charges.	'Adaptive approach' to estimating prices, which involves updating the volumetric and supply charges each year to reflect updated water sales forecasts (estimated using the Breusch-Ward model) and the latest customer and fixture numbers.
Measures to deal with expenditure risks	CPI escalation mechanism. Ex post capex review. Annual cost pass-through mechanism to deal with changes in Commonwealth subvention payments, changes in the amount ACTEW is required to pay the ACT Government for the Water Abstraction Charge (WAC), Utilities Network Facilities Tax (UNFT), changes in taxes, changes in service standards, changes in regulation and the Tantangara Transfer Payment event. The materiality threshold for this mechanism will be $0 for WAC, UNFT and subvention payments, and $2 million ($2012-13) per event for all other cost pass-through categories.	Biennial recalibrations of expenditure. CPI escalation mechanism in intervening years. Cost pass-through mechanism in intervening years to deal with changes in subvention payments and the WAC and UNFT.	CPI escalation mechanism. Cost pass-through mechanism to deal with changes in taxes, contingent capital expenditure projects, changes in subvention payments, changes in service standards and changes in regulation. A materiality threshold of $1 million ($2012-13) for cost pass-through events, with the exception of subvention payments and the WAC and UNFT, where no materiality threshold applies.
Measures to deal with unforeseen events	Price variation trigger event mechanism to deal with the following unforeseen events if they satisfy the materiality threshold: an act of terrorism; a major natural disaster; major damage to infrastructure; a significant change in ACTEW's financial or corporate structure; and a force majeure event. The materiality threshold will be defined as 'an event that severely restricts ACTEW's ability to provide services' and imposes a total annualised cost on ACTEW for the remainder of the regulatory period of more than $12 million ($2012-13).	A price variation trigger event mechanism, which allows the ICRC to initiate a variation to the price direction if there is an act of terrorism, major natural disaster, major damage to infrastructure, a significant change in ACTEW's financial or corporate structure, an unforeseen or force majeure event.	Cost pass-through mechanism to deal with a major natural disaster. A materiality threshold of $1 million ($2012-13) for this type of event.

1. 3 The Panel's draft price direction provides stability in prices and bills

Because this review is being conducted part-way through the regulatory period, and the prices determined under the original price direction for 2013-14 and 2014-15 have already been used to calculate customer bills in these years, the Panel does not intend to change these prices retrospectively.

For the remaining three years of the regulatory period (2015-16 to 2017-18), the Panel's draft decision is to adopt the maximum charges and price path set out in Table 1.2.

Table 1.2: Draft decision – Maximum water and sewerage charges and price path

	2013-14	2014-15	2015-16	2016-17	2017-18
	Prices set by the ICRC and paid by customers		Price path for the remaining years*		
Water					
Fixed ($ pa)	100	102.56	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)
Tier 1 (0-200 kL pa) ($/kL)	2.55	2.64	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)
Tier 2 (0-200 kL pa) ($/kL)	5.10	5.29	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)
Sewerage					
Supply charge ($ pa)	492.02	505.41	(1+CPI)×(1+2.4%)	(1+CPI)	(1+CPI)
Fixtures charge – non-residential customers ($ pa)	481.18	494.28	(1+CPI)×(1+2.4%)	(1+CPI)	(1+CPI)

*Note: The price path is also subject to the operation of the cost pass-through mechanism.

Table 1.3 sets out the **indicative** water and sewerage charges payable under this draft decision, assuming the inflation rate (as measured by the CPI) is 2.5% per annum, and the cost pass-through mechanism is not triggered (for example, by changes to the Water Abstraction Charge or Utilities Network Facilities Tax). In other words, the table indicates the underlying price impacts of the Panel's draft price direction, but not the potential impacts of any pass-through events that may occur.

Table 1.3: Indicative maximum water and sewerage charges ($, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
	Prices set by the ICRC and paid by customers		Indicative estimates*		
Water charges					
Fixed ($ pa)	100.00	102.56	97.21	97.21	97.21
Tier 1 (0-200 kL pa) ($/kL)	2.55	2.64	2.50	2.50	2.50
Tier 2 (0-200 kL pa) ($/kL)	5.10	5.29	5.01	5.01	5.01
% Change on previous year					
Fixed ($ pa)	0.2%	2.6%	-5.2%	0.0%	0.0%
Tier 1 (0-200 kL pa) ($/kL)	4.9%	3.5%	-5.2%	0.0%	0.0%
Tier 2 (0-200 kL pa) ($/kL)	4.9%	3.7%	-5.2%	0.0%	0.0%
Sewerage charge					
Supply charge ($ pa)	492.02	505.41	530.34	543.60	557.18
Fixtures charge ($ pa)	481.18	494.28	518.66	531.62	544.91
% Change on previous year					
Supply charge ($ pa)	-18.1%	2.7%	4.9%	2.5%	2.5%
Fixtures charge ($ pa)	-18.1%	2.7%	4.9%	2.5%	2.5%

*Note: the actual water charges payable in the remaining three years could differ from the indicative charges in this table if actual inflation differs from forecast inflation and/or if the cost pass-through mechanism is triggered.

As this table shows, the effect of the Panel's draft decision is to:

- **Reduce** the water supply charges by approximately 5.2% in 2015-16 from current levels, and hold them constant in nominal terms in 2016-17 and 2017-18.[1]
- **Increase** sewerage charges by approximately 4.9% in 2015-16 from current levels, and then adjust these charges for changes in CPI over the following two years.[2]

Table 1.4 translates what these indicative prices will mean for the annual water and sewerage bills of residential customers (for varying levels of water consumption) over the five-year regulatory period. The grey shaded row in this table highlights the effects the changes are likely to have on a typical residential customer that consumes 200 kL pa.

The draft decision changes the mix of water and sewerage bill amounts. But in most cases (assuming inflation remains around 2.5% and no cost pass-through events occur), there is only a minimal increase in the combined bill amount over the rest of the period. In addition, this increase is less than the expected rate of inflation over this period.

The Panel is satisfied that the prices under the draft direction are unlikely to have a material impact on the bills of vulnerable customers.

1 This is subject to the cost pass-through mechanism and actual inflation. If inflation is greater than 2.5% pa between 2015-16 and 2017-18, then prices will rise in nominal terms. If inflation is less than 2.5% pa in these years, then prices will fall in nominal terms.

2 ibid.

Table 1.4: Indicative impacts on residential water and sewerage bills ($, nominal)

Annual water consumption (kL)	Annual bill						Change from current bill (2014-15 to 2017-18)	Change over regulatory period (2012-13 to 2017-18)
		Prices set by the ICRC and paid by customers		Panel Draft Decision indicative estimates*				
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18		
50 kL	822	720	740	753	766	780	40	-42
% change		*-12%*	*3%*	*2%*	*2%*	*2%*	*5%*	*-5%*
100 kL	943	847	872	878	891	905	33	-39
% change		*-10%*	*3%*	*1%*	*2%*	*2%*	*4%*	*-4%*
150 kL	1,065	975	1,004	1,003	1,016	1,030	26	-35
% change		*-8%*	*3%*	*0%*	*1%*	*1%*	*3%*	*-3%*
200 kL	1,209	1,125	1,160	1,151	1,164	1,178	18	-31
% change		*-7%*	*3%*	*-1%*	*1%*	*1%*	*2%*	*-3%*
250 kL	1,429	1,357	1,400	1,379	1,392	1,406	5	-24
% change		*-5%*	*3%*	*-2%*	*1%*	*1%*	*0%*	*-2%*
300 kL	1,672	1,612	1,665	1,629	1,643	1,656	-9	-16
% change		*-4%*	*3%*	*-2%*	*1%*	*1%*	*-1%*	*-1%*
400 kL	2,158	2,122	2,194	2,131	2,144	2,158	-36	-1
% change		*-2%*	*3%*	*-3%*	*1%*	*1%*	*-2%*	*0%*
500 kL	2,644	2,632	2,723	2,632	2,645	2,659	-64	15
% change		*0%*	*3%*	*-3%*	*1%*	*1%*	*-2%*	*1%*
750 kL	3,859	3,907	4,045	3,886	3,899	3,913	-133	53
% change		*1%*	*4%*	*-4%*	*0%*	*0%*	*-3%*	*1%*

*Note: Indicative bills assume inflation of 2.5% pa and no material changes in costs or Government charges that would trigger the cost pass-through mechanism.

Table 1.5 presents indicative bill impacts for non-residential customers. These bills are also expected to be reasonably stable over the five years to 30 June 2018. As the table shows the likely bill changes over the period range from 7% decreases to 2% increases over the five years of the regulatory period, depending on the level of annual water consumption and number of billable fixtures.

Table 1.5: Indicative impacts on non-residential water and sewerage bills ($, nominal)

Annual water consumption (kL)	Number of billable fixtures	Annual bill						Change from current bill (2014-15 to 2017-18)	Change over regulatory period (2012-13 to 2017-18)
			Prices set by the ICRC and paid by customers		Panel Draft Decision indicative estimates*				
		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18		
1,000	10	10,949	9,994	10,311	10,326	10,469	10,615	3%	-3%
	50	34,445	29,241	30,082	31,072	31,734	32,412	8%	-6%
	100	63,816	53,300	54,796	57,005	58,315	59,658	9%	-7%
2,000	10	15,809	15,094	15,601	15,340	15,483	15,629	0%	-1%
	50	39,305	34,341	35,372	36,086	36,748	37,426	6%	-5%
	100	68,676	58,400	60,086	62,019	63,329	64,672	8%	-6%
5,000	10	30,389	30,394	31,471	30,383	30,526	30,672	-3%	1%
	50	53,885	49,641	51,242	51,129	51,791	52,469	2%	-3%
	100	83,256	73,700	75,956	77,062	78,372	79,714	5%	-4%
10,000	10	54,689	55,894	57,921	55,454	55,596	55,743	-4%	2%
	50	78,185	75,141	77,692	76,200	76,861	77,540	0%	-1%
	100	107,556	99,200	102,406	102,133	103,443	104,785	2%	-3%

*Note: Indicative bills assume inflation of 2.5% pa and no material changes in costs or Government charges that would trigger the cost pass-through mechanism.

The Panel has considered the impacts of its draft direction and is satisfied that its proposed prices should enable ACTEW to earn sufficient revenue to operate, maintain, renew or develop the assets required to deliver services in the remainder of the regulatory period. In addition, the Panel is satisfied that ACTEW will remain financially viable under the draft price direction.

1.4 How does the Panel's draft direction differ from the original price direction and ACTEW's proposal?

Any pricing direction involves many constituent detailed decisions, including decisions about the overarching methodology and the value of parameters. In many cases, at the individual decision level, the Panel's draft direction does not differ significantly, if at all, from the original price direction. However, in some cases, there are significant points of difference. Table 1.6 summarises these differences, while the following sections discuss the key points of difference.

Table 1.6: Comparison of methodological approaches

		Panel's draft decision	Original price direction (ICRC's final decision)	ACTEW's SOFC proposal
Value of the Regulated Asset Base (RAB)	Opening value (1 July 2013)	**Water**: $1.37 billion ($3.7 million lower than ICRC) **Sewerage**: $0.66 billion ($4.2 million lower than the ICRC)	**Water**: $1.37 billion **Sewerage**: $0.66 billion	**Water**: $1.35 billion **Sewerage**: $0.66 billion (ACTEW's estimates are lower than the Panel's because it excluded CSO expenditure from the RAB)
	Forecast capital expenditure	**Water**: $154 million (nominal full 5 year period) (15% lower than the ICRC for the first two years) **Sewerage**: $316 million (nominal full 5 year period) (42% lower than the ICRC for the first two years). Based on ACTEW's most recent expenditure program.	**Water**: $62 million (nominal first 2 years only) **Sewerage**: $97 million (nominal first 2 years only)	**Water**: $171 million (nominal 5 years) **Sewerage**: $325 million (nominal 5 years)
	Depreciation	Straight line depreciation using accounting and engineering weighted average asset lives for existing assets and asset specific lives for new assets and the water security assets.	Straight line depreciation using notional weighted average asset lives for existing assets and for all new assets.	Straight line depreciation using accounting and engineering based weighted average asset lives for existing assets and new assets.
	Indexation	Provision made for indexation (2.5% inflation forecast).	No provision made for indexation.	Provision made for indexation (2.5% inflation).
Rate of return	**Method**	Benchmark efficient entity approach.	Firm specific approach with cost of equity set below firm specific range as a transitional measure.	Benchmark efficient entity approach.
	Rate	Post-tax nominal WACC: 7.20%	Nominal WACC: 4.42%	Post-tax nominal WACC: 8.95%. (higher equity beta and risk free rate than the Panel)
Net tax liabilities		Provision made for net tax liabilities calculated assuming a 0.5 gamma value (value of imputation credits).	No provision made for net tax liabilities.	Provision made for net tax liabilities calculated assuming a 0.25 gamma value (note a lower gamma value leads to a higher allowance).
Forecast operating expenditure (incl. Water Abstraction Charge (WAC) and Utilities Network Facilities Tax (UNFT))		**Water**: $496 million (nominal full 5 year period) (4% higher than the ICRC for the first two years due to higher WAC allowance to reflect higher water sales forecast) **Sewerage**: $377 million (nominal full 5 year period)	**Water**: $183 million (nominal first 2 years only) **Sewerage**: $144 million (nominal first 2 years only)	**Water**: $484 million (nominal 5 years) **Sewerage**: $374 million (nominal 5 years) (ACTEW's estimates are lower than the Panel's because it has adopted a lower water sales forecast and excluded CSO expenditure from sewerage expenditure)
Forecast demand		**Water sales**: 42-46 GL pa based on advice from Cardno **Customer numbers growth**: 2.48% -2.5% pa **Billable fixtures growth**: 2.2% pa.	**Water sales**: 38 GL pa **Customer numbers growth**: 2.17% -2.32% pa **Billable fixtures growth**: 2.49% pa.	**Water sales**: 42-42.5 GL pa based on Breusch Ward model **Customer numbers growth**: 2.63% -2.66% pa **Billable fixtures growth**: 1.5% pa.

1.4.1 The Panel used different methods in applying the building block approach and higher demand forecasts than the ICRC

Both the ICRC and the Panel used a 'building block' approach to determine the revenue to be recovered through prices (ie, the revenue requirement). However, the Panel has adopted different methodologies and bases for assessing the return on capital building block and the value of the regulated asset base (RAB). In particular, the Panel has:

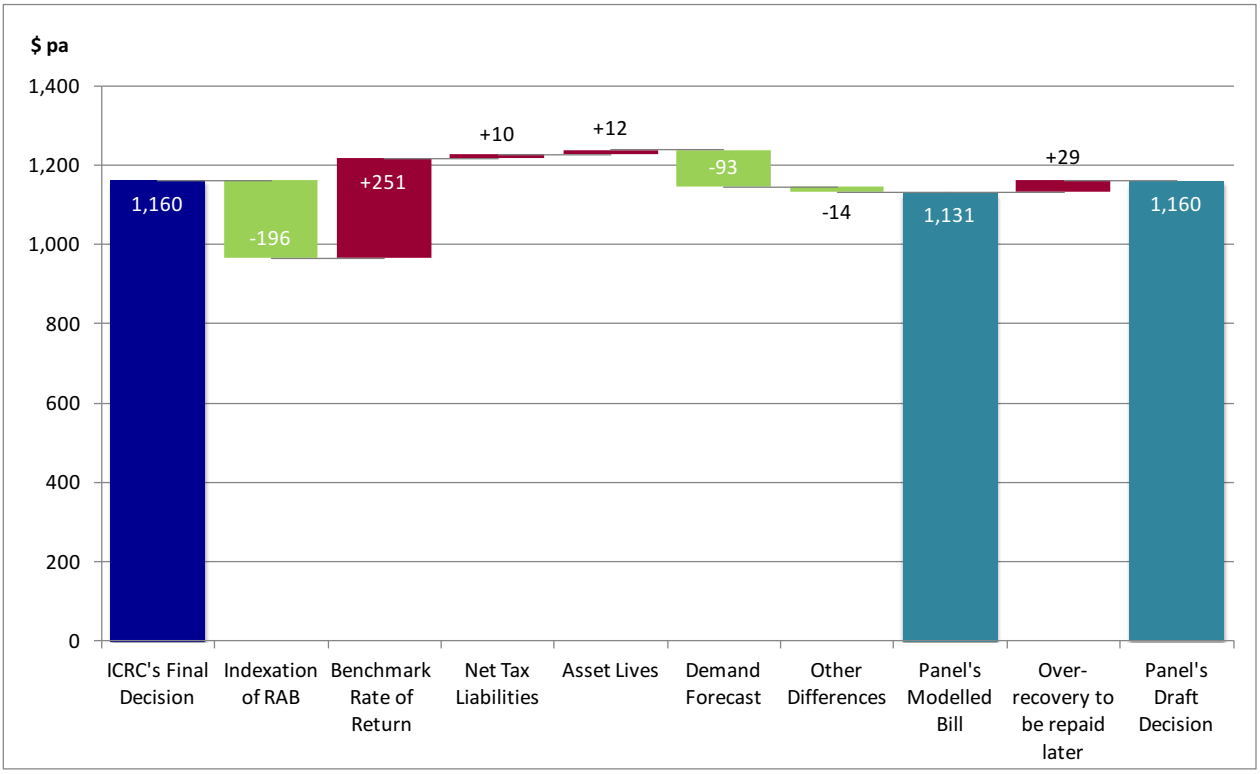
- assessed the cost of capital on a benchmark firm rather than a firm-specific basis, and
- indexed the value of the RAB to ensure the real value of assets is maintained over time.

As Figure 1.1 shows, these two methodological differences have had opposite and offsetting impacts on water and sewerage bills. Therefore, their **net** effect is not significant.

In addition, the Panel has adopted a fundamentally different mechanism to manage the risk to customers and ACTEW of changes in water demand, which may be driven by weather or other factors. In particular, the Panel has decided to use demand forecasts for the whole regulatory period to provide price stability and investment certainty. In conjunction with that decision, it has added a symmetrical demand volatility adjustment mechanism to protect customers and ACTEW from extreme changes in demand – which might otherwise mean that customers pay more than needed to cover the costs of water services, or that ACTEW might not have the financial capacity to deliver these services.

Further, the demand forecasts the Panel adopted in making its draft direction are significantly higher than those reflected in the original ICRC pricing direction (see section 1.4.3 below). As Figure 1.1 shows, these higher demand forecasts had the effect of reducing by $93 the indicative annual bill of a residential customer consuming 200 kL per year.

Figure 1.1: Differences between the Panel's draft decision and ICRC's final decision on water and sewerage bills in 2014-15 (residential customer 200 kL pa)



Note that while the Panel has chosen not to change the prices for 2013-14 and 2014-15 retrospectively, it has decided to account for any over or under recovery of revenue by ACTEW in those years (relative to its draft decision on the revenue requirement for those years). For example, as Figure 1.1 shows, the Panel's analysis indicates that the prices payable in 2014-15 over recover approximately $29 from a residential customer consuming 200 kL per annum. This over-recovery will be 'repaid' to customers through a 'true up' adjustment to prices in the remaining years of regulatory period.[3]

1.4.2 The Panel used more recent capital expenditure forecasts and different assumptions in calculating the revenue requirement than ACTEW

Both the Panel and ACTEW used similar methodologies to calculate the return on capital and depreciation components of the revenue requirement. However, the Panel used different expenditure forecasts and adopted different assumptions to those reflected in ACTEW's SOFC proposal. In particular:

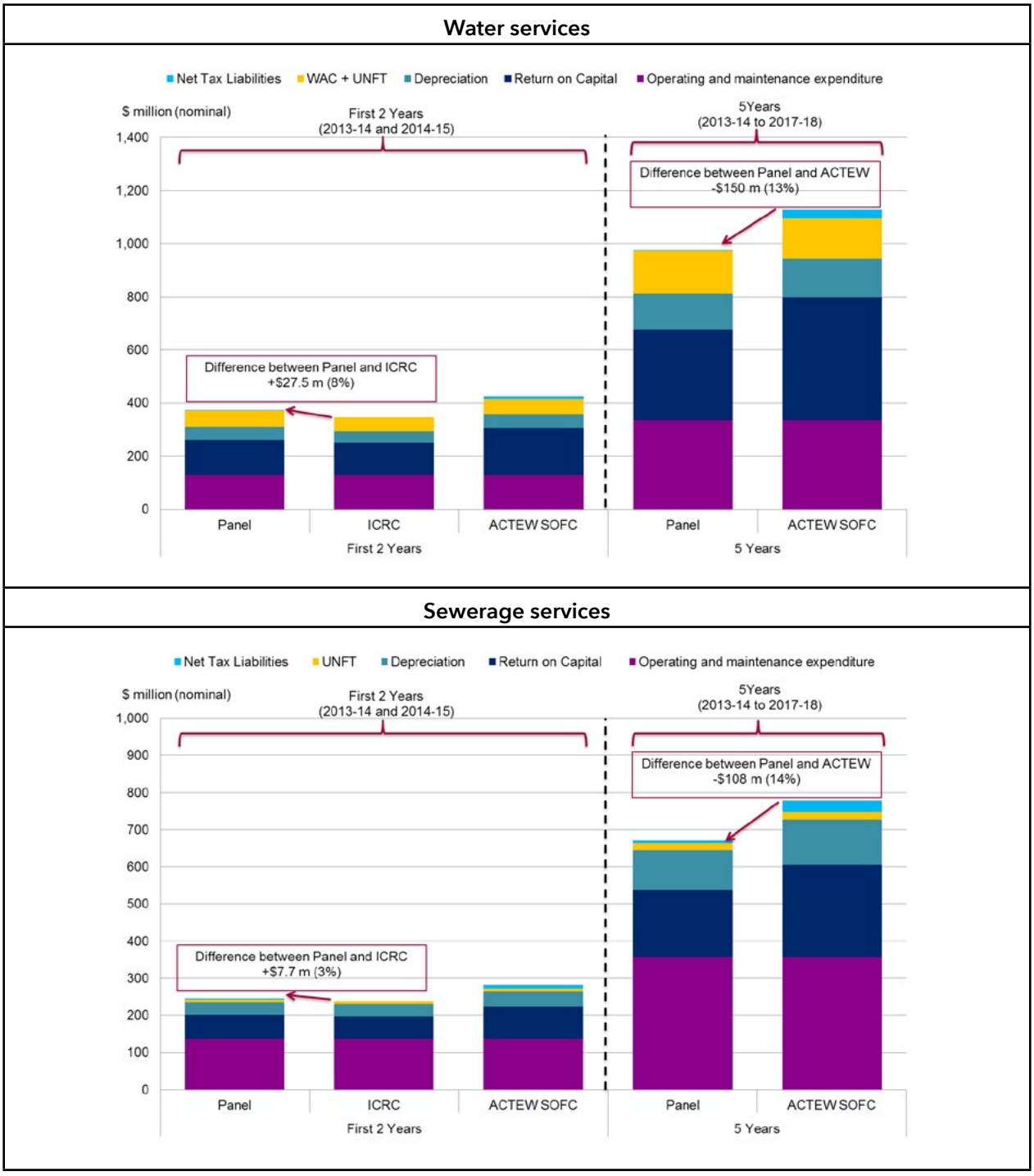
- The Panel's draft direction is based on ACTEW's most recent capital expenditure program for 2013-14 to 2017-18, whereas ACTEW's SOFC proposal reflects the forecast capital expenditure in its April 2013 submission to the ICRC's original price investigation.[4] As a result, the provision for forecast capital expenditure in the Panel's draft decision is around $26 million lower than ACTEW's proposal over the five-year regulatory period.
- The Panel has adopted the benchmark-firm approach for calculating the cost of capital that ACTEW proposed. However, in applying this approach, the Panel has made different assumptions about key parameters. As a result, it has adopted a nominal post-tax weighted average cost of capital of 7.20%, compared to ACTEW's proposal of 8.95%.
- The Panel has adopted demand forecasts for each year of the regulatory period, whereas ACTEW maintained that demand should be updated on an annual basis.

These differences have led to the Panel and ACTEW reaching different estimates of ACTEW's revenue requirement for the regulatory period. As Figure 1.2 shows, the Panel's draft price direction is based on a revenue requirement that is around $258 million lower than ACTEW proposed in its SOFC for the full five-year period ($150 million for water and $108 million for sewerage).

3 The Panel has accounted for the over-recovery by making a 'true-up' adjustment to the revenue requirement for 2015-16 to 2017-18 prior to calculating prices for these years. See Chapter 14 for further detail on this adjustment.

4 Apart from some relatively minor adjustments.

Figure 1.2: Comparison of total revenue requirements



Note that Figure 1.2 shows the Panel's draft decision on the total revenue requirement. In line with usual regulatory practice, the Panel has made certain deductions from this amount (such as income ACTEW expects to receive from other sources). The prices under the draft direction have been set to recover this net revenue requirement, taking into account the 'true up' adjustment (discussed above) and the demand forecasts (discussed further below).

1.4.3 The Panel's draft direction is based on a multi-year demand forecast

Because prices are directly proportional to the level of expected consumption, the demand forecasts used in setting prices have a material impact on the resulting level of prices within a regulatory period.

The Panel's draft direction is based on a demand forecast that covers the full five-year period to 30 June 2018. By comparison, in its final decision, the ICRC adopted demand forecasts for the first two years of the regulatory period only, while ACTEW contended that demand should be determined on an annual basis.

The Panel considers a multi-year demand forecast is preferable and appropriate given the importance of these forecasts in the price setting process, and is in keeping with general regulatory practice.

As noted above, the demand forecasts the Panel adopted for its draft direction are significantly higher than those adopted by the ICRC for the first two years of the period. For example, the Panel's water sales forecasts for 2013-14 and 2014-15 are 4 to 6 GL (or 10% to 16%) higher than the ICRC's forecasts. These forecasts also exceed the projections provided to the Panel by ACTEW, in response to a request for information.

In making its draft decision on the appropriate water sales forecasts for 2014-15 to 2017-18, the Panel was guided by the expert advice it received from Cardno, an independent consultancy firm. Cardno developed its advice using a modelling approach that looks at trends in per-property water consumption by type of dwelling, and takes into account historic trends in the growth of the housing stock (which is disaggregated by the type of dwelling). Cardno's modelling indicates that there is close to a 90% probability that ACTEW's actual water sales will exceed the projections it provided to the Panel over the five-year regulatory period.

1. 5 How did the Panel approach its task?

In making its draft decision, the Panel has worked within the regulatory framework provided by the Act and the terms of reference for the ICRC's original price direction. This framework both defines and limits the Panel's powers. It also imposes certain obligations on the Panel. In particular, it requires the Panel to take account of a broad range of matters in reaching its decisions, including objectives related to:

- consumer protection
- economic efficiency in the use of water and the provision of water services, and
- financial viability of the water services provider.

The Act requires the Panel to exercise its own judgement to make decisions that strike an appropriate balance between the various matters.

In addition, the Act requires the Panel to make a decision on the merits of the case. In keeping with the traditional approach to merits-based appeals, the Panel has considered all the evidence in order to arrive at a **correct or preferable** decision:

- **'correct'** in the sense that the decision is made according to law, and consistent with the relevant legislative mandate, and
- **'preferable'** in the sense that if there is a range of decisions that are correct in law, the decision ultimately settled upon is the best that could be made on the basis of the available evidence and relevant facts.

To ensure its methodologies are robust and its decisions will stand up to scrutiny, the Panel has been mindful of well-tested techniques and best practice regulatory principles in its analysis and decision making.

Given the potential impacts on ACTEW and its customers – and the fact that the regulatory period covered by the review has already begun – the Panel considers it important to reach its decisions in a timely manner. The need for timeliness and the limited resources available to the Panel have made it impractical to examine every component of the original price direction in detail. Instead, the Panel has focused its review on the decisions about which ACTEW or other stakeholders raised issues and which could have a material impact on prices or ACTEW's financial position. It has also had to make new decisions for 2015-16 to 2017-18 where the original price direction covered only the first two years of the regulatory period.

The Panel notes that it was not able to consider certain matters raised in submissions from other stakeholders. The Panel does not have any remit to propose changes to government policies, such as the setting of dividends and water abstraction charges, as these are matters for Government and are outside the scope of the Act. In addition, the Panel has not considered tariff structures. While the Panel recognises that tariff structures have a material impact on water customers, the timeframe for the review has not allowed for the extensive consultation that this matter requires. In addition, as the ICRC has stated its intention to conduct a separate review of tariff structures during the current regulatory period,[5] the Panel has seen no reason to duplicate this process.

Finally, the Panel notes that there are inter-linkages between the various building blocks and parameters used to determine ACTEW's revenue requirement and water and sewerage charges as well as the form of regulatory control and risk allocation measures. To the extent that any new information comes to light between the draft and final decisions that causes a change to one of these elements of the price direction, the Panel will need to consider the implications for other elements of the price direction.

1. 6 How can stakeholders comment on the Panel's draft direction?

The Panel is now consulting with the ACT community about its draft price direction. This consultation phase represents the best opportunity for the broader ACT community to have input into the Panel's process. Under the Act, the Panel must take into account issues raised in submissions received in response to this report before finalising its pricing direction.

Written submissions on this draft report must be received by the Panel no later than **Friday, 23 January 2015,** and should be addressed to:

By email (preferred):	industrypanel@act.gov.au
By post:	**Industry Panel** **GPO Box 158** **Canberra ACT 2601**
By fax:	**(02) 6207 0267**

Further details about how to make a written submission and the Panel's submission policy can be found on page iii.

In addition, the Panel will be holding a public hearing in Canberra in early February 2015 at which it will hear oral submissions from the community. Details about the public hearing will be advertised in newspapers and published on the Panel's website. All those making written submissions to this draft report will be notified about the public hearing.

5 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. xxiv.

2 Panel's review process and analytical approach

As Chapter 1 discussed, the Panel was appointed by the ACT Treasurer to review the June 2013 price direction made by the ICRC in relation to the prices ACTEW can charge for water and sewerage services from 1 July 2013 to 30 June 2019. The review was triggered by ACTEW's application for a review under Part 4C of the *Independent Competition and Regulatory Commission Act 1997* (the Act). Box 2.1 provides details of the Panel's members and support arrangements.

In undertaking the review, the Panel has broadly the same powers as the ICRC when conducting a price regulation investigation. It also has the same responsibilities as the ICRC in terms of requirements to prepare draft and final reports, invite public submissions, and conduct public hearings. At the conclusion of the review, the Panel must submit a final report to the Treasurer, who will then present the report to the ACT Legislative Assembly.

Apart from some prescriptions in the Act, there is no defined process the Panel must follow in undertaking the review. In addition, as this is the first review of a price direction conducted under the Act, the Panel has no precedent to guide it other than the legal principles that apply to merits reviews. Therefore, the Panel has developed its own review process and analytical approach, drawing on best regulatory practice and taking account of the context and timing of the appeal and review.

Box 2.1: Industry Panel profile

The three members of the Panel are:

- Ms Mary Anne Hartley QC (presiding member)
- Ms Sally Farrier
- Ms Claire Thomas PSM

Individual profiles of the Panel members can be found at the Panel's website at: http://apps.treasury.act.gov.au/industrypanel/panelbiographies.

The Panel is supported by a secretariat, comprising a project manager and a range of technical specialists, including those with expert knowledge of price determinations in utility sectors, including water. The administrative functions of the secretariat are provided by officers from the Chief Minister, Treasury and Economic Development Directorate.

2. 1 Panel's review process

The process the Panel has followed in conducting this review involves three phases:

1. Preliminary analysis, information gathering and consultation
2. Detailed analysis and draft decision-making, and
3. Public consultation and final decision-making.

The sections below describe these phases, the first two of which the Panel has now completed.

2.1.1 Phase 1: Preliminary analysis, information gathering and consultation

Under section 24R of the Act, the Panel can decide at any stage that ACTEW's application for review should be dismissed on the grounds that it is frivolous or vexatious. Therefore, one of the Panel's objectives in Phase 1 was to form a preliminary view on this issue and, if warranted, gather information needed to proceed with the review. As part of this phase, the Panel:

- **Examined the ICRC's original price direction and ACTEW's letter of application.** It formed the preliminary view that ACTEW's application was **not** frivolous or vexatious. It considered the matters raised in ACTEW's letter of application could potentially have a material impact on ACTEW's business, and were therefore worthy of further investigation.

- **Developed a charter** to articulate how it intends to conduct itself during the review. This charter (see Appendix 2), covers areas such as independence, openness, accessibility, pragmatism, efficiency and timeliness.
- **Released an approach paper in June 2014** that explained the background to the review, outlined the above preliminary view, and invited submissions from ACTEW and other stakeholders who had made submissions to the original price investigation and had informed the ICRC of their intention to provide input to the review once ACTEW's letter of application was made.[6] The Panel received five submissions in response to this paper.
- **Held a directions hearing in Canberra on 25 July 2014** to respond to these submissions. As no submissions disagreed with its preliminary position, the Panel concluded that ACTEW's application was not frivolous or vexatious, and decided to proceed with the review. It directed ACTEW to submit a Statement of Facts and Contentions (SOFC), and invited other stakeholders to make further submissions. The Panel indicated that ACTEW's SOFC was to include:
  - the full list of matters that are the subject of ACTEW's application for review and, potentially, any other contentious matters raised on its behalf in submissions to the ICRC
  - the alternative form of price direction that ACTEW proposes, and
  - in respect of each matter it has raised, the facts and contentions ACTEW is relying on in support of that matter.
- **Obtained information from the ICRC** that was provided to it in the original price investigation.
- **Received ACTEW's SOFC on 31 July 2014** (discussed in Chapter 5), as well as five other submissions by 15 August 2014. In the course of the Panel's review, ACTEW also responded to a number of other information requests from the Panel and its advisers.
- **Held a hearing of review issues in Canberra on 1 September 2014** to discuss the matters identified in ACTEW's SOFC and the issues raised in other submissions,[7] and to hear oral submissions from participants. The primary purpose of this hearing was to assist the Panel in its deliberations about the scope of its review (discussed in Chapter 5).

The transcripts from the two hearings and copies of all submissions made to the Panel to date are available from the Panel's website (http://apps.treasury.act.gov.au/industrypanel).

2.1.2 Phase 2: Detailed analysis and draft decision-making

Phase 2 of the Panel's process involved detailed analysis and draft decision-making. As part of this phase, the Panel:

- **Considered the data and information available to it**, noting that this review is taking place part way through the regulatory period covered by the original price direction (see Box 2.2).
- **Engaged technical experts and commissioned the services of a consultant –** Cardno (QLD) Pty Ltd (Cardno)[8] – to provide independent analysis and advice on:
  - ACTEW's operating and capital expenditure forecasts for the regulatory period
  - forecast water sales for the regulatory period, and
  - the regulatory treatment of the water security projects.
- **Undertook its own technical analysis** of the remaining matters within the scope of its review (see Chapter 5).
- **Considered all of the above analysis to make its draft decision** and has now released this draft report.

6 In the first phase of the review process, the Panel adopted a targeted approach to consultation in the interests of timeliness.

7 In addition to the five submissions received in response to the directions hearing, the Panel considered another submission it received earlier in the process from the Ratepayers Association.

8 Cardno undertook investigations and analysis for the ICRC on similar matters.

Box 2.2: Review being conducted part way through the regulatory period

One of the key differences between the Panel's review and a typical price regulation investigation is that this review is taking place part way through the regulatory period covered by the original price direction (2013-14 to 2018-19).

For a typical price direction, the regulator makes its decisions before the start of the period. Therefore, it must rely entirely on forecast data about the regulated business' operating and capital expenditures in each year of the regulatory period, and the forecast demand for its services in each year of this period.

In this case, the Panel is conducting its review in the second year of the regulatory period. Thus, the Panel has access to some actual or revised data for at least the first year of the period and some revised forecasts for the second year. The Panel has obtained the actual and revised data, and has made careful decisions about the use to be made of the data when evaluating the individual variables included in the pricing decision. Where the Panel has determined that ignoring new information would prevent it making the correct or preferable decision, it has used the new information.

2.1.3 Phase 3: Public consultation and final decision-making

The Panel now invites all stakeholders including members of the community to make a written submission in response to this draft report. These written submissions must be received by the Panel by **Friday, 23 January 2015**. Details on how to make a written submission are provided on page iii.

In addition, the Panel will:

- **Hold a public hearing** (targeted for early February) to provide an opportunity for ACTEW and other stakeholders to make oral submissions. Details about the date, time and venue for this public hearing will be publicised widely, including in the *Canberra Times*, on the ACT Government's Community Noticeboard, and on the Panel's website. The Panel will also send details about the public hearing to all those who have made a written submission to its draft report.
- **Consider all written and oral submissions, before making its final decisions.**
- **Deliver its final report and price direction to the ACT Treasurer**, who is then responsible for providing the report to the ACT Legislative Assembly.

At this stage, the timing of delivery of the final report is not clear, as this will depend on the nature of submissions the Panel receives in response to the draft report, and the extent to which further analysis is required. The Panel will continue to review the timing of delivery of its final report, and provide updates on its website.

2. 2 Panel's analytical and decision-making approach

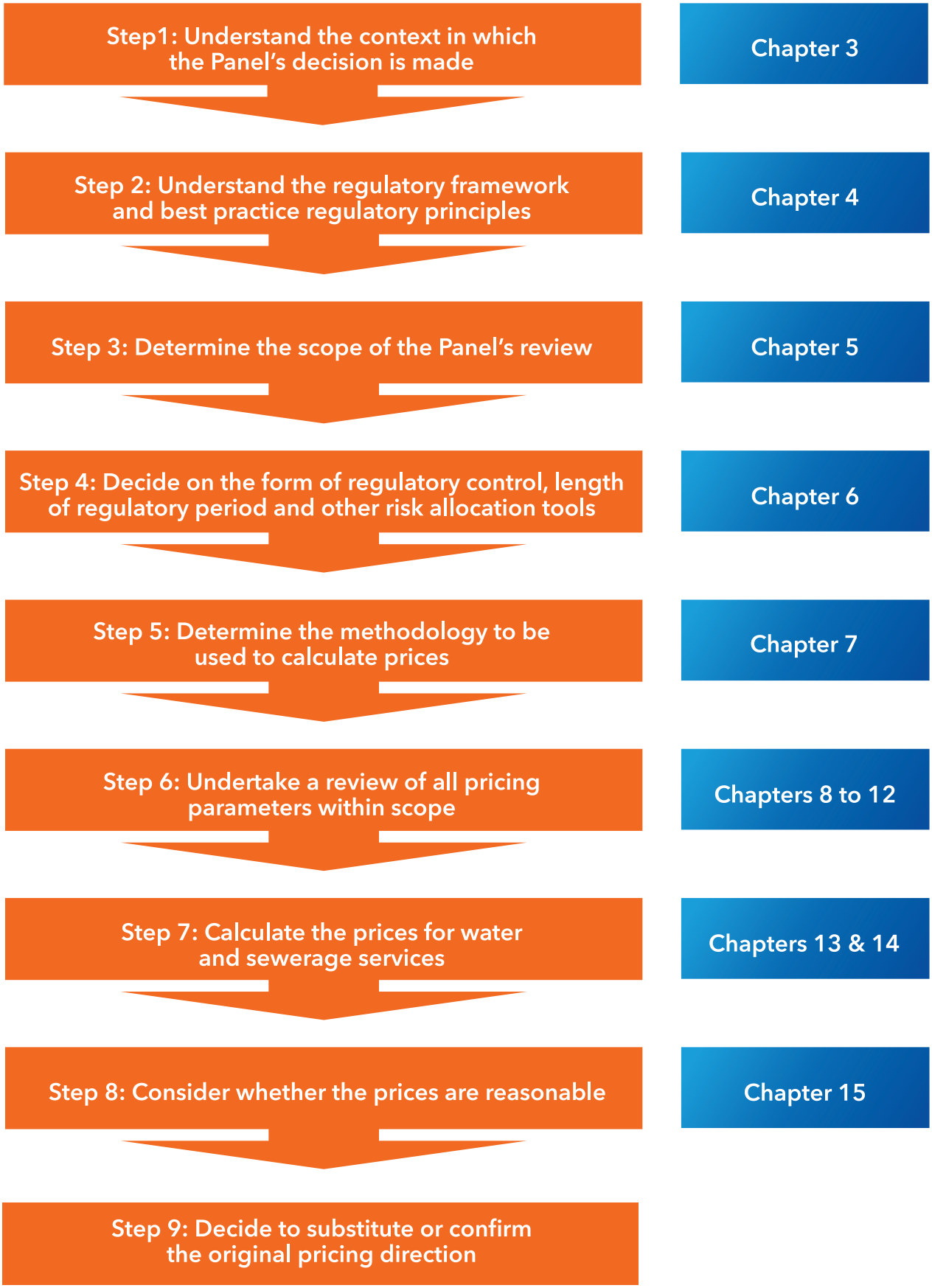
In making its draft decision and reaching its draft pricing direction, the Panel has followed an analytical framework that comprised the following nine steps:

1. **Understand the context in which its decisions are being made,** including the delineation between the roles and responsibilities of the Panel and other participants in the regulatory system.
2. **Understand the regulatory framework and best practice regulatory principles,** to ensure it is aware of all legal matters and government directions it must have regard to in reaching its decisions, and that its analytical and decision-making methods are consistent with best practice regulation in Australia.
3. **Determine the scope of the Panel's review**, to ensure it will address all matters that are within its remit and may have a material impact on water and sewerage prices and/or the financial viability of ACTEW.
4. **Decide on the form of regulatory control, length of regulatory period and other risk allocation tools** to be used in the regulatory period.
5. **Determine the methodology to be used to calculate water and sewerage prices**.

6. **Undertake a review of all the pricing related matters** that are within scope and decide whether or not to accept the ICRC's constituent decisions.
7. C**alculate ACTEW's annual revenue requirement** using the decisions in steps 4 to 6.
8. **Calculate the prices for water and sewerage services** that are consistent with enabling ACTEW to generate this revenue given the forecast demand for these services (determined in step 6).
9. **Consider whether these prices are reasonable** by assessing their impact on customers, inflation and ACTEW's financial viability.
10. **Decide to confirm the original price direction or substitute a new price decision**, based on the outputs of the above steps.

The structure of the rest of this draft report follows the sequence of these steps, as illustrated in Figure 2.1 below.

Figure 2.1: The Panel's analytical framework



3 Context for the review

The Panel began its task by considering the context in which it is conducting the review, and by ensuring it understood the key contextual matters that should be taken into account in making its decisions. In the Panel's view, these matters include:

- the appropriate roles and responsibilities of the Panel and other participants in the regulatory system
- the implications of the Competition Principles Agreement, which the ACT and all other states and territories have signed
- the challenges facing Australian water utilities at the time ACTEW made its original submission to the ICRC – particularly those related to the "Millennium Drought" – and how economic regulators in other jurisdictions have dealt with these challenges, and
- the key features of the ICRC's original price direction.

The sections below discuss the Panel's understanding of each of these matters, many of which are picked up in the analysis presented elsewhere in this draft report, and have informed the Panel's draft decision.

3. 1 Appropriate roles and responsibilities

The Panel's task for this review effectively requires it to step into the shoes of the ACT's independent economic regulator and make pricing decisions. These decisions will affect the other participants in the regulatory system – including the ACT Government, ACTEW's water business and water customers. The Panel considers it important to have regard to the purpose of economic regulation, and the delineation between the roles and responsibilities of the regulator and the other participants.

3.1.1 Purpose of economic regulation

In Australia, economic regulation of utility businesses, such as those that provide water and sewerage services, was introduced as part of the microeconomic reforms that began in the 1990s. While the arrangements differ across jurisdictions, independent economic regulators now play a role in determining the prices charged by publicly owned water utilities in New South Wales, Victoria, South Australia, Tasmania and the Northern Territory as well as in the ACT.

Where economies of scale give rise to what are known as 'natural monopoly' characteristics,[9] the main purpose of economic regulation is to ensure that the regulated business cannot misuse its market power to earn monopoly profits, and to encourage it to run the business as efficiently as possible. In simple terms, economic regulation aims to mimic the price and service outcomes that would be expected in a workably competitive environment by:

- setting regulated prices at the level necessary to recover the prudent and efficient costs of supplying the regulated services (including an appropriate return on the assets involved), and
- promoting efficient investment in, and operation and use of, the assets involved in supplying the regulated services.

This approach is designed to serve the long-term interests of customers. For example, if prices are set below the level required to recover the efficient cost of supply in one regulatory period, large 'catch-up' price rises may be necessary in later periods, resulting in price shocks for customers. If prices are consistently set below this level, it could threaten the financial viability of the regulated business and

9 For example, it would be inefficient to have more than one provider of certain network water infrastructure – such as water transportation pipelines – because it would be uneconomic to duplicate that infrastructure. That is, a new entrant could not earn a sufficient rate of return to make the investment worthwhile.

adversely affect the quality and reliability of the services it provides. In the water sector, this could threaten the security of essential water supplies.

In addition, if price regulation did not create incentives for efficient investment in assets and asset management, the regulated business may either under- or over-invest in the assets used to supply the services. This could lead to either falling service standards or higher than necessary prices.

3.1.2 Delineation between the roles and responsibilities of the regulator and other participants in the regulatory system

There is a clear delineation between the roles and responsibilities of the regulator and the other participants in the regulatory system – including government, the water utility (in this case ACTEW) and water customers. The Productivity Commission articulated this delineation in its 2011 inquiry on *Australia's Urban Water Sector* (summarised in Box 3.1).

The Panel has been conscious of the implications of these roles when conducting the review and making its draft decision – particularly in determining the scope of its review (discussed in Chapter 5). These implications are as follows:

- The primary role of the Panel is to make a pricing decision that takes account of the matters it is required to under the regulatory framework (discussed in Chapter 4) and which, in the Panel's independent judgement, appropriately balances the multiple matters it must have regard to under this framework.
- It is not the Panel's role to make decisions on matters of public policy, as this is the role of the ACT Government. This includes policies designed to achieve distributional outcomes, such as concession arrangements for low income or vulnerable consumer groups. The Panel is not in a position to decide whether government policies that impact on water prices are appropriate or correct – for example, the Panel has no scope to consider the appropriateness of the Water Abstraction Charge. Nor does it have scope to consider the appropriateness of dividend policies.
- The Panel does not make decisions about the governance of ACTEW, as this is a matter for ACTEW and its shareholder, the ACT Government.[10] Nor does the Panel judge or decide how ACTEW should manage its water business.
- While the Panel does have a mandate to examine whether ACTEW's overall level of expenditure is prudent and efficient (which may be judged by looking at relevant benchmarks), it is not appropriate for it to tell ACTEW exactly what it should spend on individual items to achieve these efficient and prudent expenditure levels.

10 In relation to governance, the Panel notes that an independent review of the institutional arrangements relating to ACTEW was completed by Dr Bruce Cohen in December 2013. This review contained 22 recommendations, including some that covered financial interactions between ACTEW and the ACT Government, such as dividends and charges for government borrowings.

Box 3.1: Roles and responsibilities of different participants in the regulatory system

Government's role is to:

- set objectives for the development of water policy
- develop best-practice policy frameworks and principles in relation to public health, the environment and service delivery that are consistent with the objectives
- define property rights for environmental and consumptive water use
- appropriately assign roles and functions to institutions (including economic regulators)
- put in place best-practice institutional and governance arrangements for:
  - public health, environmental and economic regulation relating to the sector, and
  - delivery of water, wastewater and stormwater services.

Backed by the authority of a democratic mandate, governments are best placed to resolve the trade-offs between conflicting public interest matters arising in the urban water sector (although some of these trade-offs can be delegated to independent regulators). Governments are also best placed to make decisions about distributional outcomes – eg, addressing any affordability concerns of low income and other vulnerable consumers. This is because broader welfare objectives are best achieved using other policy measures (such as concessions and rebates), rather than by water pricing. Trying to use pricing to achieve too many objectives may result in achieving none of them very well.

Independent regulators' role is to achieve governments' regulatory objectives in a manner unencumbered by political considerations. They make decisions on matters assigned to them by government, particularly in relation to setting water prices. However, governments typically specify matters that need to be taken into account when making such decisions (eg, in the relevant legislation). In performing this role, regulators are often required to balance conflicting regulatory objectives. They are best placed to do this as their independence means that they are not prone to politicisation (eg, the tendency to artificially lower prices to win the favour of voters), nor are they the advocates of the interests of particular interest groups (such as the regulated entity, customers or other lobby groups).

Water utilities' role is to make the 'day-to-day' commercial decisions about operations and investments required to deliver water and sewerage services that meet regulatory requirements. Utilities should not be policy-making bodies, and should operate within the health and environmental policies determined by governments. However, they do have a legitimate **advisory** role in policy development – for example, in providing information to governments about the likely cost of infrastructure provision, future levels of demand and likely timing of supply augmentation, or about the effects of development on water quality.

Water customers are best placed to make decisions about their own consumption patterns, although governments and utilities can facilitate this by pricing efficiently, providing choice in tariff and service offerings, and consulting with consumers about pricing and supply augmentation options.

Source: Drawn from Chapter 10 of Productivity Commission, October 2011, Australia's Urban Water Sector, Final Report.

3. 2 Implications of the Competition Principles Agreement

A number of submissions to the Panel in Phase 1 of the review process argued that the Panel should take account of the public ownership of ACTEW when making its price decision – particularly when considering the appropriate rate of return. However, the Panel considers that doing so would, inter alia, be contrary to the Competition Principles Agreement (CPA), which the ACT and all other Australian states and territories signed in 1995 as part of the National Competition Policy reform process.[11]

Under the CPA, governments agreed to apply competitive neutrality principles, where appropriate, to all significant government-owned businesses. The objective of these principles is to the benefit of consumers and taxpayers by ensuring that these businesses do not have an unfair advantage in the market place. The CPA imposes a set of obligations on all governments in relation to taxation, debt and regulatory neutrality, full cost attribution and setting prices to earn a commercial rate of return.

The overarching aim of competitive neutrality principles is to promote the efficient allocation of scarce resources by ensuring those resources are applied to their highest value use. To this end, the CPA seeks to ensure government-owned businesses like ACTEW do not enjoy competitive advantages (or suffer

11 Council of Australian Governments, *Competition Principles Agreement,* 11 April 1995.

competitive disadvantages) relative to their private sector counterparts simply by virtue of their public ownership.

In markets where a government-owned business has no private sector competitors – as is the case in the ACT water market – the removal of any significant advantages (or disadvantages) of government ownership seeks to benefit consumers and taxpayers by removing cost and other advantages that could lead the business to make wasteful resource allocation decisions.

The ACT Government's policy on competitive neutrality is in line with the other states and territories, and with the requirements of the CPA. The policy states that Territory-Owned Corporations will be subject to the following principles of competitive neutrality as appropriate:

- commercial target rates of return, capital structures and dividend payments
- full payment of Territory taxes and Commonwealth income and sales tax equivalents
- loan or debt guarantee fees where they are in receipt of concessional interest rates that reflect their government ownership rather than their commercial status
- the same business regulation as their private sector counterparts
- explicit funding for community service obligations, and
- independent performance monitoring.

The policy also states that corporatisation seeks to subject government business enterprises to disciplines, incentives and sanctions that are effectively the same as those applying to private business enterprises.

The Panel has been conscious of the ACT Government's policy on competitive neutrality in making its draft price direction – particularly in considering rate of return issues, discussed in Chapter 10.

3.3 Challenges and pricing implications of the "Millennium Drought"

The ICRC's original price direction investigation was undertaken after significant changes in the ACT water system in response to severe and prolonged drought conditions between 1997 and 2009. This drought, which has become known as the "Millennium Drought", did not just affect the ACT. Most of southeastern Australia experienced the most persistent rainfall deficit since the start of the 20th century, resulting in significant loss of soil moisture in many water catchments, and severe reductions in inflows to major water storages. As a result, even when there were significant rain events, water storage levels did not recover in the expected way.

In the ACT, as elsewhere, the drought response involved making major investments in infrastructure to boost the security of water supply, as well as increasing the focus on water demand management:

- On the supply side, Canberra's water supply was augmented through a major expansion of the Cotter Dam (ECD) (which, at 78 GL, is now 20 times its original capacity) and the construction of the Murrumbidgee to Googong water transfer pipeline (M2G). Governments in other jurisdictions made similar investments. For example, New South Wales, Victoria, South Australia, Western Australia and Queensland constructed desalination plants, and several states built new pipelines to connect major urban centres to alternative water sources against the contingency that local sources could in future be temporarily depleted.
- On the demand side, the ACT Government (in common with governments in many other jurisdictions) introduced water restrictions during the drought. While these restrictions have since been lifted, permanent water conservation measures introduced in 2006 remain in place.[12] Together with technological, appliance and other changes, this has meant that the demand for water has not returned to pre-restriction levels.

12 For example, prohibition of certain forms of outdoor water use – such as hosing down exterior surfaces, car washing or lawn watering other than in the night or early morning.

Both the supply and demand responses to the drought have placed upward pressure on water prices across Australia.

3.3.1 Pricing implications of supply-side responses

The investment in water security measures that have occurred over the last five to ten years have been a major factor behind rising water prices and household water bills across Australia in recent years.

In approving price increases, one of the key questions that Australian regulators have had to grapple with is how much of the cost of the water security measures should be paid for by the current generation of water consumers, and how much should be recovered from future consumers? This question is significant because future consumers will enjoy access to water supplies due to the investments made now, and may in fact derive a greater benefit than current consumers.

In the terms of reference for the original price direction, the ICRC was directed to have regard to a similar intergenerational equity question. Specifically, the ICRC was directed to take into consideration the ability of the price path to match the revenue requirements to the consumer benefits accrued from the water security program. The Panel is required to consider the same issues when examining the water security investments ACTEW made in the previous regulatory period. The Panel's assessment of this issue is set out in Chapter 8.

3.3.2 Pricing implications of demand-side responses

Across Australia, the imposition of compulsory water restrictions to ration scarce water supplies during the Millennium Drought resulted in reductions in water consumption. While many of these restrictions have now been lifted, the demand for water (and therefore water sales) has not to date returned to pre-restriction levels. In addition to the introduction of permanent restrictions on certain water uses, this is due to changes in building regulations, improvements in the water efficiency of appliances, and social and cultural shifts.[13]

Reduced demand necessarily leads to an increase in water prices because the costs of providing water and sewerage services are predominantly fixed. That is, they don't vary directly in line with the demand for these services. So as the demand for services falls, the price per unit must increase.

3. 4 Key features of the ICRC's original price direction

The ICRC's original price direction was made on 26 June 2013 and covers the period 1 July 2013 to 30 June 2019. This decision provided for a 4.9% increase in the volumetric water charge and an 18.1% reduction in the sewerage charge in 2013-14.

The Panel's understanding of this price direction – and the considerations underlying many of the component individual decisions – underpins much of the analysis presented in this report.

The sections below summarise the key components of the original price direction, including:

- the length of the regulatory period, form of regulatory control, and other risk allocation measures
- the approach used to establish ACTEW's revenue requirement over the regulatory period
- the treatment of the costs that ACTEW incurred in developing the water security projects (ie, the ECD and the M2G Pipeline), and
- the water sales and other demand forecasts used to convert the revenue requirement into prices.

13 For example, these shifts include the widespread installation of rainwater tanks, water-saving, and/or 'greywater' recycling systems. Further, more people are choosing to live in apartments with less green space.

3.4.1 Length of regulatory period, form of regulatory control, and other risk management tools

The ICRC provided for a **six-year regulatory period**, and used a **price cap** as the form of regulation (rather than a revenue cap). As noted above, the price direction sets maximum prices for water and sewerage services in the first year of regulatory period. It provides for these prices to be adjusted in each of the subsequent years – through an annual CPI escalation and cost pass-through mechanism and a biennial recalibration.

The biennial recalibrations and cost pass-through mechanism can be seen as risk allocation measures. The **biennial recalibrations** allow for certain inputs into the ICRC's price setting approach to be updated to reset prices in the third and fifth years of the regulatory period. These inputs include key inputs to the building block model used to establish ACTEW's revenue requirement (ie, forecast operating and capital expenditure, cost of capital), as well as forecast demand and revenue adjustments.

The decision to include these recalibrations appears to have been made to address the risk associated with uncertainty about water demand over the period, and to address the observed deviations between ACTEW's forecast and actual operating and capital expenditure in the previous regulatory period.

The **cost pass-through mechanism** allows ACTEW to pass through changes in certain uncontrollable costs that it incurs during the regulatory period, such as changes in the Water Abstraction Charge (WAC) and the Utilities Network Facilities Tax (UNFT).

The ICRC considered providing for an 'unders' or 'overs' mechanism to address risk.[14] However, it decided against this, noting that such mechanisms should "not be part of regulatory arrangements applied to government-owned businesses" (ie, because customers and shareholders are one and the same).

3.4.2 Approach used to establish revenue requirement

The ICRC used a **'building block' methodology** to establish ACTEW's revenue requirement. This method, which is described in more detail in Chapter 7, is commonly used by economic regulators.

The ICRC calculated the **allowance for a return on capital** by applying a nominal cost of capital to an unindexed regulated asset base (RAB), which brought forward the recovery of depreciation. This modelling approach differs from the approach generally adopted by other Australian regulators (whereby, under a nominal framework, the RAB is indexed for inflation). It also differed from the one the ICRC used in its previous price directions, and its draft price direction for the 2013 period.

In addition, the ICRC calculated the **rate of return** using a firm-specific approach, rather than the benchmark efficient entity approach generally adopted by other Australian regulators. The firm-specific approach also differs from the approach the ICRC used in previous price directions.

Further, the ICRC adopted a **cost of equity** that was, for the first two years of the regulatory period, below the lower bound it had established in its draft report for this cost (ie, although it established that the lower bound for the value of the cost of equity was 4.25%, it adopted a value of 2.8% in 2013-14 and 2014-15). The ICRC characterised this decision as a transitional measure that was required to:

- mitigate the step increase in prices that would otherwise have occurred as a result of its decision to model ACTEW's revenue requirement by applying a nominal cost of capital to an unindexed RAB (discussed above), and
- transfer the task of dealing with the intergenerational equity issue associated with the treatment of water security project costs back to the ACT Government (discussed below).

For the remainder of the regulatory period, the ICRC indicated that it expected to increase the cost of equity to 4.4% in 2015-16 and 2016-17 and 6.0% in 2017-18 and 2018-19.

14 An 'unders' or 'overs' mechanism involves adjusting future prices to generate a revenue offset to counterbalance the revenue consequences of the failure to accurately foresee future costs or demand.

3.4.3 Treatment of water security project costs

The ICRC considered several options for the treatment of the significant capital costs ACTEW invested in water security projects over the previous regulatory period (see section 2.3 above), so as to recover these costs in a manner consistent with intergenerational equity. However, it decided against using any of the 'fair cost recovery' (FCR) options identified in its draft report. Instead, it decided to **extend the economic life of the ECD** from 66 years to 100 years, and to 'transfer' the intergenerational equity issue back the ACT Government by reducing the cost of equity used to derive prices.[15]

3.4.4 Water sales forecasts

To convert the revenue requirement into prices, the ICRC decided to adopt a **conservative water sales forecast** of 38 GL per annum for the first two years of the regulatory period to ensure that ACTEW received "adequate revenue" in these two years.[16] This was around 2 GL lower than ACTEW's proposal for the first year of the regulatory period (2013-14).

3.4.5 Interrelationship between various aspects of the ICRC's decisions

The following extracts from the ICRC's final report on the original price direction indicate that its decisions on **water sales forecasts, the treatment of water security project costs, the cost of equity and the rate of return** were interrelated, and were expected to shield customers from a price shock, while also ensuring ACTEW remained financially viable:[17]

> "In its draft report, the Commission was critical of the typical firm approach to determining the cost of capital because it could not be relied upon to indicate accurately the true cost of capital confronted by ACTEW. The Commission proposed instead to use a firm specific approach and attempt to measure ACTEW's true cost of capital directly. Unfortunately, as the Commission now recognises, changing one of the elements of the traditional approach without recognising the implications of persisting with the other will further increase the financial pressure on ACTEW, perhaps undermining its financial stability. The Commission has now concluded that adopting the firm specific approach to measuring the cost of capital needs to be coupled with applying that rate of return, uncorrected for inflation, to a RAB that has not been indexed for inflation. In this way the cash flows provided to ACTEW, through the water and sewerage services prices resulting from this approach, will match those required to service its debt and provide a return to its equity holder.'[18]
>
> 'Adopting this proposal immediately, with the parameters adopted for the consultation with government, would place a disproportionate share of the burden of meeting the cost of the recent large investments in water infrastructure on current ACTEW customers, resulting in volumetric water prices increasing by around 25 per cent and the price of sewerage services reducing by 8 per cent with combined water and sewerage bills rising by 6 per cent.
>
> The only viable way of reducing this impost on current customers is to reduce, at least temporarily, the return on equity. Reducing the cash flows required by ACTEW to meet its operating or debt servicing costs would threaten its solvency. Making adjustments to the depreciation schedule, as in the FCR scheme, is subject to the difficulties discussed above and ultimately reduces the return on equity anyway.
>
> …
>
> It is the Commission's view that the extent of adjustment in water and sewerage services prices required to ensure the continued viability of ACTEW and provide government with

15 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, pp. iii and 66.

16 ibid, p. 112.

17 ibid, pp. 66-67.

18 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, pp. 3-4.

an appropriate return on equity requires a gradual transition. In reaching this conclusion the Commission has been mindful of the strong preference, expressed in submissions from both government and the wider community, to spread the burden of funding the water security investments beyond current ACTEW customers. Such a transition can only be funded through the government budget….

In designing a transition, the Commission has had regard to the rate of return on equity achieved by ACTEW in recent years, as well as the analysis of the Commission and views expressed by government cited above. The rate of return on equity, measured against 40 per cent of the RAB, has ranged between 2.2 and 5.5 per cent over the first four years of the current regulatory period. The Commission proposes to adopt a rate of return on equity for the first two years of the regulatory period of 2.8 per cent. With water sales at the Commission's forecast of 38 GL per year, this should produce net income for the water and sewerage business of about $21 million or about 70 per cent of the average net income for the first four years of the current regulatory period.

This rate of return on equity is substantially below that proposed in the draft report and that proposed in the Government's most recent submission…

Subject to any submissions made in the biennial recalibrations and evolving business conditions for ACTEW as the next regulatory period unfolds, the Commission proposes to lift the rate of return on equity to 4.4 per cent at the first biennial recalibration and to 6 per cent at the second. Whether a further increase is desirable could be canvassed in the terms of reference for next review of water and sewerage services."

4 Understanding the regulatory framework and best practice regulatory principles

In conducting this review, the Panel is required to work within the regulatory framework provided by the Act, and the terms of reference for the ICRC's original price direction (issued by the ACT Treasurer). This framework both defines and limits the Panel's powers. It also imposes certain obligations on the Panel, and identifies the various matters the Panel must have regard to in making its decisions. In addition, the Panel has chosen to be mindful of best practice regulatory principles in both its analysis and decision making given that tried and tested methods assist with ensuring a correct or preferable decision.

The sections below summarise the relevant provisions of the Act, the original terms of reference and best practice regulatory principles, and discuss how they impact on the Panel's decision making.

4. 1 Relevant provisions of the Act

The provisions relating to the Panel's review are set out in Part 4C of the Act. In keeping with section 24N(1) of the Act, the Panel, on an application for review of a price direction, may:

- substitute a new price direction for the original price direction made by the ICRC in relation to the prices for regulated water and sewerage services, or
- confirm the original price direction.

In undertaking this task, section 24N(2) of the Act requires the Panel to make a decision:

- on "the merits of the case", having regard to the criteria listed in section 20(2), and
- as required by sections 20A, 20B and 20C.

4.1.1 Merits of the case

In keeping with the traditional approach to merits-based appeals, the Panel is required to consider all the evidence about the merits of a decision. Then, if it decides the original decision should not stand, it must impose a **correct or preferable** decision:

- **'correct'** in the sense that the decision is made according to law, and consistent with the relevant legislative mandate, and
- **'preferable'** in the sense that if there is a range of decisions that are correct in law, the decision ultimately settled upon is the best that could be made on the basis of the available evidence and relevant facts.

Section 24O bestows the Panel with the same price investigation powers as the ICRC in considering the application for review. Therefore, in making the correct or preferable decision, the Panel is permitted to conduct its own analysis and consider all the evidence from a fresh perspective.

4.1.2 Criteria listed in section 20(2)

Section 20(2) of the Act requires the Panel to have regard to a range of matters in making its decision, which can broadly be categorised as follows:

- **consumer protection** – the protection of consumers from abuses of monopoly power, the quality, reliability and safety standards of the regulated services, the social impact of the pricing decision and their effect on inflation
- **economic efficiency** – the need for greater efficiency in the use and supply of the regulated services, and considerations of demand management and least-cost planning

- **financial viability** – the cost of providing the regulated services, the appropriate rate of return on investments in the regulated industry, and the impact of the pricing decisions on the regulated entity's borrowing, capital and cash flow requirements, and
- **environmental protection** – the principles of ecologically sustainable development.

The specific matters the Panel is required by section 20(2) to have regard to are set out in Table 4.1.

Table 4.1: Section 20(2) of the Act

Sub-section	Provision
(a)	the protection of consumers from abuses of monopoly power in terms of prices, pricing policies (including policies relating to the level or structure of prices for services) and standard of regulated services
(b)	standards of quality, reliability and safety of the regulated services
(c)	the need for greater efficiency in the provision of regulated services to reduce costs to consumers and taxpayers
(d)	an appropriate rate of return on any investment in the regulated industry
(e)	the cost of providing the regulated services
(f)	the principles of ecologically sustainable development mentioned in subsection (5) of the Act
(g)	the social impacts of the decision
(h)	considerations of demand management and least cost planning
(i)	the borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry
(j)	the effect on general price inflation over the medium term
(k)	any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person

There is a degree of tension between these matters. Therefore, while the Panel is required to have regard to all the matters, it may need to make trade-offs between them in making its decisions. In other words, the Panel will need to exercise its judgement to make decisions that strike an appropriate balance between the various matters.

4.1.3 Sections 20A, 20B and 20C

Sections 20A, 20B and 20C of the Act set out additional provisions that the Panel is required to have regard to when making its decisions. Boxes 4.1 to 4.3 outline these sections of the Act.

Box 4.1: Section 20A – Price regulation provisions

Section 20A of the Act states the following:

(1) A price direction must include a direction about the pricing of regulated services in the form of either or both of the following:

  (a) a price, a maximum price or both a minimum and maximum price for each regulated service;

  (b) a maximum total amount (revenue cap) that may be earned by a person providing regulated services from the provision of those services.

(2) A price direction must be made in accordance with the current reset principles for the regulated industry (see section 20B).

(3) A price direction may include any or all of the following:

  (a) a formula for calculating a price or amount mentioned in subsection (1);

  (b) a method by which a price or amount mentioned in subsection (1) is to be ascertained;

  (c) a reference to an event or events (price variation triggers) the happening of which would entitle the commission to initiate a reference for an investigation into a variation of the direction (under section 24F (Commission-initiated variation)).

Example for par (c)–method by reference to price indices

Box 4.2: Section 20B – Reset principles

Section 20B of the Act defines what is meant by the term reset (current and future) principles (sub-sections (1)-(3)) and also states the following:

(4) In a price direction, the commission may not–

  (a) vary, omit or replace the current reset principles; or

  (b) include any future reset principles that will have the effect of varying, omitting or replacing the current reset principles in their application at a future date.

(5) The commission may fix a period of effect for a price regulation provision of a price direction for regulated services that ends before the day when the current reset principles for the regulated services end.

(6) If the current reset principles governing a price direction (the earlier direction) will end on or before the date when any price regulation provisions in the earlier direction (the earlier provision) will end, the earlier direction must include future reset principles governing any price regulation provision (in the next price direction for the industry) that will supersede the earlier provision.

Box 4.3: Section 20C – Effective dates

Section 20C of the Act states the following:

(1) Each provision of a price direction–

  (a) comes into effect on a day ascertained in accordance with the direction, or 14 days after the day the final report containing the direction is presented to the Legislative Assembly, whichever is later; and

  (b) remains in effect until a day ascertained in accordance with the direction.

(2) Under subsection (1), the dates and periods of effect of different provisions of a price direction may be different.

4. 2 The original terms of reference

Section 24O of the Act states that in conducting its review, several provisions of the Act apply to the Panel "as if it were the commission conducting a price regulation investigation". In line with one of these provisions (section 17(1)), the Panel must conduct its review as authorised by the terms of the reference for the ICRC's original price regulation investigation. These terms of reference require it to have regard to the following matters in making its pricing decisions:

- policies of the ACT Government as they relate to water security and the use of water (see Box 4.4)
- national water initiatives, policies and agreements (see Box 4.5)
- the impact of a price of carbon on the provision of water and sewerage services[19]
- the ability of the price path to align the recovery of revenue with consumer benefits accrued from the water security projects, and
- all potential regulatory models, including consideration of the provision of sufficient flexibility in price setting to minimise the impact of significant price fluctuations.

Box 4.4: ACT Government policies on water security and use of water

The ACT Government's current water policy is contained in the *ACT Water Strategy 2014-44, Striking the Balance*, which was released in August 2014. It guides management of the Territory's water supply, management and catchment practices over the next 30 years, and is based around three 'outcomes':

1. Healthy catchments and water bodies: Well-managed, functioning aquatic ecosystems that protect ecological values and contribute to the liveability of the ACT community.
2. A sustainable water supply used efficiently: An integrated and efficient water supply system that provides for the optimal mix of supply options, encourages efficient use of water, and is resilient to climate variability, and supports the social, economic and environmental needs of the ACT community.
3. A community that values and enjoys clean, healthy catchments and waterways: Work with the ACT community to continue to use water efficiently, and to ensure safe, clean water for recreation and the environment.

In terms of water security and the use of water (outcome 2), the strategy notes that the water supply system is considered secure for at least the next 20 years, and details measures to plan for long-term water security in order to strengthen the resilience of the ACT's water supply system against a number of supply- and demand-related variables, such as climate change, future population growth, targets for reductions in per capita water use and environment flow requirements. The strategy also highlights options for more diverse water supply options, and identifies further measures to encourage water users to conserve water.

19 The Panel notes that the impact of the (now-repealed) carbon price on customer water bills is not material.

Box 4.5: The National Water Initiative

The National Water Initiative (NWI), which is the Council of Australian Governments' principal water policy agreement, was signed on 25 June 2004. Its sets out actions to achieve a more cohesive national approach to the way Australia manages, measures, plans for, prices, and trades water.

The NWI includes reforms to the pricing of water. The primary objective of these reforms is to ensure that pricing is used primarily to achieve economically efficient water use and water service provision, and to ensure the financial viability of water service providers. The agreed pricing reforms entail addressing:

- the overall level of prices–to ensure that prices recover the full efficient cost of providing water services from customers (also referred as 'full cost recovery'), with any government subsidies made transparent and gradually removed where possible
- the structure of tariffs–to introduce consumption-based charges to provide a signal for efficient water use, and to ensure that fixed charges reflect the fixed costs of service provision (rather than being based on property values, which makes them more akin to a tax), and
- price-setting processes and related institutional arrangements–to move towards independent economic regulation of water prices, with regulators aiming to ensure that only efficient costs are recovered through prices, and that those costs are sufficient to provide the levels of service that customers are willing to pay for and maintain the economic viability of the service provider in the long term.

Source: Based on National Water Commission, The National Water Initiative – securing Australia's water future: 2011 assessment

4. 3 Best practice regulatory principles

The Panel considers it appropriate for its decisions to be guided by best practice regulatory principles as, *inter alia*, this will help to ensure that its decisions are robust and stand up to scrutiny. These principles include the following:

- **Regulation should be cost effective, transparent, accountable, proportionate and targeted.** The costs of economic regulation are ultimately borne by customers. Cost-effective regulation means the long-term benefits to customers of regulation exceed the costs. Transparent means that regulators should be open, and keep regulations simple and clear. Accountable means that regulators should be able to justify decisions and be subject to public scrutiny. Proportionate means that regulators should intervene only when necessary, that remedies or mechanisms are appropriate to the risk posed, and that costs are identified and minimised. There should also be a clear match between the choice of remedy/mechanism and the regulatory objectives. Targeted means that regulation should be focused on the problem and minimise side-effects.
- **Regulation can adapt, but it should be predictable.** Economic regulation should have the capacity to evolve, respond to changing circumstances and continue to be relevant and effective over time. However, regulation should provide a stable, predictable and objective environment enabling all those affected to anticipate the context for future decisions and to make efficient long-term investment decisions with confidence. Decisions should avoid adding undue uncertainty to the business environment. Past decisions should not be unreasonably undone, and efficient and necessary investments should receive an appropriate return.
- **Regulation should be practical, pragmatic and feasible.** Regulatory decisions must be able to be implemented, taking account of information, systems and capability. The development of a complex new regime and information requirements, for instance, is neither pragmatic nor cost effective in the context of this review.

5 Determining the scope of the review

After considering the context, regulatory framework and other matters it will have regard to in making its decisions, the Panel turned to the scope of the review. Given the potential impacts on ACTEW and its customers – and the fact that the regulatory period covered by the review has already begun – the Panel considers it important that it reaches its decisions in a timely manner. The need for timeliness, and the limited resources available to the Panel, makes it impractical for it to examine **every** component of the original price direction in detail. Instead, the Panel has chosen to:

- consider and respond to the issues raised by ACTEW in its SOFC
- consider and respond to certain issues raised by other stakeholders in submissions and the hearing in the first phase of the review process
- focus its investigation on those matters that are within its remit **and** may have a material impact on prices and/or the financial viability of ACTEW, and
- within this limited scope, identify the individual components of the original price direction it must review and decide on in order to determine whether to confirm the original price direction or substitute a new price direction.

The Panel considers that limiting the scope in this way is consistent with its task, which is to review an existing price direction, not to conduct a new price regulation investigation and develop a price direction from scratch.

The sections below provide more detailed discussion on how the Panel determined the scope of the review, its decisions on the matters inside and outside this scope, and the components of the original price direction that require its review and decision-making.

5. 1 How the Panel determined the scope of the review

To determine the scope of the review, the Panel considered each of the matters ACTEW identified as the subject of its application for review in its SOFC, and the matters raised in other submissions. It then assessed each matter against a set of three criteria.

5.1.1 Matters raised by ACTEW

ACTEW raised the following matters in its SOFC:

- **The six-year regulatory period and biennial recalibration mechanism**. ACTEW contended that in deciding on a six-year regulatory period with biennial recalibrations, the ICRC did not have proper regard to sub-sections 20(2)(d), (e) and (i) of the Act.[20] It also contended this decision may be inconsistent with section 20A of the Act[21] because there are no clear principles or methods for determining forecast demand or the cost of equity. Further, it argued that the biennial recalibration mechanism:
  - provides an uncertain basis for its investment decisions
  - reduces its incentives for efficiency, and
  - increases the cost of the regulatory regime.
- Instead of a six-year regulatory period and biennial recalibration mechanisms, ACTEW proposed a five-year period from 2013-14 to 2017-18, and a range of alternative measures to address risk and uncertainty – including a revenue cap form of regulation (rather than a price cap) with an 'unders and overs' mechanism, annual demand updates and more extensive pass-through provisions.

20 See Table 4.1 for these sub-sections of the Act.

21 See Box 4.1 for this section of the Act.

- **The firm-specific approach the ICRC used in calculating the rate of return[22] (including the failure to recognise tax).** ACTEW contended that the CPA (discussed in Chapter 3) requires the application of competitive neutrality principles to ACTEW and that these principles preclude the use of a firm-specific approach to calculating the rate of return. It also argued that its use results in a less efficient allocation of resources, and leads to the absence of a clear methodology for estimating the cost of equity (discussed below). ACTEW noted that all other regulators in Australia have rejected this approach and proposed that the benchmark entity (or typical firm) approach be adopted.
- **The cost of equity the ICRC adopted for the first two years of the regulatory period.** In determining the rate of return, the ICRC adopted a value for the cost of equity that was below the lower bound of the range it had previously identified for this value.[23] ACTEW claimed that in making this decision, the ICRC did not have proper regard to sections 20(2)(d), (e) and (i) of the Act. It also noted that the ICRC did not provide clear principles or theory on how the cost of equity should be calculated after the first two years of the period. In addition, it argued that the decision subjects ACTEW to a significant loss, creates uncertainty over future decisions, and hampers incentives for efficient investment. It proposed that the cost of equity be calculated using the Capital Asset Pricing Model.
- **The calculation of depreciation**.[24] ACTEW submitted that the ICRC made a number of errors when calculating depreciation and that if these were not corrected, they would reduce ACTEW's cash flow in the short term, and create uncertainty about how depreciation will be calculated in future regulatory decisions. ACTEW also proposed that depreciation for new capital expenditure be calculated using the accounting and engineering based asset lives.

ACTEW also noted that if the Panel decides not to implement the biennial recalibration process, it will need to make decisions about forecast expenditure, demand and a number of other matters for 2015-16 to 2017-18 because no decisions were made about these in the original price direction.

ACTEW stated that it was not seeking review of the ICRC's final decision not to allow recovery of any of the $238 million shortfall in revenue in the previous regulatory review (even though ACTEW contends that this shortfall was eligible for full pass-through in the current regulatory period). The Panel therefore did not consider this issue as part of its deliberations about the scope of its review.

5.1.2 Matters raised in other submissions

A wide range of issues were raised in other submissions in response to the Panel's directions hearing (discussed in Chapter 2). These include:

- the appropriate rate of return
- the value of the regulated asset base (RAB)
- ACTEW's operating costs
- the regulatory treatment of water security projects (ie, how the costs of these projects are recovered over time)
- the structure of ACTEW's water tariffs
- the social impact of increases in the prices of water and sewerage services
- the governance of ACTEW, and
- the dividends and Water Abstraction Charge ACTEW pays to the ACT Government.

22 The rate of return is a key input for calculating the return on capital (which is one of the 'building blocks' used to determine the revenue requirement), and is a function of both the cost of equity and the cost of debt.

23 The ICRC identified the feasible range of the cost of equity in its draft report.

24 Depreciation is another 'building block' used to determine the revenue requirement.

5.1.3 Panel's assessment criteria

To make its decision on whether each of the matters raised in ACTEW's SOFC and other submissions fall inside or outside the scope of the review, the Panel assessed the matter against three criteria.

First, it assessed whether the matter falls within the Panel's remit and the appropriate role of an economic regulator. As Chapter 4 outlined, the regulatory framework provided by the Act both defines and limits the Panel's powers. The Panel can only investigate matters that fall within these defined powers. In addition, as Chapter 3 discussed, there is a clear delineation between the roles and responsibilities of the Panel (as economic regulator) and those of the other participants in the ACT water regulatory system – including government, ACTEW and customers. It is only appropriate for the Panel to investigate matters that are consistent with the roles and responsibilities of an economic regulator.

Second, it assessed the materiality of the matter. The Panel has given emphasis to the matters likely to have a material impact on the prices of water and sewerage services in the ACT, and/or on the financial viability of ACTEW. (This means, for example, that matters such as the pricing of miscellaneous services were not investigated as part of the Panel's review.)[25]

Third, it assessed whether it was practical or pragmatic to investigate the matter. In line with its Charter (see Appendix 2), the Panel is committed to taking a pragmatic approach to this review. It aims to deliver pragmatic outcomes, taking into account the limited resources available to it, the importance of reaching decisions in a timely fashion, and the need for those decisions to stand up to scrutiny. Given this, it has limited ability to investigate innovative approaches and/or examine matters likely to require extensive consultation, and a preference for relying on accepted, well-tested regulatory techniques in making its decisions.

5. 2 Panel's decisions on which matters are within the scope

In the Panel's view, all of the matters in ACTEW's SOFC are within the scope of its review. It considers each of these matters is consistent with the Panel's remit, could potentially have a material impact on ACTEW's financial viability, and can be investigated within the time and resources for the review.

The Panel also agreed that, given the biennial recalibration mechanism is within the scope of the review, a range of matters connected to this mechanism also need to be reviewed. Most significantly, these include forecast operating and capital expenditure and forecast demand in the years beyond 2013-14 and 2014-15.

The Panel notes that many of the matters raised in other submissions are related to the matters raised by ACTEW, and therefore are within the scope the review. Of those that are **additional** to the matters raised by ACTEW, the Panel decided the following are within the scope:

- the regulatory treatment of the water security projects[26]
- the value of the RAB, and
- the social impact of increases in the prices of water and sewerage services.

In the Panel's view, these additional matters are consistent with the Panel's remit, could potentially have a material impact on ACTEW's financial viability, and can be investigated within the time and resources for the review. The Panel also notes that it is required to consider the social impact of increases in prices under section 20(2) of the Act.

25 In these cases the Panel has just adopted the same approach as the ICRC.

26 26 The Panel notes that the terms of reference for the original price regulation investigation undertaken by the ICRC required consideration of "the ability of the price path to align the recovery of revenue with consumer benefits accrued from the water security projects".

However, the Panel assessed some of the matters raised in other submissions as falling outside the scope of its review. These include:

- **The structure of water tariffs.** While within the Panel's remit, the Panel considers it is not practical for it to investigate ACTEW's tariff structures. The Panel accepts assertions made in submissions that tariff structures have a material impact on water customers. However, a review of tariff structures would require extensive consultation and analysis, which is not possible within the time available for this review. The Panel also notes that the ICRC has indicated it may use other processes to review tariff structures within this regulatory period. Given this, the Panel considers it would not be sensible for it to also review tariff structures.
- **The governance of ACTEW and the dividends and Water Abstraction Charge ACTEW pays.** The Panel does not have a mandate to look at these matters. As section 3.1.2 discussed, both are matters for the ACT Government, not the economic regulator. The Panel notes that the same applies to alternative government financing strategies for long-lived assets, which was raised in one submission.[27]

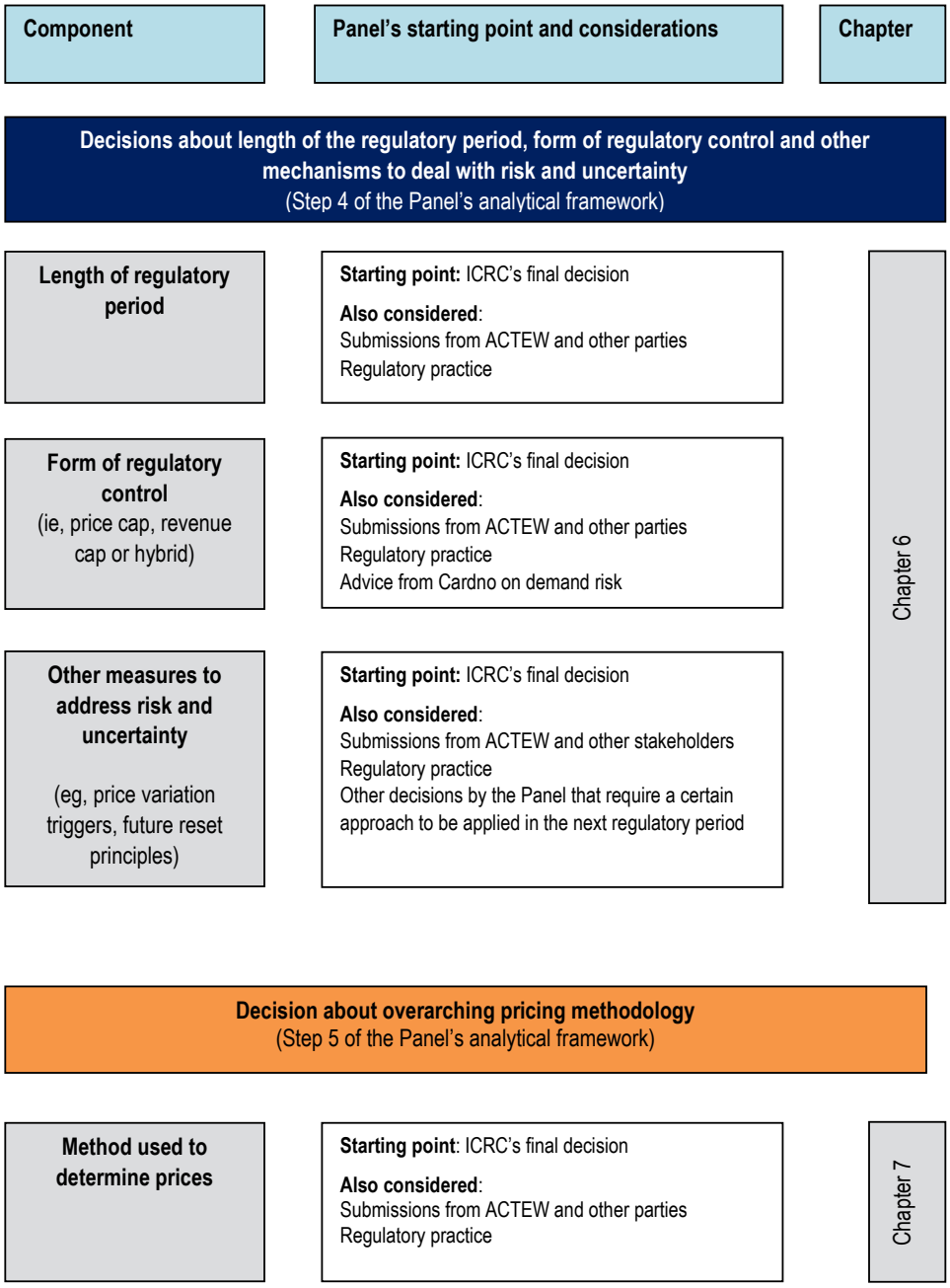
5. 3 Components of the original price direction that require review and decision-making

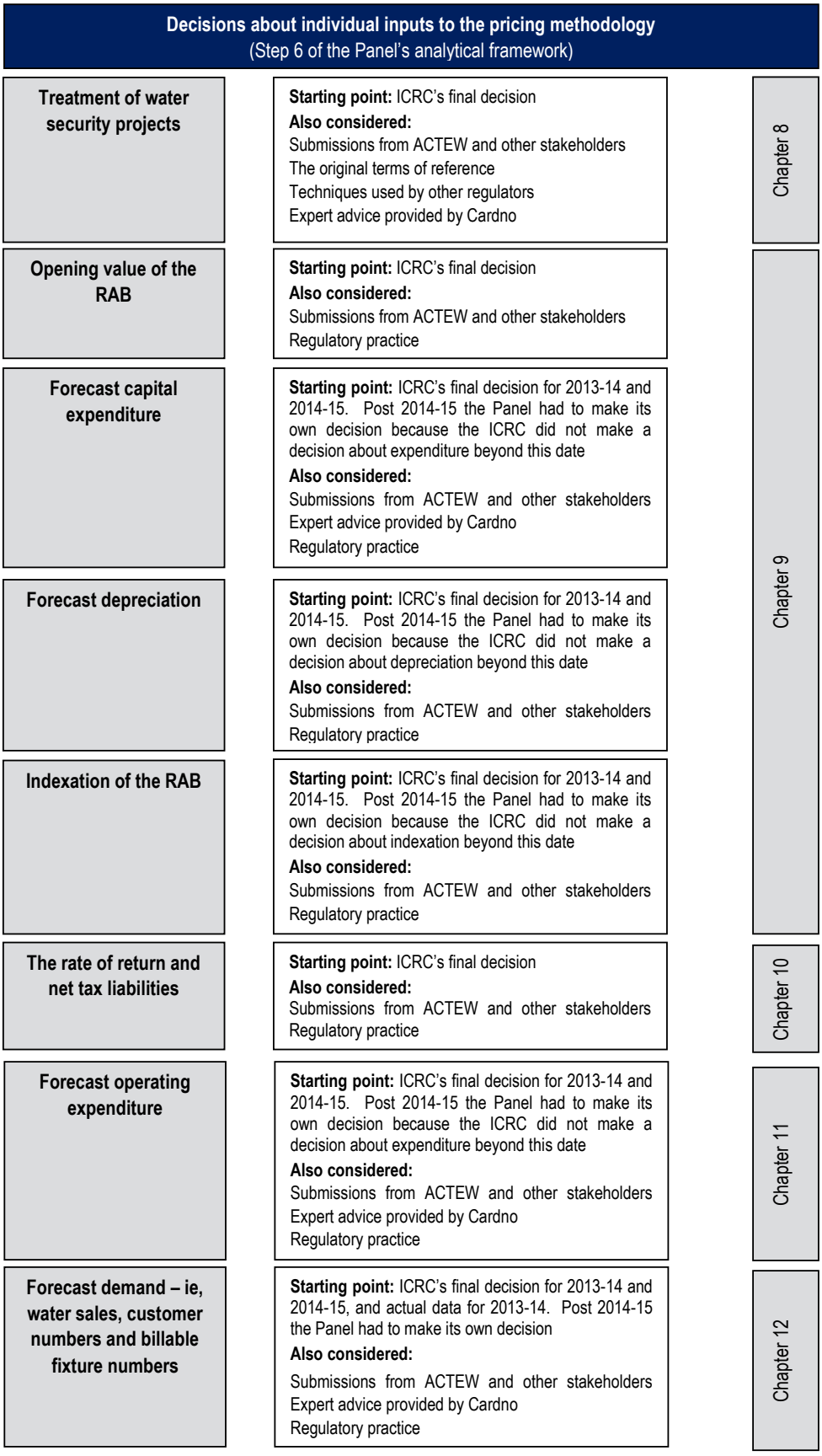
In line with its decisions on the scope, the Panel identified the individual components of the original price direction that it will need to review in order to reach its overall decision on whether to substitute a new price direction for the original price direction or to confirm the ICRC's original direction.

Figure 5.1 sets out these components, and indicates the starting point for the Panel's review of each. This figure also indicates the chapter in which the Panel's decision on each component is discussed.

27 Submission to the Review of ICRC Price Increases in ACTEW Water and Sewerage, 6 August 2014.

Figure 5.1: Components of original price direction the Panel must review and make decisions on




Decisions about individual inputs to the pricing methodology
(Step 6 of the Panel's analytical framework)
Treatment of water security projects
Starting point: ICRC's final decision
Also considered:
Submissions from ACTEW and other stakeholders
The original terms of reference
Techniques used by other regulators
Expert advice provided by Cardno
Chapter 8
Opening value of the RAB
Starting point: ICRC's final decision
Also considered:
Submissions from ACTEW and other stakeholders
Regulatory practice
Forecast capital expenditure
Starting point: ICRC's final decision for 2013-14 and 2014-15. Post 2014-15 the Panel had to make its own decision because the ICRC did not make a decision about expenditure beyond this date
Also considered:
Submissions from ACTEW and other stakeholders
Expert advice provided by Cardno
Regulatory practice
Forecast depreciation
Starting point: ICRC's final decision for 2013-14 and 2014-15. Post 2014-15 the Panel had to make its own decision because the ICRC did not make a decision about depreciation beyond this date
Also considered:
Submissions from ACTEW and other stakeholders
Regulatory practice
Indexation of the RAB
Starting point: ICRC's final decision for 2013-14 and 2014-15. Post 2014-15 the Panel had to make its own decision because the ICRC did not make a decision about indexation beyond this date
Also considered:
Submissions from ACTEW and other stakeholders
Regulatory practice
Chapter 9
The rate of return and net tax liabilities
Starting point: ICRC's final decision
Also considered:
Submissions from ACTEW and other stakeholders
Regulatory practice
Chapter 10
Forecast operating expenditure
Starting point: ICRC's final decision for 2013-14 and 2014-15. Post 2014-15 the Panel had to make its own decision because the ICRC did not make a decision about expenditure beyond this date
Also considered:
Submissions from ACTEW and other stakeholders
Expert advice provided by Cardno
Regulatory practice
Chapter 11
Forecast demand – ie, water sales, customer numbers and billable fixture numbers
Starting point: ICRC's final decision for 2013-14 and 2014-15, and actual data for 2013-14. Post 2014-15 the Panel had to make its own decision
Also considered:
Submissions from ACTEW and other stakeholders
Expert advice provided by Cardno
Regulatory practice
Chapter 12

6 Regulatory period, form of control and other risk allocation measures

The first components of the original price direction the Panel reviewed were the length of the regulatory period, the form of regulatory control (eg, a revenue cap or a price cap) and the other risk allocation measures to apply in the period. To reach its draft decision on these components, the Panel reviewed:

- The range of risks and uncertainties ACTEW and its water customers are likely to face in this regulatory period.
- The ICRC's final decision to adopt:
  - a six-year regulatory period with biennial price recalibrations to address demand and expenditure risk
  - a price cap form of control
  - CPI escalation and cost pass-through mechanisms to address expenditure risk between biennial recalibrations, and
  - a price trigger event mechanism to address risk related to unforeseen events.
- ACTEW's SOFC, including its concerns about:
  - the biennial recalibration process and the length of the regulatory period[28]
  - the form of control and the measures used to deal with demand risks,[29] and
  - the cost pass-through provisions.[30]

In doing so, the Panel assessed the extent to which the ICRC's final decision and ACTEW's proposal are consistent with the requirements of the Act and the original terms of reference, and strike an appropriate balance between the following matters:

- providing customers with some degree of price stability and predictability over the regulatory period
- minimising regulatory costs
- ensuring ACTEW remains financially viable and able to meet its service obligations, and
- promoting economic efficiency.

The Panel also considered the approaches employed by other regulators in recent water and sewerage decisions, and the risk allocation and incentive frameworks used in other regulatory regimes (outlined in Appendix 4).

The sections below provide an overview of the Panel's draft decision on the length of the regulatory period, form of control and other risk allocation measures, and then discuss these in more detail.

6. 1 Overview of Panel's draft decision

The Panel's draft decision on this aspect of the original price direction is summarised in Table 6.1.

28 ACTEW, Statement of Facts and Contentions, 31 July 2014, pp. 4, 16-20 and 31.

29 ibid, pp. 5 and 28-29.

30 ibid, pp. 5 and 29-31.

Table 6.1: Draft decision – Regulatory period, form of control and other tools

Issue	Draft Decision
Length of regulatory period	Five years (1 July 2013 – 30 June 2018) with **no** biennial recalibrations.
Form of control and measures to deal with demand risk	Hybrid price and revenue cap, with individual price caps set for water and sewerage charges and a demand volatility adjustment mechanism used to account for deviations between actual and forecast volumetric water sales revenue (ie, revenue from tier 1 and tier 2 water sales) in excess of a 7% deadband over the full five year regulatory period (2013-14 to 2017-18). If this mechanism is triggered then the ICRC will be required to include any under or over recovery of revenue associated with this deviation (measured in NPV terms) in the calculation of ACTEW's revenue requirement for water for the regulatory period commencing on 1 July 2018. The requirement to take this into account will be given effect through a future reset principle.
Measures to deal with expenditure risks	CPI escalation mechanism. *Ex post* capex review. Annual cost pass-through mechanism to deal with changes in subvention payments, changes in the amount ACTEW is required to pay the ACT Government for the WAC and UNFT, changes in taxes, changes in service standards, changes in regulation and the Tantangara Transfer Payment event. The materiality threshold for this mechanism will be: • $0 for WAC, UNFT and subvention payments, and • $2 million ($2012-13) per event for all other cost pass-through categories.
Measures to deal with unforseen events	Price variation trigger event mechanism to deal with the following unforeseen events if they satisfy the materiality threshold: an act of terrorism; a major natural disaster; major damage to infrastructure; a significant change in ACTEW's financial or corporate structure; and an unforeseen or *force majeure* event. The materiality threshold in this case will be defined as 'an event that severely restricts ACTEW's ability to provide services and imposes a total annualised cost on ACTEW for the remainder of the regulatory period of more than $12 million ($2012-13)'.

Regulators sometimes use incentive schemes that are designed to encourage the regulated business to improve its cost efficiency and service standards over the regulatory period in conjunction with the form of control and risk allocation measures. These incentive schemes are outlined in Appendix 4. In the Panel's view, there may be merit in including such schemes in ACTEW's regulatory framework. However, there was insufficient time in this review to carry out the analysis and consultation required to properly consider this issue. Therefore the Panel intends to suggest to the ICRC that it investigate the potential use of an operating and capital expenditure incentive scheme for the next regulatory period, and consider whether a service-level incentive scheme should also be introduced.

6. 2 Risks that ACTEW and its customers are expected to face

When calculating a regulated business' revenue requirement and prices prior to the start of a regulatory period, there is always a risk that the business' actual expenditure and/or demand for the regulated services will deviate from the forecasts used in this calculation. There is also a risk that a major unforeseen event (such as a natural disaster) may occur in the period and adversely affect the business' ability to provide the service and/or its financial viability.

To better understand the risks that ACTEW and its customers are likely to face in this period at a high level, the Panel analysed:

- the deviations between forecast and actual expenditure and water sales that occurred in the previous regulatory period and the sources of those deviations, and
- the key sources of uncertainty facing ACTEW and its customers in the current regulatory period.

6.2.1 Deviations between forecast and actual expenditure and water sales in the last regulatory period

To provide some insight into the risks and uncertainties ACTEW and its customers faced in the previous regulatory period, Figure 6.1 compares:

- the forecast expenditure and forecast water sales for the period 1 July 2008 to 30 June 2013, which the ICRC used in making its 2008 price direction, with
- ACTEW's actual expenditure and actual water sales over that period.

As this figure shows, the previous regulatory period was characterised by higher capital expenditure and lower water sales than was anticipated when the 2008 price direction was made. The sources of these deviations and the $268 million shortfall in water revenue that occurred in the period include the following:

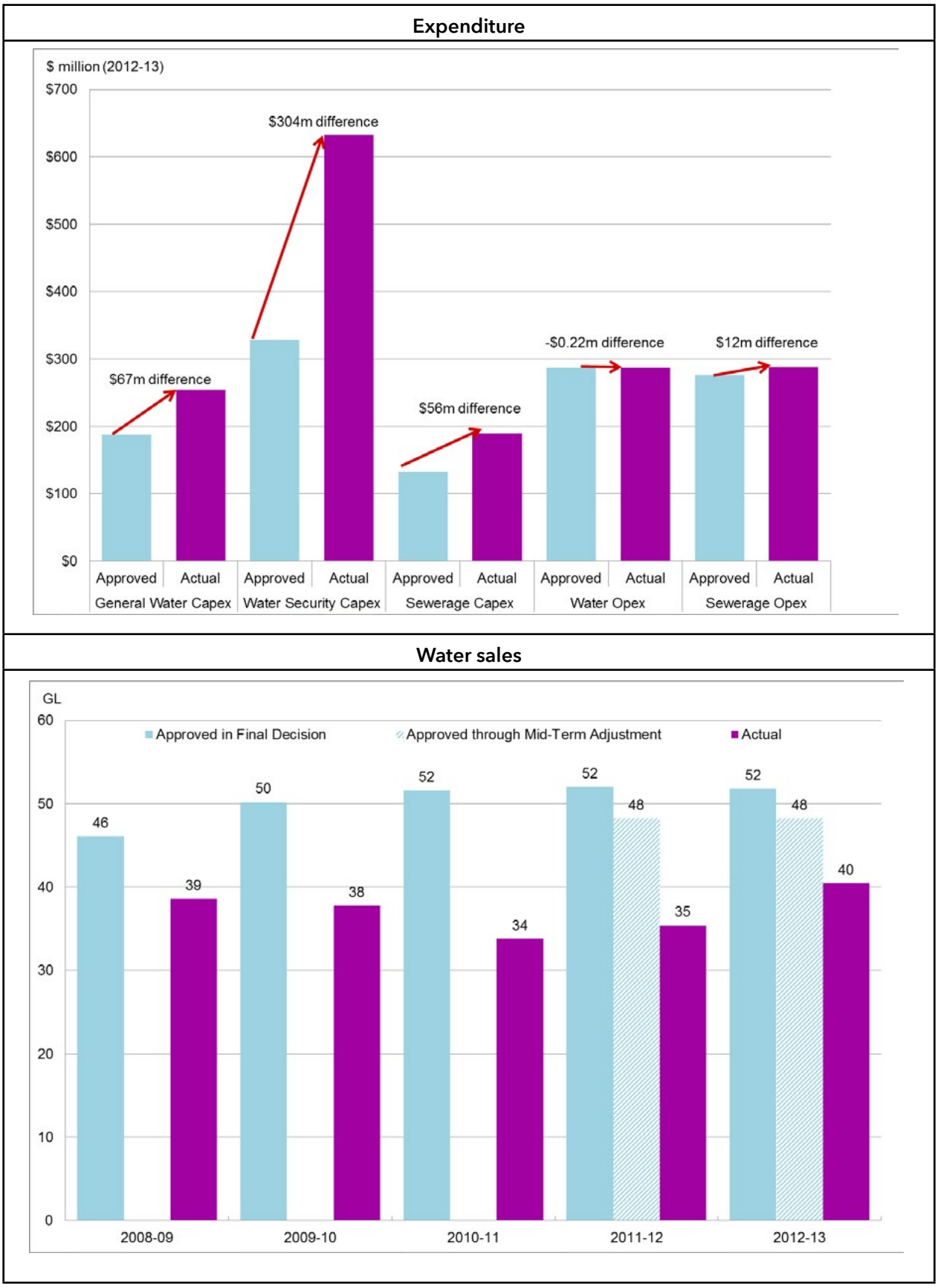
- **Actual capital expenditure related to water and sewerage services** was $427 million (or 70%) **higher** than projected when the 2008 price direction was made. Capital expenditure on water security projects accounted for $304 million of this overspend.

- **Actual operating expenditure related to sewerage services** was $11 million (or 4%) **higher** than projected when the 2008 price direction was made.

- **Actual water consumption** from 2008-09 to 2011-12 was between 17.5% and 35% **lower** than projected when the 2008 price direction was made, and in 2011-12 was 27% **lower** than projected when the 2011 mid-term adjustment was carried out. ACTEW and the ICRC attributed this lower than forecast consumption to the stage 3 water restrictions that were in place until 2010, and two relatively cool and wet summers in 2010-11 and 2011-12.

- **Actual water revenue** from ACTEW's water operations was $268 million (or 27%) **lower** than the revenue requirement for the 2008 price direction. The extent of this deviation is not surprising given water consumption was so much lower than expected, and that 90% of ACTEW's water revenue is derived from volumetric charges.

Figure 6.1: Forecast and actual expenditure and water sales for the previous regulatory period



Source: Underlying data obtained from ICRC, Draft Report – Regulated Water and Sewerage Services, February 2013 and ACTEW, Information return: demand forecasts, 15 August 2014, p. 5.

6.2.2 Key sources of uncertainty for ACTEW and customers in this period

Since the completion of the water security projects in 2013, there appears to have been an improvement in operating conditions and a corresponding reduction in the uncertainty facing ACTEW and customers in this regulatory period. However, ACTEW and its customers may still be exposed to a number of expenditure and demand related risks in this regulatory period. An overview of these risks is provided in the table below.

Table 6.1: Expenditure and demand related risks in this regulatory period

Risk type	Risks
Capital expenditure	Although capital expenditure is expected to be substantially lower in this regulatory period than it was in the previous period, it is expected to be quite lumpy (see section 9.3). Apart from the uncertainty surrounding the actual costs that will be incurred and the timing of this expenditure, the only risks ACTEW has identified are that: • it may be required to carry out additional projects that were not foreseen at the time of the determination (eg, through changed land release programs), and • there may be a natural disaster, which would require major capex to be carried out.
Operating expenditure	Operating expenditure is expected to be relatively stable over the regulatory period for both water and sewerage, rising by just 3% in real terms over the period (see chapter 11). The only risks relating to operating expenditure ACTEW has identified are: • changes to the timing and cost of major maintenance works • changes in the Water Abstraction Charge (WAC), the Utilities Network Facilities Tax (UNFT) and Commonwealth Government subvention payments • changes in other taxes and carbon pricing • changes in service standards and other regulations that ACTEW is subject to • a requirement that ACTEW exercise its option to transfer water from the regulated Murrumbidgee River to the ACT via the Snowy Mountains Scheme (Tantangara Transfer), and • a major natural disaster.
Demand	The key demand-related uncertainties facing ACTEW and its customers in this regulatory period are whether: • the demand for water will return to its pre-water restriction level and, if so, how quickly it will bounce back, or • the stage 3 water restrictions and campaigns carried out to encourage customers to conserve water have resulted in a structural break in the demand for water and, if so, the level at which demand will settle. While it is difficult to know at this stage how these issues will unfold, one thing that is clear is that the risk of stage 3 water restrictions being reintroduced in this regulatory period is extremely low. So the demand for water is more likely to increase in this regulatory period than it is to fall. Other sources of demand-related uncertainty in this period are climatic conditions; population growth; and behavioural changes.

From ACTEW's perspective, the uncertainty surrounding the demand for water is the most significant risk it is likely to face in this period, given that over 90% of its water revenue is currently recovered through a volumetric inclining block water charge ($/kL).[31] This risk is far lower than what it was though in the previous regulatory period, given the water security projects have been developed and the risk of stage 3 water restrictions being reintroduced is low.[32] As to expenditure risks, these do not, in the Panel's view, appear to be any greater than those faced by other regulated service providers.

From customers' perspectives, the greatest risk is that the water sales forecasts will prove conservative, so that prices will be higher than necessary to meet ACTEWs revenue requirement. The expenditure related risks, on the other hand, appear to be quite low so there is less of a risk of customers bearing the effects of higher than forecast costs (even if these costs are prudent and efficient).

31 When sewerages services are included, this reduces to 53%.

32 This point has been acknowledged by both the ICRC and ACTEW. See ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 164.

6. 3 Length of the regulatory period

In water and other regulated industries in Australia, the length of the regulatory period is typically five years. However, the Panel is aware that shorter or longer regulatory periods have been adopted in the following circumstances:

- Shorter regulatory periods have been adopted when there has been a significant degree of uncertainty surrounding demand, expenditure or general operating conditions and where the regulator has assessed the benefits of the shortened period (eg, being able to respond more rapidly to changing circumstances) outweigh both:[33]
  - the higher regulatory costs that are associated with shorter regulatory periods, and
  - any adverse effects the shorter regulatory period may have on price stability, predictability and a regulated business' incentive to pursue efficiencies.
- Longer regulatory periods have been adopted where the risks associated with locking in prices for a longer period are considered low and where there have been effective safeguards in place to deal with any risks that may arise over the longer period.[34]

6.3.1 ICRC's final decision

In its final decision, the ICRC adopted a six-year regulatory period (1 July 2013 – 30 June 2019) and made provision for two biennial recalibrations within this period. The ICRC's rationale for employing the biennial recalibration process is explained in the following extract:[35]

> "The form of regulation… was designed to build on the current form of regulation while ensuring that the model would cope better with unforeseen circumstances, such as those that occurred during the current regulatory period. Specifically, the combination of the six-year regulatory period and the recalibration of key parameters at two-yearly intervals was considered an appropriate means of establishing a future price path that was sufficiently flexible to take account of updated information relating to both expenditures and water consumption. In addition, [it]…reduces the possibility of ACTEW's revenue diverging significantly from…forecast and creates a closer nexus between…expenditure planning practices and the Commission's price determination process."

Unlike a full price determination, the ICRC expected the biennial recalibration process to be relatively straightforward because it would only involve:

> "…adjustments to selected elements of the pricing model, based on inputs from ACTEW that can be taken directly from its internal reporting and management systems and methodologies established as part of the form of regulation."[36]

The ICRC concluded that the additional costs associated with carrying out the recalibrations would be "marginal" and that the benefits to the community of the recalibrations would outweigh any increase in costs incurred.[37] The benefits cited by the ICRC included the following:[38]

- regular interactions will mean the ICRC is in a better position to understand ACTEW's operations and assess the prudence and efficiency of its expenditure

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33 See for example, IPART, Final Report, Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services, June 2012, p. 31 and ESC, Final Decision, Price Review 2013: Greater Metropolitan Water Businesses, June 2013, Chapter 3.

34 See for example, ACCC, Final Decision – Central West Pipeline Access Arrangement, 30 June 2000, p. 35, ACCC, Final Decision – Amadeus Basin to Darwin Pipeline, 4 December 2002, p. 156 and ACCC, Draft Decision – DVP, 23 May 2007, pp. 94-95.

35 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 31.

36 ibid, p. 35.

37 ibid, pp. 36-37.

38 ibid, pp. 35-37.

- regular recalibrations will enable the ICRC to consider projects when major decisions are made, which will reduce the risk of it later deeming it imprudent or inefficient and reduce regulatory costs because there will be no need to carry out a large-scale retrospective assessment of capex, and
- regular reviews will help ACTEW to improve efficiency.

6.3.2 ACTEW's SOFC

In its SOFC, ACTEW contended that the adoption of a six-year regulatory period with biennial recalibrations effectively amounts to a series of two-year regulatory periods, and that in making this decision, the ICRC failed to have proper regard to sections 20(2)(c), (e) and (i) of the Act. Elaborating further on these contentions, ACTEW claimed the biennial recalibration process:[39]

- provides ACTEW with a "highly uncertain basis on which to make critical operating, investment and financing decisions" because no clarity has been provided on the principles or methods that will be used to update demand forecasts and the cost of equity
- reduces ACTEW's incentive to find ways to reduce costs over time and to carry out efficient investment, and
- gives rise to higher regulatory costs (estimated by ACTEW as an additional $1.65–$1.8 million pa) because the level of information the ICRC will require to make the decision will not be substantially different from what it requires for a price regulation investigation.

In addition, ACTEW claimed that the biennial recalibration process is inconsistent with section 20A of the Act, because it provides for "subjective decisions" within the regulatory period.[40] It noted that given the way the review provisions are drafted in Part 4C of the Act, it may be unable to seek a review of a recalibration decision even though it constitutes a substantive pricing decision.[41]

- Given these concerns, ACTEW submitted that the six-year regulatory period with biennial recalibrations should be abandoned, and a five-year regulatory period (1 July 2013 – 30 June 2018) adopted in its place.

6.3.3 Panel's considerations and draft decision

As far as the Panel can ascertain, the ICRC's decision to implement a biennial recalibration process has not been employed by any other regulators in Australia. In evaluating this decision, the Panel had regard to:

- whether the risks and uncertainties facing ACTEW and its customers in this regulatory period are sufficiently high to require biennial recalibrations
- whether the benefits of the biennial recalibration process are likely to outweigh the costs
- whether the benefits of the biennial recalibration process can be achieved through other less costly measures, and
- the appropriate length of the regulatory period, taking account of its findings on the above matters and the availability of information.

Based on these considerations, the Panel made a draft decision **not** to include biennial recalibrations in this regulatory period, and to adopt a five-year regulatory period from 1 July 2013 to 30 June 2018.

6.3.3.1 Are the risks and uncertainties sufficient to warrant biennial recalibrations?

The Panel understands that the ICRC's decision to implement the biennial recalibration process was primarily driven by concerns about:

39 ACTEW, Statement of Facts and Contentions, 31 July 2014, pp. 16-20.

40 ibid, p. 19.

41 ibid.

- how the regulatory framework coped with lower than forecast water sales and higher than forecast expenditure on the water security projects in the previous regulatory period, and
- the potential for water sales and expenditure to deviate from forecasts in this regulatory period.[42]

The regulatory framework was placed under a considerable degree of strain in the previous regulatory period. However, as section 6.2.2 discussed, since the water security projects were completed, the degree of risk and uncertainty facing ACTEW and its customers has fallen and the Panel is not convinced that the risks are sufficient to require the biennial recalibration process. That is not to say that there is not a risk that actual expenditure or demand will deviate from the forecasts used to develop prices over the regulatory period because, as with any *ex ante* price setting process, this will always be a risk. However, in the Panel's view, this risk can be dealt with more effectively and proportionately through the form of control and other risk management tools (discussed in section 6.5 and 6.6).

6.3.3.2 Do the benefits of biennial recalibrations outweigh the costs?

The Panel notes the ICRC's view that the benefits of the biennial recalibration process (such as enabling it to respond more rapidly to changing conditions and improving the ICRC's decision making ability) outweigh the costs. However, given the Panel's finding that the degree of risk and uncertainty in this regulatory period is likely to be substantially lower than in the previous regulatory period (discussed above), it considers these benefits are likely to be relatively low. Further, the Panel is not convinced that these benefits outweigh the adverse effects the recalibration process is likely to have on:

- **Price stability and predictability.** The Panel agrees with ACTEW's contention that the biennial recalibrations effectively result in a series of two-year regulatory periods. This provides the ICRC with limited scope to smooth the effect on prices of any changes in demand, operating expenditure, capital expenditure and rate of return in a two-year period. As a result, prices are likely to be more variable than they would if a recalibration process was not used, and customers will have less certainty about prices over the regulatory period. In the Panel's view, this is less than ideal, given that customers have already faced a number of significant changes in prices over the previous two regulatory periods.[43] Further, this does not fit well with clause 1(e) of the original terms of reference, which states that consideration should be given to minimising the impact of significant price fluctuations.
- **ACTEW's incentive to pursue efficiencies**. ACTEW will only be able to retain the benefits of any efficiency measures for the two years between biennial recalibrations. This reduces its incentive to implement such measures. It may also encourage ACTEW to adopt a shorter term expenditure focus, which could have adverse longer term implications for the efficiency of its operations.
- **Regulatory costs.** In the Panel's view, the regulatory costs associated with the recalibration process are likely to be higher than the ICRC anticipated because, while some aspects of the price direction may be locked in, the ICRC will still need to:
  - undertake a detailed review of operating expenditure, capital expenditure, demand, ACTEW's cost of debt, the cost of equity and other revenue sources over the period (and in later years if it decides to provide indicative prices for these years), and
  - consider the effect that the prices it has derived are likely to have on customers, inflation and ACTEW's financial viability.

Other parties, including ACTEW, can also be expected to incur costs in participating in the review process. Based on the Panel's experience in this review, it considers that these costs are likely to be material.

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42 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 31.

43 For example, in the last regulatory period the water supply charge increased by 17.5% within the period and tier 1 and tier 2 volumetric charges rose by 31%. In the 2004-2008 regulatory period, the water supply charge remained constant while the tier 1 price rose by 50%, the tier 2 price rose by 67% and the tier 3 price by 90% over the regulatory period. See ICRC, Final Report: Water and Wastewater Price Review, April 2008, p. 127 and ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 157.

6.3.3.3 Can the biennial recalibration process benefits be achieved in other ways?

As part of its broader consideration of this issue, the Panel considered whether there are any other measures that could be used to achieve some of the claimed benefits of the recalibration process, such as:

- improving the ICRC's ability to assess the prudence and efficiency of expenditure, and
- allowing the ICRC to assess major capital expenditure projects when decisions are made rather than at the end of the regulatory period.

One measure that the Panel thinks could improve the regulatory review process is to require ACTEW to submit a report to the ICRC each year, which sets out:

- the actual operating and capital expenditure it incurred in the previous financial year, and an explanation for any major deviation from the expenditure allowances approved in the price direction
- the revenue it received from the provision of water and sewerage services in the previous financial year and revenue received from other sources, and
- its actual water sales, water and sewerage customer numbers, fixture numbers, dam releases and sewerage volumes in the previous financial year.

While the Panel recognises this reporting requirement will give rise to additional costs, it expects the costs would be offset by both a reduction in the degree of information asymmetry and improvements in the ICRC's ability to monitor ACTEW's performance and assess the prudence and efficiency of ACTEW's expenditure. Therefore, the Panel intends to suggest to the ICRC that it consider implementing this reporting requirement. The Panel also seeks feedback from stakeholders on whether this reporting requirement needs to sit within the price direction or if the ICRC can otherwise obtain this information from ACTEW through its information gathering powers.

6.3.3.4 What is the appropriate length of the regulatory period?

Given its decision not to include a biennial recalibration process, the Panel considered whether a five-year or six-year regulatory period is appropriate.

From a practical perspective, the Panel notes that ACTEW only provided the ICRC with forecasts for a five-year period (ie, 1 July 2013 – 30 June 2018), in line with length of the regulatory period the ICRC originally signalled it would adopt.[44] While the Panel could have asked ACTEW to provide an additional year of forecasts, it considered that this would have led to further costs and delays to all parties. It would also have materially altered the scope of the Panel's work, because the additional information would not have been previously reviewed by either the ICRC or the public. In the Panel's view, the costs of obtaining this information outweigh the benefits of adding a further year to the regulatory period.

Given this view, and the risks that can be associated with a longer regulatory period, the Panel decided to adopt a five-year regulatory period – from 1 July 2013 to 30 June 2018.

6. 4 Form of control and measures to deal with demand risk

Section 20A(1) of the Act states that a price direction must include a direction about the form of control that will apply, which may be:

(a) a price, a maximum price or both a minimum and maximum price for each regulated service, and/or

(b) a maximum total amount (revenue cap) that may be earned by a person providing regulated services from the provision of those services.

Further detail on the alternative forms of control that are provided for by this section of the Act is provided in the Table 6.2. As this information highlights, the choice between these forms of control has important implications for the allocation of demand risks between customers and the regulated

44 ICRC, Issues Paper, Regulated water and sewerage services 2013-18, p. 2.

business. The choice also has implications for price stability, revenue stability and the regulated business' incentive to encourage efficient utilisation of the asset.

Table 6.2: Alternative forms of control

Form of control	Description and implications
Pure revenue cap (proposed by ACTEW)	**Description:** Under this option a cap is placed on the revenue that a regulated service provider can earn in each year. To account for deviations between actual revenue and the revenue cap arising as a result of variations between actual and forecast demand, an 'unders and overs' account will typically be established. Prices can then be adjusted to reflect the extent of any under or over recovery, either within the regulatory period or at the commencement of the next regulatory period. **Allocation of demand risk**: Because the amount of revenue that the regulated service provider can earn is fixed (ie, it doesn't vary with demand), customers bear all of the demand related risks.[45] **Revenue and price stability:** While this form of control provides for a stable revenue path over the regulatory period, prices can be quite volatile if demand differs from forecast. **Incentive to encourage efficient asset utilisation**: This form of control can provide a strong incentive to pursue conservation and other demand management measures because cost reductions are retained, but it does not provide encourage demand efficiencies because revenue is capped.
Average revenue cap	**Description:** Under this form of control a cap is placed on the revenue a regulated service provider can earn per unit of output (eg, revenue per customer). **Allocation of demand risk**: The regulated service provider bears all of the demand risks. **Revenue and price stability:** Revenue will be variable because it depends on demand. In terms of prices, while the overall average revenue cap is stable, individual prices can vary substantially during the period unless side constraints on price changes are imposed. **Incentive to encourage efficient asset utilisation**: This form of control can provide a strong incentive to improve asset utilisation but a disincentive to encourage conservation and other demand management measures (ie because any reduction in demand will result in lower revenue).
Price cap on individual services (used by the ICRC)	**Description:** Under this form of control a cap is placed on the price of each service. **Allocation of demand risk**: The regulated service provider bears all of the demand risks. **Revenue and price stability:** Revenue will be variable under this option because it depends on demand, but individual prices will be stable. **Incentive to encourage efficient asset utilisation**: This form of control can provide a strong incentive to improve asset utilisation but a disincentive to encourage conservation and demand management measures.
Hybrid price and revenue cap (Panel's draft decision)	**Description:** A hybrid price and revenue cap contains elements of both a price and revenue cap. The precise elements that will be combined can vary, but one example that has been used by a number of Australian regulators is a price cap that can be adjusted for any under or over recovery of revenue above a certain threshold (deadband). Under this type of hybrid cap, the regulated service provider bears demand risk up to the threshold while customers bear the risk beyond this threshold. **Allocation of demand risk**: Demand risk shared between the regulated service provider and customers. The proportionate allocation of risk will depend on the form of the hybrid cap. **Revenue and price stability:** Revenue will be variable but if there is an unders or overs mechanism regulated services providers may have some protection against this variability. Whether or not prices are stable will depend on how the revenue cap component operates and if any under or over recoveries are recovered within the regulatory period or deferred to the next period. **Incentive to encourage efficient asset utilisation**: This form of control can provide a strong incentive to improve asset utilisation and expand demand and may also provide an incentive to encourage conservation and other demand management measures if the regulated service provider is afforded some protection from under recoveries of revenue.

45 That is not to say that the regulated service provider is completely immune from demand risk. To the contrary, if demand is higher than expected and the regulated entity's costs are not completely fixed, it will be unable to recoup the costs of servicing the additional demand, resulting in lower profit (and vice versa). On the other hand, if demand is lower than expected and its costs are not completely fixed, it will earn a higher profit. The precise effect on profit will depend on how accurate demand forecasts turn out to be and the relationship between costs and output (ie, are the service provider's costs fixed or is there a variable component.

6.4.1 ICRC's final decision

The ICRC's final decision was to adopt the individual price cap form of control, and to deal with demand-related risks by adopting:

- the biennial recalibration process and allowing water sales, customer and fixture numbers to be updated every two years, and
- a "conservative"[46] forecast for water sales (38GL) to calculate tier 1 and tier 2 prices for the volumetric water charges.

6.4.2 ACTEW's SOFC

In its SOFC, ACTEW proposed the adoption of a pure revenue cap form of control with an 'unders and overs' mechanism and noted that the use of this form of control would:[47]

"…replace the uncertainty of large period-to-period bill impacts (from revenue pass-through) with the lesser uncertainty of smaller year to year bill impacts, while increasing the accuracy between the matching of revenues and costs over time."

ACTEW also proposed that demand-related risks be dealt with using an "adaptive approach" to estimating demand, with annual updates to prices carried out to reflect updated:[48]

- water sales forecasts estimated using the Breusch-Ward model, and
- customer and fixture number forecasts.

6.4.3 Panel's considerations and draft decision

To determine what form of control and other demand related risk mitigation measures should be employed in this regulatory period, the Panel carefully examined:

- the nature of the demand-related risks that ACTEW and its customers are expected to face in this regulatory period (see section 6.2.2)
- the form of control and other risk mitigation measures adopted by the ICRC in its final decision and the alternative measures proposed by ACTEW, and
- the measures employed by other Australian regulators when dealing with this type of risk.

Based on its findings, the Panel made the draft decision to adopt a hybrid price and revenue cap form of control, with:

- individual price caps established for water and sewerage charges, and
- a demand volatility adjustment mechanism to be used to account for deviations between actual and forecast volumetric water sales revenue in excess of a 7% deadband.

6.4.3.1 Assessment of the ICRC's final decision and ACTEW's proposals

To deal with the demand-related risks outlined above, the ICRC and ACTEW opted for two quite distinct approaches. For example:

- The ICRC used an individual price cap form of control, in conjunction with both a conservative water sales forecast (38 GL) and a biennial recalibration process. On its own, the price cap form of control can expose a regulated service provider to a significant degree of demand risk. However, because the ICRC coupled it with a conservative water sales forecast and the biennial recalibration process, ACTEW's exposure to demand risk is actually quite low under this approach.

46 This estimate was referred to by the ICRC as being conservative because it is lower than the forecast proposed by ACTEW (38 GL versus 40.86 GL). See ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 115.

47 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 29.

48 ibid, p. 5.

- ACTEW proposed the use of both a revenue cap with an unders and overs mechanism and an adaptive approach to price setting, which involves updating prices each year to reflect changes in projected demand. Together, these two mechanisms effectively shield ACTEW from any demand risk.

In the Panel's view, neither of these approaches provides for an appropriate allocation of demand-related risks and benefits between ACTEW and its customers. For example:

- Under the ICRC's approach, where the volumetric water charges are calculated using a low water sales assumption of 38 GL, customers will derive no benefit if actual demand is higher than this level. This benefit will instead be retained by ACTEW.
- Under ACTEW's approach, customers bear all the demand-related risks even though ACTEW is well-placed to manage some of these risks (eg, by connecting customers or by encouraging conservation measures).

In addition, neither of these approaches strikes an appropriate balance between:

- providing customers with some degree of price stability and predictability over the regulatory period
- minimising regulatory costs
- ensuring ACTEW is financially viable and able to meet its service obligations, and
- promoting economic efficiency.

For example, although the biennial recalibration process may provide ACTEW with a greater opportunity to recover its efficient costs, it comes at the expense of higher regulatory costs, price instability and adverse effects on ACTEW's incentive to pursue efficiencies. Even if the biennial recalibration process was assumed not to operate, the Panel would still have concerns about the distortionary effect that the use of a conservative water sales assumption would have on asset utilisation and allocative efficiency more generally. That is, by adopting a conservative demand forecast, prices will be higher than what they otherwise would be, which will, in turn, discourage the efficient utilisation of the assets.

ACTEW's proposal to shield itself from demand-related risks by adopting a revenue cap and updating prices annually can also be expected to result in higher regulatory costs and increased price instability over the regulatory period, which is what occurred in the 2004 regulatory period when a similar approach was adopted.[49]

Given these concerns, the Panel decided **not** to implement either of these approaches.

6.4.3.2 Approaches used by other regulators

As Chapter 3 highlighted, water businesses and regulators throughout Australia are dealing with uncertain demand following the Millennium Drought. A number of water businesses in Australia have grappled with this issue over the last few years.

An overview of the measures other regulators have recently used to deal with demand-related risks is provided in Appendix 5. Of the various measures identified in this appendix, the Panel considers the hybrid price and revenue cap adopted by the Independent Pricing and Regulatory Tribunal (IPART) in its 2012 Sydney Water decision has merit in this case.

The hybrid price and revenue cap adopted by IPART in its decision consisted of individual price caps for water services and a demand volatility adjustment mechanism, which was implemented to provide

49 The Panel is aware from statements made by the ICRC in the 2008 price direction that when a similar approach was adopted in the 2004 regulatory period, water prices exhibited a significant degree of variability from year-to-year and the annual reset process was quite resource intensive. Based on the information contained on page 127 of the ICRC's 2008 Price Direction it would appear that the three tier volumetric water charges rose by 13-14% between 2004-05 and 2005-06, 14% between 2006-07 and 2005-06 and 17%-48% between 2007-08 and 2006-07.

Sydney Water with some protection against significant deviations between actual and forecast water sales. Under this mechanism, if the deviation between the actual and forecast demand over the full regulatory period exceeds 10%, then an adjustment may[50] be made at the commencement of the next regulatory period to account for any over or under recovery in excess of the 10% deadband.[51]

In the Panel's view, the primary benefit that IPART's approach has over the other approaches set out in Appendix 5 is that it provides for a clearly defined allocation of demand-related risk between the regulated business and customers (ie, the business bears risk up to the deadband while customers bear the risk[52] beyond this). Other benefits of IPART's approach are that:

- it will have no effect on regulatory costs within the regulatory period because deviations are only accounted for at the start of the next regulatory period
- the price cap component of the hybrid form of control ensures that prices remain relatively stable over the period
- the price cap component also provides the regulated service provider with a strong incentive to pursue productive efficiencies, and
- positive and negative variations within the regulatory period will offset each other, so at the end of the period, all that will be passed through to customers is the total deviation in excess of the deadband.

As with any of these approaches, the hybrid price and revenue cap does have some disadvantages, the most notable of which are that:

- customers will only benefit from higher demand if demand exceeds the upper bound of the deadband, and
- the regulated business may not have an incentive to implement conservation measures that result in demand falling below the deadband.

Notwithstanding these disadvantages, the Panel considers the hybrid price and revenue cap provides a better balance between the competing objectives outlined in section 6.4.3.1 than other approaches – particularly given the degree of uncertainty surrounding demand. The Panel also considers this form of control is consistent with sections 20A(1) and 20(2) of the Act and clause 1(e) of the original terms of reference.

The Panel notes that IPART's approach in the Sydney Water decision is similar in many ways to the approach the ICRC adopted in the last regulatory period (see Box 6.1), with the only real difference between the two being the deadband that was adopted:

- the ICRC set the deadband at 3% of forecast volumetric **water sales revenue**, and
- IPART set the deadband at 10% of forecast **water sales**.

The Panel understands that in the 2008 price direction the ICRC considered adopting a 10% deadband on total revenue but given the significant degree of uncertainty surrounding water sales decided to reduce the deadband to 3% and apply it to volumetric water sales revenue only.[53]

The different positions taken by the ICRC and IPART on the level and reference point for the deadband have prompted the Panel to carefully consider what the deadband should be in this regulatory period. This issue is discussed in the next section.

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50 The term 'may' is used here because IPART is unable to bind future decisions of the Tribunal.

51 IPART, Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services, June 2012, pp. 38-39.

52 Note that the risk may be positive or negative. For example, if demand exceeds the upper bound of the deadband then customers will benefit through lower water charges. If, on the other hand, demand is lower than the lower bound of the deadband customers will be required to pay higher water charges.

53 ICRC, Final Report and Price Determination, Water and Wastewater Price Review, April 2008, p. 124.

Box 6.1: Form of control adopted by the ICRC in the 2008 price direction

In the 2008 price direction, the ICRC tried to minimise ACTEW's exposure to water demand risk by adopting both:

- A hybrid price and revenue cap with a 3% deadband mechanism applied to water revenue. This mechanism was designed to enable ACTEW to recoup (repay) any under (over) recovered revenue in excess of the 3% deadband in the next regulatory period.
- A mid-term price variation trigger event provision, which allowed prices in the last two years to be revised to reflect updated water consumption forecasts if the following conditions were met:
  - water revenue in the first 2.5 years differed by more than 7% of forecast, and
  - there was evidence to suggest the under or over recovery would continue.

The Panel understands that the mid-term price variation trigger event provision was triggered in 2011 and resulted in a material increase in water prices.[53] The Panel also understands that the 3% deadband was triggered and, by the end of the regulatory period, the unrecovered revenue in excess of the 3% deadband had reached $238 million.[54] The size of this under recovery should not, in the Panel's view, be considered a flaw with the mechanism. Rather, it simply reflects the fact that water consumption in the last regulatory period was 18-35% **lower** than expected (Actual: 34-38 GL versus Forecast: 46-52 GL).[55]

6.4.3.3 Level of the deadband to be used in the demand volatility adjustment mechanism

In considering the level of the deadband to be used in the demand volatility adjustment mechanism, the Panel has been cognisant of both:

- the need for ACTEW to remain financially viable over the range of possible revenue outcomes that could occur under the deadband, and
- the potential for the incentive benefits of the price cap to be undermined if the edges of the deadband are breached too frequently.

To help inform its decision on this issue, the Panel had regard to advice that Cardno provided on the central water sales forecasts for this regulatory period (see Chapter 12) and the modelled distribution of possible outcomes around this central forecast, which range from approximately:[57]

- 41-42 GL (estimated to have a 95% probability of exceedance),[58] to
- 47-49 GL (estimated to have a 5% probability of exceedance).

Using the 95% probability of exceedance to 5% probability of exceedance forecast range, the Panel estimated that if actual water sales reached:

- the lower bound of the range, then ACTEW would recover approximately 7.2% (~$51 million in net present value terms) **less** in revenue from tier 1 and tier 2 water sales than it would if the central water sales forecast was achieved, and
- the upper bound of the range, then ACTEW would recover approximately 8.7% (~$61 million in net present value terms) **more** in revenue from tier 1 and tier 2 water sales than it would if the central water sales forecast was achieved.

While there is a marked difference between the revenue that ACTEW could earn from water sales under these two extreme water sales forecasts, the Panel is satisfied that if the deadband is set by reference to these forecasts:

- ACTEW will, all else being equal, remain financially viable over this range of revenue outcomes, and

54 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 157.

55 ibid, p. xx.

56 ICRC, Draft Report, Regulated Water and Sewerage Services, February 2013, p. 40.

57 Cardno, Technical Report: Independent review of ICRC price direction, November 2014, p. 87.

58 Cardno has advised the Panel that it expects aggregate water sales to lie between these forecasts in 90% of "modelled futures" considering modelled weather volatility.

- the incentive benefits associated with a price cap will not be undermined because the deadband is unlikely to be frequently breached.

Therefore, the Panel's draft decision is to set the deadband at 7% of water sales revenue (ie, the revenue derived from tier 1 and tier 2 water charges).

6.4.3.4 How the hybrid price and revenue cap will operate

For the reasons set out above, the Panel decided to adopt a hybrid price and revenue cap that consists of:

- individual price caps for water and sewerage charges, and
- a demand volatility adjustment mechanism that will be used to account for deviations between actual and forecast water sales revenue in excess of a 7% deadband over the regulatory period (1 July 2013 to 30 June 2018).

If the demand volatility adjustment mechanism is triggered, then the net present value of any under or over recovered revenue will be included in the calculation of water charges in the next regulatory period. This requirement will be given effect through a future reset principle, which the ICRC will be required by section 20A(2) of the Act to comply with. The form that this reset principle will take is set out below:

> The demand volatility adjustment will be determined as the difference between:
>
> – the net present value of the revenue earned through tier 1 and tier 2 water charges over the period 1 July 2013 to 30 June 2018, and
> – the net present value of the volumetric water sales revenue (ie, the revenue to be recovered from tier 1 and tier 2 charges) allowed in the final report plus or minus 7% depending on whether there has been an over collection or an under collection of revenue.
>
> Forecast revenue will be used for those quarters of the financial year 2017-18 for which actual revenue data is unavailable. The rate of return to be used in the calculation of the net present value is the post-tax nominal WACC set out in the final decision.

Box 6.2 provides some simplified examples of how the demand volatility adjustment mechanism will operate.

Box 6.2: Simplified examples of the operation of the demand volatility adjustment

Assuming a post-tax nominal WACC of 7.2%, the approved allowance for volumetric water sales revenue (ie, revenue from tier 1 and tier 2 charges) is $705 million (NPV over the regulatory period). The deadband is 7%, which means that the deadband range for the hybrid price/revenue cap is $654-$756 million.

Example 1

In this example, it is assumed that the actual revenue earned from tier 1 and tier 2 sales is $776 million or 10% higher than the allowed $705m. Because the actual revenue is greater than the deadband upper bound of $756 million (by $21 million), the revenue cap is activated. ACTEW would therefore have to **return** $21 million (plus interest from 1 July 2013 at 7.2%) of the over collection to water consumers in the next regulatory period.

Example 2

In this example, it is assumed that the actual revenue earned from tier 1 and tier 2 sales is $740 million or 5% higher than the allowed $705 million. Because the actual revenue is within the deadband, the revenue cap is not activated. ACTEW would therefore be able to **retain** the additional revenue in this case.

Example 3

In this example, it is assumed that the actual revenue earned from tier 1 and tier 2 sales is $634 million or 10% lower than the allowed $705 million. Because the actual revenue is less than the deadband lower bound of $654 million (by $21 million), the revenue cap is activated. ACTEW would therefore be able to **recover** $21 million (plus interest from 1 July 2013 at 7.2%) of the under collection from water consumers in the next regulatory period.

Example 4

In this example, it is assumed that the actual revenue earned from tier 1 and tier 2 sales is $670 million or 5% lower than the allowed $705 million. Because the actual revenue is within the deadband, the revenue cap is not activated. ACTEW would therefore be **unable to recover** the lost revenue in this case.

6. 5 Measures to deal with expenditure risks

Regulators have developed a number of different tools to deal with the risk that actual expenditure within a regulatory period deviates from the forecasts used to derive the revenue requirement (see for example Table 6.3).

Table 6.3: Regulatory tools to deal with expenditure risks

Tool	Description
CPI escalation mechanism	The CPI escalation mechanism is used to deal with changes in inflation over the regulatory period.
Cost pass-through mechanism	A cost pass-through mechanism can be used to deal with positive and negative changes in uncontrollable costs (eg, taxes, externally determined service standards and regulatory obligations) in the period. To ensure that this type of mechanism does not undermine a regulated business' incentive to pursue efficiencies or give rise to frequent price changes and higher regulatory costs, regulators usually only allow a pass through to occur on an annual basis if it satisfies a materiality threshold.
Limited scope capital expenditure trigger event provision (or a contingent project pass-through mechanism)	Both these tools can be used to deal with the risk that a regulated service provider is required to carry out a major capital expenditure project, which either wasn't anticipated when the regulatory determination was made, or was considered too uncertain in terms of timing, costs or need. The key difference between these tools is that the trigger event provision allows prices to be varied within the regulatory period while the intra-period review provision does not. The benefit of the intra-period review provision is that it allows the regulated business to seek an advance determination from the regulator on the prudence and efficiency of new capex projects that arise during the regulatory period, rather than facing the risk that its expenditure will retrospectively be found to be imprudent or inefficient.
Intra-period capital expenditure review	
Ex post capital expenditure review	An *ex post* capital expenditure review allows the regulator to undertake a review of the prudence and efficiency of capital expenditure actually undertaken in the regulatory period at the commencement of the next regulatory period and can therefore be used to deal with the risk that a regulated service provider spends less than it proposed or undertook imprudent or inefficient expenditure in the period.

A regulator's decision to employ any of these tools will depend on how significant it considers the risks to be and the relative importance it places on:

- providing the regulated business with an opportunity to recover efficient costs
- providing for some degree of price stability over the regulatory period
- minimising regulatory costs, and
- providing the regulated business with incentives to pursue efficiency gains.

Invariably there will be a trade-off between these factors.

6.5.1 ICRC's final decision

In its final decision, the ICRC decided to deal with expenditure-related risks through:

- the biennial recalibration process
- an *ex post* capital expenditure review
- a CPI escalation mechanism to operate in the intervening years, and
- a cost pass-through mechanism that provides for changes in the WAC, UNFT and subvention payments to be passed through to customers.

6.5.2 ACTEW's SOFC

In its SOFC, ACTEW noted that if the Panel decides not to implement the biennial recalibration process, then the scope of the ICRC's cost pass-through mechanism will need to be expanded because it will be subject to "increased revenue risk".[59] It proposed an alternative pass-through mechanism that provides for changes in costs arising as a result of the following factors to be passed through to customers on an annual basis, subject to the materiality threshold being satisfied:[60]

- changes in taxes (including the WAC and UNFT)
- changes in subvention payments
- contingent capital expenditure projects
- changes in service standards, and
- changes in regulation.

ACTEW's proposed materiality threshold is:

- $0 for changes in the WAC, UNFT and subvention payments, and
- $1 million ($2012-13) for all other cost pass-through events.

6.5.3 Panel's considerations and draft decision

In considering the appropriate tools for dealing with ACTEW's expenditure-related risks in this regulatory period, the Panel took account of its draft decision not to include the biennial recalibration mechanism. It also took account of the fact that frequent adjustments to prices can increase regulatory costs, result in greater price variability and decrease the regulated service provider's incentives to pursue efficiencies, all of which act to the detriment of consumers. At the same time, it was aware that not allowing these types of adjustments could adversely affect ACTEW's financial viability and/or its ability to meet its service obligations, which would also act to the detriment of consumers.

59 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 5.

60 ibid, p. 30.

Having carefully assessed the tools set out in Table 6.3, the Panel decided to adopt the following measures:

- A CPI escalation mechanism, which will provide ACTEW with some protection against changes in inflation over the period.
- An annual cost pass-through mechanism, which will provide ACTEW and customers with some protection against material changes (positive and negative) in uncontrollable costs over the period.
- An *ex post* capital expenditure review, which will allow the ICRC to assess the prudence and efficiency of the capital expenditure actually incurred by ACTEW in this regulatory period before rolling it into the RAB in the next determination. This will be given effect through a future reset principle.

The scope of the cost pass-through mechanism and other potential tools the Panel considered are discussed further below.

6.5.3.1 Cost pass-through mechanism

Because ACTEW will no longer have an opportunity to have its costs reset every two years, the Panel has decided to expand the scope of the cost pass-through mechanism to include:[61]

- Changes in the annual amount payable by ACTEW to the ACT Government for the WAC and the UNFT. Note that unlike prior price directions that have only passed through changes in the WAC and UNFT rates, the Panel has decided that the pass through amount should reflect differences in the total amount payable to the ACT Government in each year, which is calculated as follows:
- $WAC\ charge_t = Actual\ dam\ releases_t \times WAC\ rate_t$
- $UNFT\ charge_t = Actual\ network\ length_t \times UNFT\ rate_t$
- In other words, this amount should reflect differences in the rates, the dam releases and the network lengths that were assumed when calculating ACTEW's revenue requirement. The Panel has decided to adopt this approach so that ACTEW does not receive a windfall gain or loss as a result of changes in these uncontrollable costs.
- Changes in the subvention payments received from the Commonwealth Government.
- Changes in other taxes.
- Changes in service standards that result in a material increase or decrease in the cost of providing water or sewerage services.
- Changes in regulatory obligations that result in a material increase or decrease in the cost of providing the services.
- A Tantangara Transfer Payment event, which will be triggered if ACTEW is required to exercise its option to transfer water from the regulated Murrumbidgee River to the ACT via the Snowy Mountains Scheme.

To ensure that the cost pass-through mechanism does not undermine ACTEW's incentive to act in a prudent and efficient manner, or give rise to frequent price changes and higher regulatory costs (which would act to the detriment of customers), the application of this mechanism will be subject to the following materiality thresholds:

- $0 for changes in the amounts payable for the WAC and UNFT and subvention payments, which is consistent with the approach currently employed by the ICRC, and
- $2 million ($2012-13) per event for all other cost pass-through categories, which is consistent with the materiality threshold adopted by the ICRC in the 2004 price direction.[62]

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61 This list of events is in keeping with ACTEW's proposal and is also broadly in line with the approach previously adopted by the ICRC and the approach adopted by the AER.

62 In this price direction the ICRC adopted a threshold of $1.5 million in 2002-03 dollar terms. In 2012-13 dollar terms this translates to $2 million.

The Panel recognises that the latter of these materiality thresholds is higher than the threshold adopted by the ICRC in the 2008 price direction ($1 million). However, in that price direction the ICRC reduced the materiality threshold because it decided to move away from an annual pass-through mechanism to an end-of-regulatory-period mechanism. It considered that in this circumstance, a higher materiality threshold was not required to restrict the number of pass-through applications in the period.[63]

In contrast to the position taken by the ICRC in the 2008 price direction, the Panel decided that the cost pass-through mechanism should operate, as it does in other regulated industries,[64] on an annual basis. Therefore, the Panel decided to use a materiality threshold equivalent to that adopted in the ICRC's 2004 price direction.[65]

In the Panel's view, this materiality threshold provides an appropriate balance between the following factors, both of which are in the best interests of consumers:

- minimising the degree of price variability in the regulatory period by limiting the number of occasions that the cost pass-through provisions are likely to be triggered beyond that provided for changes in the WAC, UNFT and subvention payments, and
- allowing ACTEW to remain financially viable and meet its service obligations.

6.5.3.2 Other potential tools

The Panel also considered two other tools for dealing with expenditure-related risk, which it decided not to implement. The first was a limited scope capital expenditure variation provision (or a contingent project pass-through mechanism) for significant projects that were not foreseen at the time of the determination process, are beyond ACTEW's control and satisfy a materiality threshold. The Panel decided not to include this tool in its draft price direction because, with just three years left in the current regulatory period, it has judged the risk of such a project being developed within the period as low.

While the Panel has decided not to make provision for this type of tool, it remains appropriate when there is a large scale project that either was not anticipated when the regulatory determination was made, or was considered too uncertain in terms of timing, costs or need. If this tool is used in the future, a materiality threshold similar to that adopted by the Australian Energy Regulator (AER) in electricity may be required to ensure that it doesn't result in frequent adjustments to prices within the period. This threshold is the lesser of $30 million or 5% of the service provider's annual revenue requirement.[66]

The second tool the Panel considered but decided not to implement was an intra-period capital expenditure review provision. Such a tool would allow ACTEW to seek a determination from the ICRC within the regulatory period on the prudence and efficiency of new large-scale projects identified in the regulatory period before work commences, but would not result in any change to prices in the period. Because the Panel has judged the risk of a large-scale project having to be developed in the remaining three years of the current regulatory period as low, it has decided not to make provision for this type of mechanism.

6. 6 Measures to deal with unforeseen events

To minimise a regulated business' exposure to unforeseen events in the regulatory period, some regulatory regimes allow a trigger event mechanism to be included in the regulatory determination, which allows the determination to be re-opened and prices to be reset if:

63 ICRC, Draft Report and Price Determination: Water and Wastewater Price Review, December 2007, pp. 110-111.

64 For example, in gas and electricity cost pass-through applications are considered on an annual basis.

65 It is worth noting in this context that the Panel has looked at the materiality thresholds adopted by other jurisdictions but there appears to be no standard or best regulatory practice in relation to this issue.

66 AER, Capital Expenditure Incentive Guideline – Explanatory Statement, November 2013, p. 40.

- a major event occurs that is beyond the control of the service provider (such as a natural disaster or an act of terrorism), and
- this event will adversely affect the business' ability to provide services or its financial viability.

The Act is one such regulatory regime, with section 20A(3)(c) stating that a price direction may include a price variation trigger 'the happening of which would entitle the commission to initiate a reference for an investigation into a variation of the direction'.

6.6.1 ICRC's final decision

In its final decision, the ICRC decided to implement a price variation trigger event mechanism. This mechanism is set out in clause 11 of the price direction and allows the ICRC to initiate a variation if there is:

(a) an act of terrorism

(b) a major natural disaster

(c) major damage to ACTEW's infrastructure

(d) a significant change in ACTEW's financial or corporate structure

(e) an unforeseen or *force majeure* event that severely restricts ACTEW's ability to provide services, or

(f) a decision by the ICRC to amend the tariff structure during the regulatory period.

Unlike prior price directions, no materiality threshold has been adopted for this provision.

6.6.2 ACTEW's SOFC

The only unforeseen event that ACTEW has stated should be recognised in the price direction is a major natural disaster. In its SOFC, ACTEW proposed that this type of event be dealt with through a cost pass-through mechanism, rather than through a price variation trigger event provision. It also proposed that costs only be passed through if they exceed the materiality threshold of $1 million ($2012-13).

6.6.3 Panel's considerations and draft decision

The Panel recognises that the regulatory framework should accommodate any major unforeseen events that may occur in the regulatory period and have a material impact on ACTEW's ability to provide services or its financial viability.

Having reviewed the alternative approaches advocated by the ICRC and ACTEW, the Panel considers that the price variation trigger event mechanism is the most appropriate way of dealing with these types of events, because it may not be possible to deal with all the consequences of an unforeseen event through a cost pass-through mechanism.[67] The Panel therefore broadly agrees with the approach taken by the ICRC in clause 11 of the price direction. The Panel has decided though that, in a similar manner to the cost pass-through mechanism a materiality threshold should be applied to ensure that the mechanism does not undermine ACTEW's incentive to act in a prudent and efficient manner, or give rise to frequent price changes and higher regulatory costs. The materiality threshold the Panel decided to adopt is as follows:

The event must severely restrict ACTEW's ability to provide water and/or sewerage services and impose a total annualised cost on ACTEW for the remainder of the regulatory period of more than $12 million.

This materiality threshold is consistent with the threshold the ICRC adopted for the price variation trigger mechanism in its 2008 price direction, which was $10 million in 2006-07 dollar terms (or $12 million in 2012-13 dollar terms).

67 For example, if the unforeseen event affects demand then this could not be dealt with through the cost pass-through mechanism.

7 Method used to determine prices

Prices for 2013-14 and 2014-15 were set by ICRC and, in practice, cannot be changed by the Panel. However, as a consequence of its draft decision on the length of the regulatory period and form of price control[68] (see Chapter 6), it was necessary for the Panel to establish the price setting method to be used for the remaining three years of the period (2015-16 to 2017-18).

The sections below provide an overview of the method adopted by the Panel, and then discuss this method in more detail.

7. 1 Overview of price setting method for 2015-16 to 2017-18

The Panel adopted the following method to determine the maximum prices of ACTEW's water and sewerage services for the period 1 July 2015 – 30 June 2018:

- **Determine ACTEW's net revenue requirement the full five-year regulatory period** (1 July 2013 – 30 June 2018) using the building block methodology, and accounting for certain other matters.
- **Adopt the prices payable under the original price determination for the first two years of the period and calculate the extent to which the prices set by ICRC in these years over or under recovers the net revenue requirement for these years** (the 'true up' adjustment).
- **Calculate prices for the remaining three years of the period** (1 July 2015 – 30 June 2018) consistent with enabling ACTEW to recover the net revenue requirement for these years, taking account of the 'true up' adjustment and forecast demand for water and sewerage services in these years.
- **Consider whether the resulting prices are appropriate,** having regard to the impacts they are likely to have on customers (social impacts), general price inflation and ACTEW's financial viability.

In the Panel's view, these steps and the matters considered under them are consistent with the Act and the original terms of reference.[69] They are also consistent with the price setting method typically used by other economic regulators and merits review bodies.

7. 2 Determine ACTEW's net revenue requirement for full five-year period

To determine ACTEW's net revenue requirement for the period 1 July 2013 – 30 June 2018, the Panel:

- used the building block methodology to calculate the total revenue requirement for this period
- considered whether the recovery of the capital costs associated with the water security projects can be aligned with the benefits that current and future consumers are expected to derive from these projects over the economic life of the assets, and
- calculated the net revenue requirement to be recovered through water and sewerage charges by deducting income that ACTEW is expected to derive from other unregulated sources and Community Service Obligation (CSO) related expenditure.

68 Particularly, the draft decision to adopt a five-year regulatory period without biennial recalibrations and a hybrid price and revenue cap form of price control.

69 In the Panel's view, these four steps and the matters it intends to consider under them are consistent with the following sections of the Act and the original terms of reference:

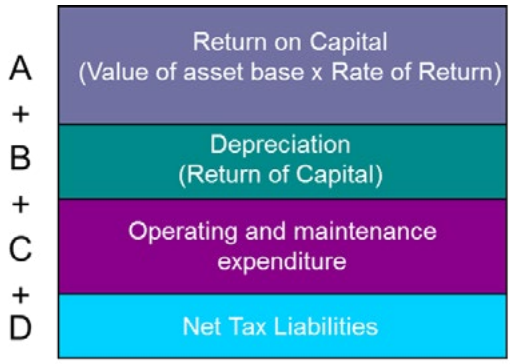
- The first step is consistent with sections 20(2)(a)-(e), (h) and (k) of the Act and clause 1(d) of the terms of reference.
- The third step is consistent with section 20(2)(h) of the Act and clause 1(e) of the terms of reference.
- The final step is consistent with sections 20(2)(g),(j) and (i) of the Act.

7.2.1 Use building block method to calculate a total revenue requirement for full five-year period

The building block methodology is the most widely used and accepted approach in Australia for determining a regulated business' revenue requirement. It involves summing the cost components (building blocks) that a **prudent and efficient business** would incur in providing the regulated services over the regulatory period. Typically, these cost components include:

- The return on capital, which is calculated by multiplying:
  - the value of the assets used in the provision of services (referred to as the regulated asset base (RAB)), *by*
  - a rate of return that reflects efficient financing costs.
- Depreciation (the return of capital), which is calculated having regard to the value of the RAB, the economic life of the assets and the depreciation profile.
- The prudent and efficient costs of operating and maintaining the assets over the period.
- The estimated cost of income tax, net of the value of imputation credits.

Figure 7.1: Building block methodology



The Panel made provision for each of these building blocks, as well as two additional costs that ACTEW incurs in providing its water and sewerage services – the Water Abstraction Charge (WAC) and the Utilities Network Facilities Tax (UNFT), which are treated as an expenditure item.

In applying the building block methodology, the Panel was guided by the principles listed in Box 7.1. These principles reflect the approach regulators typically use to determine the value of each building block (see Appendix 6).

In the Panel's view, using the building block methodology and the principles in Box 7.1 is consistent with the overarching objective of economic regulation, which is to mimic the price and service outcomes would be expected to occur in a workably competitive market (see section 3.1.1), and the provisions set out in sections 20(2)(a) to (e), (h) and (k) of the Act (see section 4.1.2).

The Panel's draft decision regarding the values of the building blocks are set out in Chapters 8 to 11.

Box 7.1: Principles used in applying the building block methodology

The Panel adopted the following principles in applying the building block methodology to calculate ACTEW's revenue requirement:

- **Capital expenditure:** The provision made for capital expenditure should be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering the service.
- **Depreciation:** The provision made for depreciation should, to the extent possible, be consistent with the following principles:
  - **Economic efficiency principle:** Depreciation should be recovered over the economic life of the asset and in a manner that encourages both the efficient use of, and efficient investment in, the assets over this period.
  - **Intergenerational equity principle:** Consumers in each time period should contribute to the recovery of investments from which they derive benefits in accordance with their share of those benefits.
- **Operating expenditure:** The provision made for operating expenditure should be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering the service.
- **Rate of return:** The rate of return should be commensurate with the efficient financing costs of a benchmark efficient entity and the risks involved in delivering the services.
- **Net tax liabilities:** The provision made for net tax liabilities should be calculated by reference to the benchmark efficient entity standard.

7.2.2 Treatment of the water security projects

As Chapter 3 discussed, towards the end of the previous regulatory period, ACTEW developed two major water security projects in response to the Millennium Drought – the ECD and the M2G. One of the specific matters that clause 1(d) of the terms of reference requires the Panel to consider when assessing these projects is:

> "the ability of the pricing path to match revenue recovery requirements to the consumer benefits accrued from the water security program"[70]

In keeping with this requirement and section 20(2)(i) of the Act, the Panel considered whether it was possible to align the recovery of the costs of the ECD and M2G[71] with the benefits that customers are expected to derive over the lives of these assets, whilst also allowing ACTEW to remain financially viable. The Panel's draft decision on the treatment of water security projects is set out in Chapter 8.

7.2.3 Deduct income from other sources and expenditure that should not be recovered in prices

Once the Panel calculated the total revenue requirement for the full five-year period, it deducted the following items to calculate the net revenue requirement to be recovered from water and sewerage charges:

- Income ACTEW is expected to derive from the following sources over the regulatory period:
  - the provision of bulk water to the Queanbeyan City Council
  - subvention payments by the Commonwealth for water and sewerage services,[72] and
  - miscellaneous charges and income from other sources.
- Expenditure ACTEW is expected to incur carrying out works that should be treated as if they were funded through a CSO over the regulatory period.

The Panel's draft decision on these deductions are set out in Chapter 13.

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70 Clause 1(d) of the Terms of Reference, 13 October 2011.

71 The limitation of this analysis to the ECD and M2G is consistent with the ACT Treasurer's expectation as noted in his 12 April 2013 submission to the ICRC.

72 These payments are made to reflect the cost disadvantage of operating in an inland location in the provision of water and wastewater service for the national capital.

7. 3 Calculate the 'true up' adjustment necessary to account of over or under recovery in first two years

Because ACTEW's customers are already paying the prices the ICRC set for 2013-14 and 2014-15, the Panel could not, in practice, change these prices. Rather, the Panel calculated the difference between the net revenue requirement for 2013-14 and 2014-15 and the net revenue ACTEW is expected to earn in these first two years.

This difference (the 'true up' adjustment) represents the extent to which the prices for 2013-14 and 2014-15 have over or under recovered the net revenue requirement for those years. It needs to be accounted for in setting prices for 2015-16 to 2017-18 so ACTEW does not over or under recover the net revenue requirement for the full five-year period.

7. 4 Calculate prices for the remaining three years of the period

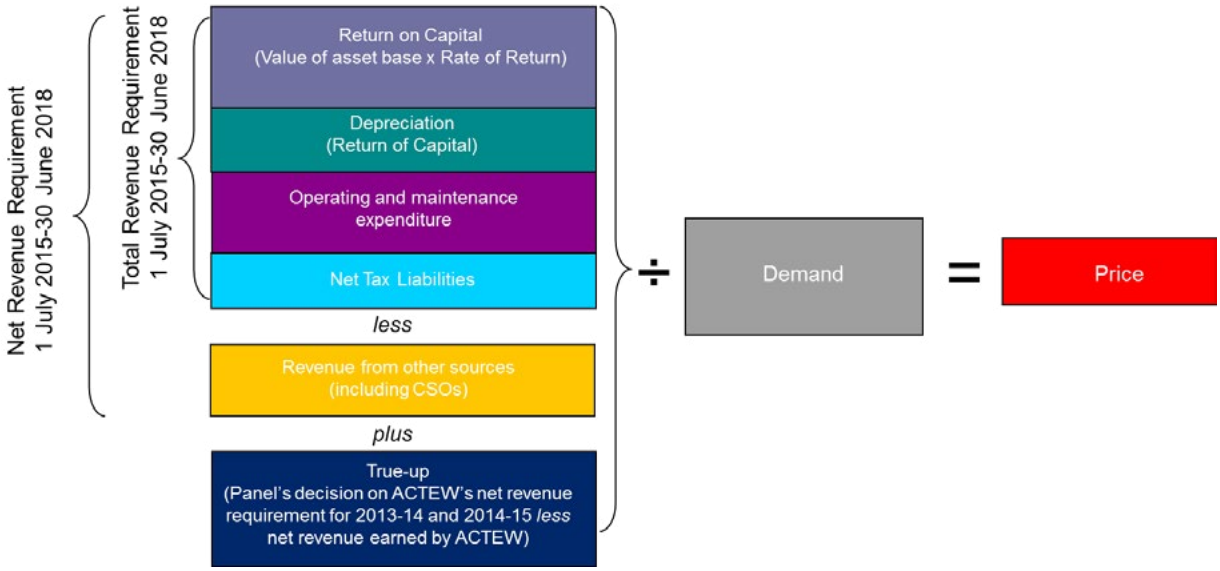
To calculate water and sewerage charges for the period 1 July 2015 to 30 June 2018, the Panel took account of the net revenue requirement for these years and 'true up' adjustment (discussed above) and the forecast demand for water and sewerage services in these years. In line with the current tariff structure, it used:

- forecast water sales and water customer numbers to set water charges, and
- forecast sewerage customer numbers and billable fixture numbers to set sewerage charges.

The Panel also considered the extent to which any step change in price and/or price fluctuations could be ameliorated by smoothing prices in a manner that ensures ACTEW is no worse off in present value terms.

The Panel's draft decision on ACTEW's net revenue requirement, the 'true-up' adjustment, forecast demand, and water and sewerage charges for 2015-16 to 2017-18 are set out in Chapters 12 to 14.

Figure 7.2: Stylised approach to calculating prices for 2015-16 to 2017-18



7. 5 Consider whether the resulting prices are appropriate

Before making its draft decision on the water and sewerage charges to apply from 1 July 2015 to 30 June 2018, the Panel considered whether the price levels resulting from the method described above are appropriate. To do this, the Panel analysed the impacts the prices are likely to have on:

- customers (social impacts) (in line with section 20(2)(g) of the Act)
- general price inflation (section 20(2)(j) of the Act), and
- ACTEW's financial viability (section 20(2)(i) of the Act).

Table 7.1 outlines the matters the Panel has decided to take into account when considering these impacts and how it will deal with the findings of its analysis. The analysis itself is discussed in Chapter 15.

Table 7.1: Matters considered when assessing impacts on customers, inflation and ACTEW's financial viability

Effect	Matters considered by the Panel
Impact on customers	To assess the effect the water and sewerage charges are likely to have on residential and non-residential customers, the Panel will have regard to the following matters: • the annual water and sewerage bill that will be payable by residential customers between 2015–16 and 2018–19 (for varying levels of water consumption) and likely impacts on vulnerable customers, and • the annual water and sewerage bill that will be payable by non-residential customers between 2015–16 and 2018–19 (for varying water consumption levels and billable fixture numbers).
	How the Panel will deal with the findings of this analysis: If this analysis reveals that particular groups of customers (eg, pensioners or low income households) may be adversely affected by the decision then, in keeping with good regulatory practice, the Panel will expect this to be dealt with through targeted government concessions and other hardship programs. On the other hand, if the analysis reveals that the adverse effects are broader reaching, the Panel will consider whether the prices are at an appropriate level, or if an NPV neutral adjustment needs to be made to prices in this period (eg, by deferring the recovery of some revenue to the following regulatory period if doing so would not affect ACTEW's financial viability).
Impact on inflation	To assess the effect that the water and sewerage charges are likely to have on general price inflation, the Panel will employ the same approach as IPART,[73] which involves multiplying: • the contribution that water and sewerage costs in the ACT make to the consumer price index (CPI) (all groups, eight capital cities), *by* • the annual average change in the water and sewerage bill for a customer consuming 200 kL per annum, measured in real terms.
	How the Panel will deal with the results of this analysis: If this analysis indicates that there would be a material increase in inflation, the Panel will consider whether the prices are set at an appropriate level, or if an NPV neutral adjustment needs to be made to prices in this period (eg, by deferring the recovery of some revenue to the following regulatory period if doing so would not affect ACTEW's financial viability).

73 IPART, Final Report, Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services, June 2012, p. 186.

Effect	Matters considered by the Panel
Impact on ACTEW's financial viability	To assess the effect that the water and sewerage charges will have on ACTEW's financial viability, the Panel will consider the following financial ratios: • Funds from operations (FFO) interest cover ratio, which provides an indication of ACTEW's ability to make interest payments. • Net debt gearing ratio, which measures the proportion of ACTEW's overall regulatory capital structure, which is made up by debt and provides an indication of its ability to repay its debt. • FFO to net debt ratio, which provides an indication of whether ACTEW's debt servicing ability is improving, remaining stable, or declining. • Retained cash flow to capital expenditure ratio, which provides an indication of the extent to which ACTEW has cash remaining to finance a prudent portion of capex after paying dividends. The target range the Panel has used when assessing these metrics is set out in section 15.5.
	How the Panel will deal with the results of this analysis: If this analysis indicates that ACTEW's financial viability may be adversely affected by the decision, the Panel will consider whether the prices are set at an appropriate level, or if an NPV neutral adjustment needs to be made to prices in this period (eg, by altering the recovery profile for the water security projects).

8 Treatment of the water security projects

The next component of the original price direction the Panel reviewed was the approach the ICRC used to deal with the intergenerational equity[74] issues posed by the water security projects ACTEW completed in the previous regulatory period. These projects include the 20-fold expansion of the Cotter Dam, and the construction of the M2G.

This was one of the more complex issues the ICRC had to deal with in making the original price direction due to:

- the scale of the investment in these water security projects, which was approximately $560 million ($2012-13),[75] and
- the expectation that the benefits of the projects will accrue across multiple generations, with current customers to benefit from improvements in water security while future generations of customers will benefit from the increased supply capacity as the population expands.

No specific issues were raised about this component of the original price direction by ACTEW or other stakeholders. However, the Panel is required by clause 1(d) of the terms of reference to consider "the ability of the pricing path to match revenue recovery requirements to the consumer benefits accrued from the water security projects."

Consistent with this clause, the Panel assessed the possibility of aligning the recovery of the ECD and M2G[76] costs with their benefits to customers over the lives of these assets. As part of its assessment, the Panel considered:

- ACTEW's investment in water security projects in the previous regulatory period and the benefits that customers in this regulatory period are expected to derive from these projects *vis-à-vis* customers in future periods
- the ICRC's treatment of this investment in the original price direction and the consistency of this treatment with the intent of clause 1(d) and intergenerational equity and economic efficiency principles set out in Box 7.1
- the techniques used by other regulators when dealing with large-scale infrastructure investments where the benefits accrue across multiple generations and the constraints on the use of these techniques, and
- the extent to which any of the techniques used by other regulators could be implemented in this case, given the information before the Panel and other constraints in section 20(2) of the Act.

The sections below provide an overview of the Panel's draft decision, and then discuss its consideration of each of these matters in more detail.

8. 1 Overview of the Panel's draft decision

The Panel's draft decision is:

- not to defer the recovery of any of the ECD or M2G capital costs, and
- to use the traditional straight line depreciation approach (with indexation of the RAB) to recover the costs of the ECD and M2G over the economic lives of these assets (ECD:~147 years and M2G: ~56.5 years).

74 The term intergenerational equity is used in this context to refer to consumers in each time period contributing to the recovery of investments from which they derive benefits in accordance with their share of those benefits.

75 ACTEW also spent approximately $48 million on the Tantangara Transfer Project.

76 The limitation of this analysis to the ECD and M2G is consistent with the ACT Treasurer's expectation as noted in his 12 April 2013 submission to the ICRC.

In reaching this draft decision, the Panel had particular regard to the impact that deferring the recovery of some of the ECD and M2G capital costs would have on ACTEW's short-term financial viability. If there is a change between the Panel's draft and final decisions that results in ACTEW's financial viability improving, then the Panel may revisit its decision not to defer any of the costs associated with these projects.

8. 2 ACTEW's investment in water security projects and customer benefits

In the previous regulatory period, ACTEW spent approximately $420 million on the ECD and $140 million on the M2G ($2012-13).[77] It spent a further $48 million on the Tantangara Transfer Option (see Box 8.1). [78] More than 50% of the costs of these three projects was included in the RAB during the previous regulatory period[79] and used in deriving the water charges that applied over this period. The remaining 50% was rolled into the RAB as part of the ICRC's original price direction for the 2013 period (see section 9.2).

Box 8.1: Tantangara Transfer Option

During the previous regulatory period, ACTEW purchased the Tantangara Transfer Option to provide "a back-up supply in dry times" and to "keep Canberra out of severe water restrictions".[80] In short, this option involves transferring water the regulated Murrumbidgee River to the ACT via the Snowy Mountains Scheme. According to ACTEW, under this option:

- NSW water entitlements must be purchased from Murrumbidgee Regulated River licence holders downstream of ACT.
- A long-term, secure and flexible commercial agreement must be entered into with Snowy Hydro Limited for the release of water from Tantangara Reservoir.
- Interstate trading arrangements between the NSW and ACT Governments must be established to allow for transfer of water from NSW to the ACT via the Tantangara Reservoir and return transfers if unused.
- The water must be delivered to the ACT via the unregulated Murrumbidgee River.
- The water must be extracted from the Murrumbidgee River via the Murrumbidgee to Googong Water Transfer pipeline at Angle crossing.
- The water can be stored in the Googong Dam until used.

Water allocations in a particular year can be sold back to NSW if they are not used.

The primary benefit of these water security projects to customers in this regulatory period is the reduced risk of water restrictions being applied in the period (ie, increased water security). However, as the population of the ACT expands, customers in future regulatory periods will derive benefits from the additional supply capacity the ECD and M2G provide.

Based on the information before it, the Panel has not been able to determine precisely how much value customers in different regulatory periods will derive from these projects. However, the Panel notes:

77 ICRC, Price Direction Attachment 2: Pricing Model.

78 ibid

79 ICRC, Draft Report, Regulated Water and Sewerage Services, February 2013, p. 29.

80 ACTEW, Main submission to the ICRC, July 2012, p. 107.

- Initial estimates of the customer benefits associated with the ECD and M2G[81] developed by ACTEW and the Centre for International Economics (CIE) in 2009 suggested that:[82]
  - only 6% of the benefits would be derived by customers in this regulatory period, and
  - 91% of the benefits would be derived by customers after 2025, which is when an augmentation to ACTEW's supply capacity was expected to be required.
- Estimates developed by Cardno for this review of the costs of achieving the mandated level of water security in the 2013 period using an alternative source of short-term water security, suggest that approximately 70% of the annual ECD and M2G capital costs can be attributed to customers in this regulatory period (see section 8.5.1 for further detail).

The difference between these estimates (6% to 70%) is significant, indicating there is a high degree of uncertainty about the expected benefits of the ECD and M2G to customers over time and the extent of the intergenerational equity issue the timing of these benefits creates.

8. 3 ICRC's treatment of water security project costs in the original price direction

In its draft decision, the ICRC considered several options for recovering the capital costs associated with the water security projects from water customers, including:

- **The traditional straight line depreciation approach:** Under this option, the annual allowance for the return on capital and depreciation building blocks recovered from customers diminishes over the life of the asset. This is because although depreciation is recovered in a uniform manner, the return on capital building block falls as more of the investment is recovered through depreciation.
- **The straight line depreciation approach combined with extending the period over which the costs are recovered** from 66 years (the notional asset life adopted by the ICRC for all new water assets) to 100 years (the estimated economic life of a dam).[83]
- **The 'fair cost recovery' (FCR) scheme**, which includes both:
  - the flat capital cost recovery profile, which in simple terms, provides for the recovery of the same level of capital costs (depreciation plus a return on capital) from current and future customers.[84]
  - the inclining capital cost recovery profile, which provides for a greater level of capital costs to be recovered from future customers than current customers.

In its draft decision, the ICRC indicated a preference for the inclining capital cost recovery profile.[85] However, it noted that there were trade-offs associated with this approach, which would require further careful consideration.

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81 These benefits were reportedly estimated using hydrological modelling, climate change modelling and willingness to pay studies. ACTEW provided Cardno with a high level summary of this analysis, which was contained in a report prepared by CIE in 2009 entitled, *Economic benefits of new water supply options using 2030 and 2070 climate sequences*. ACTEW also provided Cardno with a spreadsheet (*Water security projects_benefits and probability of restriction profile.xlsx*) that contained the outputs from the benefits model for the ECD and M2G projects, but did not provide any detail about the specific assumptions underlying this analysis.

82 This has been estimated on a present value basis using the rate of return allowed by the ICRC in the 2008 price direction (9.65%).

83 Note that the 100 year assumption was based on advice from Cardno about the economic life to assume for a dam, which was informed by the asset lives adopted by other water utilities (82-107 years).

84 The ICRC likened this alternative to the repayment of a mortgage, where the return on capital and depreciation building blocks (ie, interest and principal) are recovered through a uniform payment, which is fixed for the life of the loan but at different points in time consists of a different allowance for the return on capital and depreciation components.

85 The ICRC's inclining profile was determined having regard to projected population growth and wages growth.

In its final decision, the ICRC noted that while the inclining capital cost recovery profile had "significant theoretical merit", several limitations would undermine its intent, including the potential for it to adversely affect ACTEW's short-term financial viability.[86] Therefore, it decided to deal with the intergenerational equity issues posed by the water security projects by: [87]

- using a straight line depreciation approach and extending the period over which the costs of the ECD would be recovered from water customers from 66 years to 100 years, and
- transferring the task of dealing with the intergenerational issue to the ACT Government by reducing the cost of equity to between 2.8% and 6% over the regulatory period.[88]

At the same time as putting these measures in place, the ICRC decided to change its approach to modelling ACTEW's revenue requirements by applying a nominal rate of return to an **unindexed** RAB.[89]

After carefully examining these decisions and their impacts on customers, the Panel has three concerns. The first concern is that the effect of the ICRC's decision to not index the RAB – was to **bring forward** the recovery of depreciation across all of ACTEW's assets, rather than to defer the recovery of the water security project costs.

This effect is significant. As the figure in Box 8.2 illustrates, the decision not to index the RAB, in conjunction with the ICRC's other decisions, results in customers in this regulatory period paying for approximately 35% of the water security project costs. To put this into perspective, under the traditional straight line depreciation approach with indexation, customers in this regulatory period would have paid approximately 23% of the costs of the projects.

In the Panel's view, the high proportion of costs borne by customers in this period under the ICRC's approach is inconsistent with the intent of clause 1(d). It is also inconsistent with the intergenerational equity and economic efficiency principles set out in Box 7.1.

The second concern relates to the ICRC's decision to transfer the intergenerational equity issue back to the ACT Government and taxpayers by reducing the cost of equity. In the Panel's view, it is not appropriate to write down the return on taxpayers' investment in ACTEW, given that the ICRC found that the expenditure on the projects was prudent and efficient. The Panel also notes that:

- there is no direct relationship between the cost of equity and the benefits future customers are expected to derive *vis-à-vis* existing customers, so it is unclear how the reduction in the cost of equity to 2.8% will improve intergenerational equity
- the reduced cost of equity applies to all assets not just the water security projects, and
- the reduced cost of equity is likely to have a deleterious effect on investment in the future.

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86 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, pp. 43 and 81.

87 ibid, p. 43.

88 The ICRC's rationale for adopting a lower rate of return is set out in the following extracts:

"The investments made to maintain water security must… be paid for, if not by water users then by the taxpayer. Through the process of this review the Commission has explored various ways of discharging this obligation. Our conclusion is that it is simply not feasible to ask ACTEW to defer the servicing of the debt that it has taken on to make these investments. Such a task is clearly beyond ACTEW's financial capacity. Ultimately, only government can spread the burden across the generations."

"…reducing the return on equity transfers the cost burden from ACTEW customers to ACT taxpayers. Government can then determine, through its borrowing program, the distribution of that burden between current and future taxpayers. This decision will be made in a budget context, which will allow all elements of the intergenerational distribution of costs and benefits of community funded activity to be considered together, including any transitional elements in water and sewerage services tariffs."

ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, pp. iii and 66.

89 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. xvii.

The Panel's final concern relates to the ICRC's decision to extend the period over which the costs of the ECD would be recovered from customers to 100 years. The Panel notes that this assumed 100-year asset life is approximately 50% shorter than the economic life ACTEW has advised should be assumed for the ECD (see Table 9.14).

In light of the above concerns, the Panel has decided not to employ the same approach as the ICRC.

8. 4 Techniques used by other regulators and constraints on their use

The ICRC is not the only regulator that has considered whether an alternative to the traditional approach to capital cost recovery can be used when dealing with large-scale infrastructure investments where the benefits accrue across multiple generations. For example, IPART, the ESC and the Queensland Government have also recently considered this issue in the water industry. Regulators in other industries in Australia, including gas, electricity and telecommunications, have also considered this issue.

Table 8.1 provides a summary of the techniques that have been employed or contemplated by other regulators. Further detail on these techniques and examples of their use can be found in Appendix 7.

As the information in Appendix 7 shows, there is no 'one-size-fits-all' approach to dealing with the intergenerational equity issues posed by large-scale one-off investments. Rather, there are a number of techniques that can be used and the choice between these will depend on a range of factors, such as:

- the benefits that current and future customers are expected to derive from the investment
- the availability of the information required to apply the technique
- the regulatory risks associated with each technique, which primarily relate to the ability of the regulator to bind future decisions by itself, and
- the effect the techniques may have on the regulated business' financial viability.

Table 8.1: Techniques to deal with investments that have intergenerational benefits

Technique	Description
Deferral of the recovery of a defined portion of the capital costs	This technique involves the full or partial deferral of the recovery of a defined portion of the capital costs (depreciation plus return on capital) when existing customers are not expected to fully utilise, or otherwise benefit from, the investment for a period of time. For example, if an asset is built with significant excess capacity, a regulator may decide to only allow a portion of the investment to be recovered from current users and defer the recovery of the remainder until the excess capacity is used. To ensure a regulated business is no worse off as a result of the deferral (in net present value terms), the deferred expenditure may be included in a notional account and allowed to increase annually by the required rate of return. At the end of the deferral period, the balance of this account (including the return on capital) is included in the business' revenue requirement and prices. This technique was adopted by IPART in 2009 when it assessed Hunter Water's proposed Tillegra Dam (note that in late 2010 the NSW Government decided not to proceed with the construction of this dam).
Alignment of the capital cost recovery profile with the profile of expected benefits	This technique, which is a variant on the deferred recovery of capital technique, aligns the recovery profile for capital costs with the benefits customers are expected to derive over the economic life of the asset. For example, if current and future customers are expected to benefit equally from the investment over the economic life of the asset, then the capital costs could be recouped through an annuity style payment over the life of the asset. However, if future customers are expected to derive a greater benefit from the investment, then a greater proportion of capital costs could be recovered from customers in the later years. This is akin to the approach proposed by the ICRC in its draft report.

Technique	Description
Alignment of the depreciation profile with the profile of expected benefits	This technique is designed to align the depreciation profile with the benefits that customers are expected to derive over the economic life of the asset. The only difference between this technique and the capital cost recovery technique is that it focuses on just one component of the capital costs – depreciation. If current and future customers are expected to benefit equally from the investment over the economic life, depreciation should be recovered on a straight line basis. On the other hand, if future customers are expected to derive a greater (lower) benefit, depreciation may be back end loaded (front end loaded) so a greater proportion of depreciation is recovered in the later (earlier) years.
Long term smooth price path	This technique has been used in a number of regulated and unregulated industries to ensure that existing customers (or initial customers of a new asset) do not bear a disproportionate share of the costs associated with the investment by smoothing the recovery of capital and other costs over a long period. Its application involves: • Determining the service provider's revenue requirement for each year of the period. • Establishing a smooth price path for the pricing period having regard to expected demand. • If demand is expected to be relatively low initially and to increase over time, the revenue recovered may be below a traditionally calculated 'revenue requirement' in the initial years but increase over time. • Any under recoveries of revenue arising in the initial years of the price path are recouped from customers when demand increases. To ensure the service provider is no worse off in net present value terms, regulators usually allow any unrecovered revenue to be rolled into the RAB and earn a regulated rate of return until it is recouped. Where there is no established customer base for new assets (eg, a new toll road, a gas pipeline servicing a new location or a new telecommunications network) this technique allows prices to be set at a level that can encourage demand while also providing the regulated business with a greater degree of certainty about its ability to recoup any under recoveries.

The last of these factors is particularly important. This is because while the techniques should be applied in a way that ensures the business is no worse off in net present value terms, any deferral of the recovery of costs will result in lower cash flows in the short-run. This may adversely affect the business' ability to meet its debt obligations and threaten its overall financial viability – which, in turn, may adversely affect the business' ability to meet its service obligations. For this reason, the impact on the regulated business' financial viability tends to act as an overriding constraint on the use of these techniques. That is, if the regulated business' financial viability would be threatened by the use of the technique, the traditional straight line depreciation approach will be used.

The Panel understands from the concerns raised by the ACT Treasurer in his response to the ICRC's draft decision to use the inclining capital cost recovery scheme that he also intended financial viability to act as an overriding constraint. In particular, the ACT Treasurer noted that if the adoption of this technique was to result in the 'impairment of the water security assets', then the benefits to the current ACT community from adopting the technique would be negated. The ACT Treasurer also noted that if this and a number of other issues could not be resolved, then he would be "open to retaining the traditional methodology for sharing the price of water security assets over an extended timeframe".[90]

8. 5 Extent to which alternative regulatory technique could be implemented

Of the techniques set out in Table 8.1, the Panel considers the inclining capital cost recovery profile technique and the deferral of a defined portion of capital costs technique are most relevant in this case given future customers are expected to derive a greater benefit from the ECD and M2G than current customers.

To implement one of these techniques, there would need to be sufficient information to estimate either:

- the benefits that customers are expected to derive in each year of the life of the ECD and M2G (a benefits profile), which is a key input into the inclining capital cost recovery profile technique, or

90 ACT Treasurer, Submission, 23 April 2013, p. 4.

- the proportion of ECD and M2G costs that can be attributed to customers in this regulatory period versus customers in future periods, which is a key input into the deferral of capital cost technique.

In addition, the Panel would need to be confident that implementing the technique would not adversely affect ACTEW's financial viability, in line with section 20(2)(i) of the Act,[91] and usual regulatory practice (as discussed above).

To help it consider whether sufficient information was available, the Panel asked Cardno to investigate the options for estimating either a benefits profile or the proportion of ECD and M2G costs that can be attributed to customers in this regulatory period. It then considered the results of Cardno's analysis, and assessed the likely effect of implementing Cardno's proposed approach on ACTEW's financial viability.

8.5.1 Cardno's analysis

Cardno investigated a number of different estimation options for the Panel, including:

- using the benefits profile developed by ACTEW and CIE
- estimating the size (or the cost) of the capacity expansion that would have been required to satisfy the mandated water security level in this regulatory period, and
- estimating the cost of satisfying the mandated water security level in this regulatory period using an alternative short-term water security option.[92]

Cardno found that the first two options were not feasible, as it was concerned about the assumptions underlying the ACTEW/CIE analysis[93] and was unable to access the detailed hydrological modelling required to estimate the size of the capacity expansion that would have been required in this regulatory period.

Therefore, Cardno focused primarily on the third option, which involves estimating the least-cost method of achieving the mandated security standard in this regulatory period using an alternative source of short-term water security.[94] The rationale underlying this approach is that if the ECD and M2G cost more in the period than the least-cost option, then the additional costs should be recovered from future customers by deferring the recovery of these costs to a future regulatory period.

The alternative source of short-term water security Cardno investigated was the Tantangara Transfer Option (see Box 8.1). To estimate the costs of using this option, Cardno drew on a number of assumptions that ACTEW referred to in its 2007 Future Water Options review. Cardno also assumed that water would only be required under this option 35% of the time, which is consistent with statements made by ACTEW in the 2007 Future Water Options review. That is, that ACTEW would only need to purchase water in this way three to four years in every 10.[95]

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91 This section of the Act requires the Panel to have regard to the borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry.

92 Note that while the ECD and M2G projects were found to be efficient when considering the total benefit to the community over the life of the assets (water security now, supply capacity in the future), they may not necessarily be the lowest cost method of providing short-term water security for customers in this regulatory period.

93 In its report, Cardno raised a number of concerns about the assumptions underlying the ACTEW/CIE analysis, including the use of: higher bound willingness to pay estimates, extreme drought scenarios, upper bound population forecasts and a risk aversion factor of 3.5, which was applied to the estimated cost of Stage 4 water restrictions. Cardno also noted that the willingness to pay analysis underlying the benefits profile may not reflect the mandated service level that ACTEW is required to comply with (ie, the current water supply system should meet unrestricted demand 95% of the time until at least 2030). Cardno therefore cautioned the Panel against relying on this analysis.

Cardno, Independent review of ICRC price decision, Technical report, November 2014, pp. 93-95.

94 The service standard states that the current water supply system should meet unrestricted demand for the ACT and Queanbeyan 95% of the time until at least 2030. See, ACT Government, ACT Water Strategy 2014-44: Striking the Balance, August 2014, p. 20.

95 Cardno, Independent review of ICRC price decision, Technical report, November 2014, pp. 96-98.

Cardno's estimate of the cost of the Tantangara Transfer Option is approximately $22 million ($2012-13).[96] Based on the Panel's own analysis the annual cost of the ECD and M2G projects under the traditional straight line depreciation approach is approximately $31 million. Therefore, the results of Cardno's analysis suggests that the recovery of up to 30% of the annual capital costs associated with these two projects could be deferred to future regulatory periods on intergenerational equity grounds.

Finally, it is worth noting that in its report, Cardno has made it clear that:

- it estimated the costs of the Tantangara Transfer Option only for the purpose of apportioning the total cost of the ECD and M2G between current and future customers, and
- with the limited information and time available and without detailed knowledge of hydrological modelling, or legalities of purchasing high security water from the Tantangara Catchment, it was unable to form an opinion about the best long-term water security option.

In light of the above, some care should be taken when interpreting the results of its analysis.

8.5.1.1 Panel's consideration of Cardno's analysis

The Panel understands that Cardno's use of the Tantangara Transfer Option to apportion the costs of the ECD and M2G between current and future customers is similar in many ways to the approach IPART used when assessing Hunter Water's proposed Tillegra Dam in 2009 (see Appendix A7.2).[97] The Panel does not therefore have any concerns with the general approach employed by Cardno.

In addition, the Panel recognises that Cardno faced a number of information constraints, and so it is possible that its $22 million estimate could overstate or understate the true cost of implementing the Tantangara Transfer Option. For example:

- Most of the inputs into Cardno's analysis are based on assumptions ACTEW has previously made about this option, but Cardno was unable to test the validity and robustness of the assumptions because it did not have access to the proposed or existing commercial arrangements related to this option.
- Cardno was also unable to ascertain the extent to which any of the costs it included in its estimate formed part of the $48 million that ACTEW spent on the Tantangara option in the last regulatory period, which was approved by the ICRC in the 2011 mid-term review and is already being recovered from water customers.

While there is some uncertainty surrounding the $22 million estimate, it is important to bear in mind that under the deferral of a defined portion of capital costs technique this estimate is only used to apportion the costs of the ECD and M2G between current and future customers. Therefore, all else being equal, ACTEW should be no worse off in net present value terms if the estimate overstates or understates the true cost of this option.

8.5.2 Financial viability assessment

To analyse the effect that deferring 30% of the annual ECD and M2G capital costs from this regulatory period to subsequent regulatory periods would have on ACTEW's financial viability, the Panel used the financial viability metrics set out in Table 7.1.

The results of this analysis indicate that such a deferral, on top of the 7% deadband (see section 6.4.3), could place significant strain on ACTEW's ability to meet its debt obligations in the last three years of the regulatory period, if water sales were persistently lower than forecast over the remainder of the regulatory period. In particular, the funds from operations (FFO) interest cover ratio falls to well below the target minimum level in these years (see Table 15.4).

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96 If the fact that the drought has broken was taken into account, then this estimate would fall to around $17.4 million pa because all that would be payable is the fixed costs of the project. Cardno, Independent review of ICRC price decision, Technical report, November 2014, p. 98.

97 In this case, the alternative source of short-term water security was assumed to be a desalination plant.

Given this finding, the Panel tested a number of other smaller deferral options, including:

- a 20% deferral option – in this case the FFO interest cover ratio falls well below the lower bound of the target range in the last year of the regulatory period, and
- a 10% deferral option – in this case the FFO interest cover ratio only just remains above the target level of 1.8 over the regulatory period.

While under the latter of these options, ACTEW would remain financially viable, it is worth noting that the adoption of this option would only reduce the typical customer bill by 1.7% in the remainder of this regulatory period. More importantly, it would add approximately $77 million[98] to the value of the RAB at the commencement of the next regulatory period. Depending on the conditions prevailing in financial markets in 2018, such an addition to the RAB could contribute to a significant price increase in the next period. Therefore, the Panel has concluded there would be little merit in implementing this option.

8. 6 Panel's draft decision on the treatment of water security projects

In the course of its review of this aspect of the original price direction, the Panel carefully evaluated the approach employed by the ICRC. In short, the Panel found that, contrary to the intent of clause 1(d) and the intergenerational and economic efficiency principles set out in Box 7.1, the ICRC's approach resulted in current customers paying a greater proportion of the costs of the ECD and M2G than would arise under the traditional straight line depreciation (with indexation) approach.

In addition, the Panel found that while it would be possible to achieve a closer alignment between the recovery of the ECD and M2G capital costs by deferring a defined portion of these costs, the adoption of this technique, in conjunction with the 7% deadband (see Chapter 6), could place some strain on ACTEW's financial viability in the short-term if water sales were persistently lower than forecast over the remainder of the regulatory period.

Given this finding, the Panel's draft decision is to:

- not defer the recovery of any of the ECD or M2G capital costs, and
- use the traditional straight line depreciation approach (with indexation) to recover the costs of these assets over the remaining economic lives of these assets (ECD: ~ 147 years and M2G: ~56.5 years – see Table 9.14).

In reaching this decision, the Panel had particular regard to the impact a deferral would have on ACTEW's short-term financial viability. If, for some reason, there is a change between the Panel's draft and final decisions that results in ACTEW's financial viability improving, then the Panel may revisit the decision not to defer a portion of these capital costs.

Finally, it is worth noting that while the Panel has decided not to defer a specific proportion of the ECD and M2G capital costs, its decision to index the value of the RAB and to adopt a longer economic life than the ICRC, in effect, results in more than 10% of the costs being deferred relative to the approach adopted by the ICRC (see Box 8.2 for further detail).

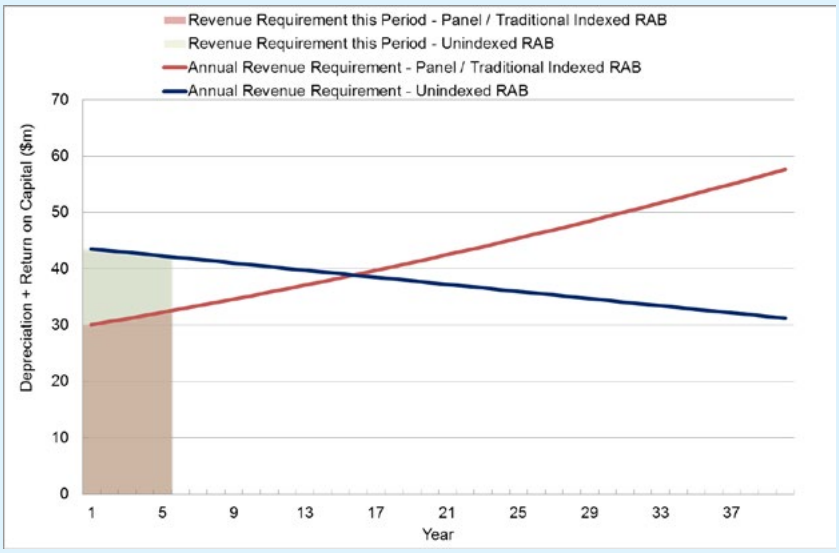
98 This represents both the deferred capital cost plus the return on capital that would accumulate over the five year period.

Box 8.2: Difference between the Panel's and ICRC's approach

As discussed in section 9.5, the Panel has decided to adopt the traditional 'indexed RAB' approach when calculating the return on investment that ACTEW can recover from tariffs. Compared to the ICRC's unindexed RAB approach, the effect is to defer recovery of return on investment. Indeed, for assets with lives greater than 40 years, the rate of indexation (2.5%) is greater than the rate of depreciation. This leads to an increasing asset value (and increasing contributions to revenue requirement) in the initial years. That is, for long-lived projects, the traditional approach to indexing the RAB yields a revenue recovery profile with some characteristics of the 'inclining capital cost recovery profile' that was originally considered by the ICRC in its draft decision.

The figure below shows the effect of indexing the RAB for recovery of the water security projects' costs (assuming WACC of 7.2% and asset life of 147 years). Under ICRC's approach, current users pay more than future users and approximately 35% of the total net present value of the costs is recovered in the first five years. Under the Panel's approach, recovery of return on investment is deferred and approximately 23% of the total net present value of the costs is recovered in the first five years.

Panel versus ICRC approaches for setting the required revenue from water security projects



9 Value of the regulated asset base

The next component of the original price direction the Panel reviewed was the value of ACTEW's water and sewerage RAB over the regulatory period. The value of the RAB is an integral component of the building block methodology and is used in calculating both the return on capital and the depreciation (or return of capital) allowances in the revenue requirement.

To calculate the value of the RAB **within** a regulatory period, regulators first establish the value of the RAB at the **commencement** of the regulatory period (ie the opening value of the RAB). Once this is established, the value of the RAB in subsequent years of the regulatory period (year t), is usually calculated as follows:

- the opening value of the RAB *plus*
- forecast capital expenditure (net of the value of any capital contributions) between the commencement of the regulatory period and year t *less*
- depreciation between the commencement of the regulatory period and year t *less*
- the value of any assets to be sold or disposed of between the commencement of the regulatory period and year t *plus*
- indexation of the RAB between the commencement of the regulatory period and year t.

To make its draft decision on the values of the water and sewerage RABs, the Panel considered the ICRC's final decisions for 2013-14 and 2014-15,99 and the issues raised in ACTEW's SOFC and other stakeholder submissions.100 These issues related to the ICRC's decisions on:

- the opening value of the RAB
- forecast capital expenditure
- the method used to calculate depreciation, and
- the treatment of inflation (indexation).

The sections below provide an overview of the Panel's draft decision on the value of ACTEW's water and sewerage RAB and then discuss its considerations and decisions on each component in more detail.

9. 1 Overview of the Panel's draft decision

The Panel's draft decision on the value of the water and sewerage RABs over the regulatory period is set out in the tables below.

99 As discussed in previous chapters, the original price direction provided for two biennial recalibrations within the regulatory period. Therefore, the ICRC's determined the value of the RAB for the first two years of the period only.

100 See for example the submissions received from Ms Jo Forestier, the Ratepayers Association and Dr Dwyer.

Table 9.1: Draft decision – Value of the water RAB ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Opening value of the RAB	1,369.80	1,405.81	1,442.43	1,476.10	1,515.85
Capital expenditure (net of capital contributions)	25.96	26.99	24.44	30.95	45.94
Disposals/assets written off	–	–	–	–	–
Depreciation	-24.52	-25.86	-27.14	-28.49	-30.09
Indexation	34.57	35.48	36.37	37.29	38.47
Closing value of the RAB	**1,405.81**	**1,442.43**	**1,476.10**	**1,515.85**	**1,570.17**

Table 9.2: Draft decision – Value of the sewerage RAB ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Opening value of the RAB	656.72	674.83	712.35	776.36	891.50
Capital expenditure (net of capital contributions)	18.11	38.23	65.57	117.78	76.43
Disposals/assets written off	–	–	–	–	–
Depreciation	-16.64	-18.06	-20.19	-23.52	-27.26
Indexation	16.64	17.35	18.63	20.88	23.24
Closing value of the RAB	**674.83**	**712.35**	**776.36**	**891.50**	**963.92**

The Panel's draft decision differs from the ICRC's final decision in the following ways:

- **Opening value of the RAB –** the Panel's draft decision on the opening value of the water RAB is $3.7 million lower than the value adopted by the ICRC while the opening value of the sewerage RAB is $4.2 million lower. These differences reflect the Panel's decision to account for the time value of money on the difference between the forecast capital expenditure for 2007-08 and actual capital expenditure in this year.
- **Forecast capital expenditure** – the draft decision on forecast capital expenditure in the first two years of the period are lower than the ICRC's final decisions (by $12 million in 2013-14 and $37.7 million in 2014-15). These decisions reflect the most recent, updated information provided by ACTEW on its capital expenditure program for 2013-14 to 2017-18, and Cardno's advice that this information is the best available estimate of the prudent and efficient level of this expenditure.
- **Depreciation –** the Panel's draft decision on the provision to be made for depreciation in the first two years of the regulatory period is approximately $10.5 million higher than the ICRC's final decision. This difference primarily reflects the Panel's decision to, where possible, calculate depreciation using the *economic* lives of the assets used in the provision of services rather than a notional estimate. It also reflects the correction of a number of small errors that were identified in the ICRC's modelling.
- **Indexation –** in contrast to the ICRC, but in keeping with standard regulatory practice, the Panel decided to ensure the real value of the RAB is maintained over time by making provision for inflation in the RAB. The forecast inflation rate that the Panel has used in this context is 2.5% pa.

9. 2 Opening value of the RAB as at 1 July 2013

To establish the opening value of the RAB, regulators generally use the following formula:

$$Opening\ RAB_{New\ regulatory\ period} =$$

$$Opening\ RAB_{Prior\ regulatory\ period} + Capital\ Expenditure_{Prior\ regulatory\ period} - Depreciation_{Prior\ regulatory\ period} - Asset\ Sales\ or\ Disposals_{Prior\ regulatory\ period} + Indexation_{Prior\ regulatory\ period}$$

When applying this formula, regulators usually consider the extent to which any adjustments need to be made to:

- the opening value of the RAB in the previous regulatory period to account for differences between forecast and actual capital expenditure and inflation in the final year of the penultimate regulatory period[101]
- the capital expenditure undertaken in the previous regulatory period to remove any imprudent or inefficient expenditure
- the depreciation allowance in the previous regulatory period, and
- the indexation parameter to account for differences between forecast and actual inflation in the previous regulatory period.

9.2.1 ICRC's final decision

In its final decision the ICRC employed a similar approach to that outlined above and determined that:

- the opening value of the water RAB was $1.37 billion (see Table 9.3), and
- the opening value of the sewerage RAB was $661 million (see Table 9.4).

Table 9.3: ICRC final decision – Opening value of the water RAB as at 1 July 2013 ($m, nominal)

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Opening value of the RAB	496.57	535.28	652.74	829.20	1,056.03	1,265.45
Depreciation adjustment	-	-1.03	-	-	-	-
Capital expenditure (net of capital contributions)*	33.16	113.70	175.71	216.71	203.17	108.42
Depreciation	11.71	13.67	16.44	19.06	20.41	21.41
Asset sales and disposals	-	-	-	-	-	11.78
Indexation	17.27	18.46	17.19	29.18	26.65	32.84
Closing value of the RAB	**535.28**	**652.74**	**829.20**	**1,056.03**	**1,265.45**	**1,373.53**

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p102.

* The ICRC reduced ACTEW's actual capital expenditure by the value of the contractor margin payable to ActewAGL.

101 This adjustment is required because a regulator's decision on the opening value of the RAB is usually made in the final year of the penultimate regulatory period, which means that the regulator must rely on forecasts for this final year rather than information on actual capital expenditure and inflation.

Table 9.4: ICRC final decision – Opening value of the sewerage RAB as at 1 July 2013 ($m, nominal)

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Opening value of the RAB	467.50	491.45	558.88	585.71	611.42	635.00
Depreciation adjustment	-	-	-	-	-	-
Capital expenditure (net of capital contributions)*	19.94	64.00	27.33	21.58	24.22	25.30
Depreciation	12.06	12.89	13.79	14.43	15.00	15.62
Asset sales and disposals	-	-	-	-	-	-
Indexation	16.07	16.32	13.29	18.57	14.36	16.19
Closing value of the RAB	**491.45**	**558.88**	**585.71**	**611.42**	**635.00**	**660.87**

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p102.

* The ICRC reduced ACTEW's actual capital expenditure by the value of the margin payable to ActewAGL and the difference between the actual costs of constructing the Uriarra Village sewerage plant and the costs of a package plant.

9.2.2 ACTEW's SOFC

ACTEW did not raise any specific concerns in its SOFC about the opening values adopted by the ICRC in its final decision. However, the opening values in the regulatory models it provided as attachments to its SOFC were **lower** than those adopted by the ICRC.[102] The Panel therefore sought further information from ACTEW on the source of this difference.

In response, ACTEW indicated that the difference reflected a range of matters including:[103]

- ACTEW's decision to exclude a number of items of capital expenditure from the opening value of the RAB that the ICRC decided should be treated as if they were funded through a Community Service Obligation (CSO) (ie, the Cotter Dam Discovery Trail, the Uriarra Village sewerage project and abatement activities).
- Differences in the assumed level of expenditure on the Uriarra Village Sewerage System, which have arisen as a result of the following:
  - ACTEW excluded $0.46 million of expenditure on the Uriarra Pressure Sewerage System rectification works that the ICRC did not, and
  - ACTEW assumed that the prudent and efficient costs of a package plant were $3.4 million, based on information contained in the ICRC's draft and final reports, which was $0.5 million higher than the value assumed in the ICRC's pricing model.
- ACTEW and the ICRC used different values for forecast inflation in 2012-13 (3% versus 2.5%)[104] and actual inflation in 2006-07 (2.9% versus 2.96%).
- ACTEW accounted for the time value of money when accounting for the difference between its actual and forecast capital expenditure in 2007-08.

102 The opening value of the water RAB in Attachment A1 to ACTEW's SOFC was $1.34 billion, which is $30.5 million lower than the ICRC's value, while the opening value of the sewerage RAB in Attachment A2 was $656 million, which is $4.7 million lower than the ICRC's value. See ACTEW, Attachment A1 PTRM FY14-FY18 Water.xlsm and Attachment A2 PTRM FY14-FY18 Sewerage.xlsm.

103 ACTEW, Responses to questions, 31 August 2014.

104 It is worth noting that while ACTEW assumed an inflation rate of 3% in its roll forward model, on page 27 of its SOFC ACTEW has proposed the use of a 2.5% inflation rate.

ACTEW also informed the Panel that it had identified two errors[105] in its model and submitted the following revised estimates of the opening RABs:[106]

- Water assets – $1.35 billion
- Sewerage assets – $0.656 billion.

9.2.3 Panel's considerations and draft decision

To determine the opening value of the water and sewerage RABs as at 1 July 2013, the Panel used the formula set out in the introduction to this section. It also had regard to:

- the ICRC's findings on the prudence and efficiency of capital expenditure in the previous regulatory period and other adjustments to be made to the opening value of the RAB
- ACTEW's proposed treatment of the capital expenditure items the ICRC decided to treat as if they were funded through a CSO, and
- other points of difference between ACTEW's proposed opening values and the ICRC's final decision.

9.2.3.1 ICRC's final decision on capital expenditure and other adjustments

In the course of making its decision on the opening value of the RAB, the ICRC, in conjunction with Cardno, conducted a detailed review of the prudence and efficiency of ACTEW's capital expenditure in the previous regulatory period. The key findings of this review are set out in Table 9.5.

Table 9.5: ICRC's key findings on the prudence and efficiency of capital expenditure

Capital expenditure items	ICRC's findings
Water security projects	Cardno undertook a review of ACTEW's expenditure on the water security projects for the ICRC as part of its broader *ex post* capex review. Cardno's findings were broadly similar to those reached by the ICRC in a review that it undertook in 2010. That is, that the water security projects "represent an extra precautionary approach to managing the ACT's water security needs…in the meantime, the ACT appears to have a significant surplus of water source capacity". Cardno went on to note though that the conditions prevailing in mid-2007 when dam levels were at 29.7% (~12 months of supply remaining) were such that "it was understandable that ACTEW would have urgently embarked on a range of water security measures". It also found that the cost increases associated with the ECD appeared to be "reasonable" and that the water security projects more generally "appear to have been implemented in an efficient manner".[107] Based on Cardno's advice and the findings from its own review in 2010, the ICRC decided to accept the increased expenditure on the water security projects but reiterated the concerns it had expressed in its 2010 review about the 'over-cautious approach to achieving water security', the governance and decision-making processes employed by ACTEW and the potential for the ECD not to have been undertaken.
Uriarra Village sewerage project	Based on Cardno's advice, the ICRC decided that a prudent and efficient service provider would have built a package plant rather than the membrane bioreactor treatment plant built by ACTEW. Therefore the ICRC decided to exclude the difference between the costs of these two types of plants from the value of the sewerage RAB. The ICRC also decided that the project should have been carried out as a CSO and funded accordingly, so it decided to include the efficient costs into the sewerage RAB but to make an offsetting adjustment to ACTEW's revenue requirement so that the ongoing costs, net of revenue collected directly from Uriarra residents were not recovered from the general population. This adjustment was designed to mimic what would occur if the ACT Government actually made a CSO payment to ACTEW.
Cotter Dam Discovery Trail	In a similar manner to the Uriarra Village sewerage project, the ICRC concluded that the costs incurred by ACTEW in developing the discovery trail should be treated as if it were funded by the ACT Government through a CSO, with the costs included in the water RAB and an offsetting adjustment made to ACTEW's revenue requirement for ongoing costs.

105 These errors related to ACTEW's treatment of asset disposals and the provision made for sewerage indexation in 2007-08.

106 ACTEW, Email responses to questions, 2 September 2014 and Attachment A3 Roll Forward Model_amended 29aug2019.xls

107 ibid, pp. 144 and 153.

Capital expenditure items	ICRC's findings
Greenhouse gas (GHG) abatement costs	Like the two preceding projects, the ICRC found that the GHG abatement costs associated with the M2G and Tantangara Transfer projects should be treated as if they were funded by the ACT Government through a CSO, with the costs included in the water RAB and an offsetting adjustment made to ACTEW's revenue requirement.
Contract margin payable	The ICRC found that the 3% margin payable by ACTEW to a related entity, ActewAGL under the Utilities Management Agreement (UMA), should be excluded from the RAB because the contract did not deliver the benefits that were originally expected.

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, Chapter 6 and Cardno, Review of ACTEW's Capital and Operating Expenditure, November 2012.

Having examined Cardno's report and the ICRC's final decision, the Panel is satisfied that ACTEW's capital expenditure in the previous regulatory period has been subject to a comprehensive and robust *ex post* review. Therefore, the Panel decided to rely on the results of this review and the findings contained in Table 9.5.

In addition to the revisions outlined in Table 9.5, the ICRC made the following adjustments:

- the opening values of the water and sewerage RABs as at 1 July 2008 were adjusted to account for differences between forecast and actual capital expenditure and inflation in 2007-08 and a change in the inflation index in 2006-07, and
- the indexation values adopted in the 2008 price determination were adjusted to account for differences between forecast and actual inflation through to 2011-12.

The Panel understands that the approach employed by the ICRC when making these adjustments is consistent with the way in which other regulators approach the task. The Panel is satisfied that these adjustments should be made to the calculation of the opening value of the water and sewerage RABs.

9.2.3.2 ACTEW's proposed treatment of CSO related expenditure

ACTEW suggested in its response to the questions posed by the Panel that, rather than including the costs of the three projects that[108] the ICRC decided should have been funded through a CSO in the RAB and making an offsetting revenue adjustment, these costs should just be excluded from the RAB.

While ACTEW's proposed approach may be administratively simpler, the Panel considers the ICRC's approach is more transparent. Therefore, the Panel has decided to adopt the same approach as the ICRC and to:

- include the costs of the Uriarra Village sewerage project, the Cotter Dam Discovery Trail and abatement activities in the opening value of the water and sewerage RABs, and
- make an appropriate deduction from ACTEW's revenue requirement so that the ongoing costs are not recovered from all ACT customers.

The Panel's view on the other points of difference between ACTEW's and the ICRC's opening RAB values are set out below.

9.2.3.3 Other points of difference

As section 9.2.2 indicated, there were several other points of difference between ACTEW's and the ICRC's opening RAB values. The Panel's considerations on these matters are set out below.

9.2.3.4 Uriarra Village sewerage plant

There are two sources of difference between the values that ACTEW and the ICRC have assumed for the Uriarra Village sewerage plant:

108 The Uriarra Village sewerage project, the Cotter Dam Discovery Trail and the greenhouse gas abatement costs.

- First, ACTEW excluded expenditure on the Uriarra pressure sewerage system rectification works, while the ICRC did not. ACTEW has informed the Panel that it considers its approach is consistent with the intent of the ICRC's final decision, which in its view was to exclude all Uriarra-related expenditure except the prudent and efficient costs of a package plant, in line with Cardno's advice.
- Second, ACTEW assumed the prudent and efficient costs of a package plant were $3.4 million, while the ICRC assumed these costs were $2.9 million. ACTEW has informed the Panel that it based its costs on information in the ICRC's draft decision, which differs from the costs used in the ICRC's pricing model.

The Panel's findings on these two sources of difference are as follows:

- **Sewerage rectification works** – It is unclear from the report Cardno prepared for the ICRC on ACTEW's capital expenditure whether it intended to exclude ACTEW's expenditure on rectification works on the basis that they were imprudent or inefficient.[109] However, through further discussions with Cardno, the Panel established that the costs were considered prudent and efficient. Therefore the Panel decided to include the costs of these works in the opening value of the sewerage RAB and to also account for these in the Uriarra CSO revenue adjustment (see section 13.3).[110]
- **Package plant costs** – Based on the Panel's review of this issue, it appears that the advice Cardno provided the ICRC on the prudent and efficient cost of constructing a package plant[111] was correctly reflected in the ICRC's pricing model, but not in Table 6.6 of its final report and Table 10.4 of its draft report. Therefore the Panel decided to use the value adopted in the ICRC's pricing model ($2.9 million).

9.2.3.5 Forecast inflation in 2012-13 and actual inflation in 2006-07

For the reasons set out in section 9.5.4, the Panel has decided to adopt the same inflation forecast as that adopted by the ICRC for 2012-13 (ie, 2.5%). The Panel also considers it was open to the ICRC to revise the actual inflation measure for 2006-07 in calculating the opening value of the RAB. Therefore the Panel has adopted the same inflation assumptions as the ICRC.

9.2.3.6 Accounting for differences between actual and forecast expenditure in 2007-08

In 2007-08, ACTEW spent $15 million **less** on water and sewerage capital expenditure than forecast.[112] While the ICRC accounted for this difference by altering the capital expenditure values in 2007-08, ACTEW recognised the additional value it derived from having the use of these funds between 2007-08 and 2012-13 (the time value of money) and deducted this value (approximately $9.8 million)[113] from the opening value of the water and sewerage RABs.

The Panel accepted the adjustment proposed by ACTEW which is consistent with the approach employed by the Australian Energy Regulator (AER).[114] This results in lower opening RAB values for water and sewerage.

Therefore, the Panel accepted this adjustment, which results in a lower opening RAB value.

9.2.3.7 Opening value of the water and sewerage RAB as at 1 July 2013

For the reasons set out above, the Panel is satisfied that, with the exception of the treatment of the difference in expenditure in 2007-08 and the treatment of the sewerage rectification works, all the

109 Cardno, Review of ACTEW's Capital and Operating Expenditure, November 2012, pp. 185-187.

110 The Panel understands that the ICRC did not include these costs in its Uriarra revenue adjustment, but this appears to have been an oversight on its part.

111 Cardno, Review of ACTEW's Capital and Operating Expenditure, November 2012, p. viii.

112 ACTEW, Attachment A3 Roll Forward Model_amended 29aug2014.xls.

113 ibid.

114 AER, Roll Forward Model, 26 June 2008, Appendix B.

adjustments the ICRC made to the opening value of the water and sewerage RABs were appropriate. The Panel's draft decision is that:

- the opening value of the water RAB as at 1 July 2013 is $1.37 billion (see Table 9.6), and
- the opening value of the sewerage RAB as at 1 July 2013 is $6567million (see Table 9.7).

Table 9.6: Draft decision – Opening value of water RAB calculation ($m, nominal)

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Opening value of the RAB	496.57	542.30	659.98	836.60	1,063.66	1,273.26
Depreciation adjustment	-	-1.03	-	-	-	-
Capital expenditure (net of capital contributions)	40.06	113.70	175.71	216.71	203.17	108.42
Depreciation	11.71	13.67	16.44	19.06	20.41	21.41
Asset sales and disposals	-	-	-	-	-	11.78
Indexation	17.39	18.68	17.36	29.41	26.83	33.04
Adjustment to account for difference between actual and forecast capital expenditure in 2007-08						(11.73)
Closing value	**542.30**	**659.98**	**836.60**	**1,063.66**	**1,273.26**	**1,369.80**

Table 9.7: Draft decision – Opening value of sewerage RAB calculation ($m, nominal)

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Opening value of the RAB	467.50	499.77	567.46	594.49	620.48	644.26
Depreciation adjustment	-	-	-	-	-	-
Capital expenditure (net of capital contributions)	28.12	64.00	27.33	21.58	24.22	25.30
Depreciation	12.06	12.89	13.79	14.43	15.00	15.62
Asset sales and disposals	-	-	-	-	-	-
Indexation	16.21	16.58	13.49	18.84	14.56	16.42
Adjustment to account for difference between actual and forecast capital expenditure in 2007-08						(13.65)
Closing value	**499.77**	**567.46**	**594.49**	**620.48**	**644.26**	**656.72**

9. 3 Forecast capital expenditure in the 2013 period

To establish the forecast capital expenditure to be included in the value of the RAB within a regulatory period,[115] regulators usually assess the regulated business' proposed capital expenditure over this period, and include only the level of expenditure they are satisfied would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering the regulated services.

The Panel followed this approach in making its draft decision on the forecast capital expenditure to be included in ACTEW's RAB for the 2013 period. In doing so, it had regard to the ICRC's final decision for 2013-14 and 2014-15, ACTEW's SOFC proposal and other submissions, and the expert advice it received from Cardno on the efficiency of ACTEW's proposed expenditure.

115 Note that forecast capital expenditure is included in the RAB for the purpose of setting prices within the regulatory period. Before it is incorporated into the RAB for the **next** regulatory period, it undergoes a prudence and efficiency test as discussed in section 9.2 above.

9.3.1 ICRC's final decision on forecast capital expenditure

In making its final decision, the ICRC considered Cardno's expert advice on the prudence and efficiency of the forecast capital expenditure ACTEW initially proposed in its July 2012 submission, and the revised forecast expenditure ACTEW subsequently proposed in its April 2013 submission. The ICRC's final decision for 2013-14 and 2014-15 (Table 9.8) broadly accepted ACTEW's revised expenditure for these years, except for a minor adjustment downwards of $0.6 million (0.4% pa).[116] (More information on the ICRC's reasoning for this decision is provided in Box 9.1.)

Table 9.8: ICRC final decision – Forecast capital expenditure (net of capital contributions) ($m, nominal)

	Water		Sewerage	
	2013-14	2014-15	2013-14	2014-15
Forecast capital expenditure (net of capital contributions)	24.25	37.81	31.87	65.11

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p146.

Box 9.1: ICRC's review of ACTEW's capital expenditure

The ICRC commissioned Cardno to review the prudence and efficiency of ACTEW's proposed capital expenditure program for this regulatory period.[117] In its November 2012 report, Cardno raised a number of concerns about ACTEW's capital expenditure forecasts. ACTEW's April 2013 submission to the ICRC's draft report included a revised five-year capital expenditure forecast, which was lower (in total) than the forecast contained in the initial submission reviewed by Cardno, and included a significant re-profiling of projects to later in the 2013 to 2018 period. ACTEW submitted that since its July 2012 submission it had:

- Adopted a new and improved capital expenditure planning process, which would be applied to all capital expenditure in the current regulatory period.
- Updated the timing of the proposed capital expenditure program and adjusted it for some carryover projects from 2012-13.
- Accepted the capital expenditure efficiency factors recommended by Cardno.
- Applied revised construction cost escalation factors that more closely matched those recommended by Cardno.[118]
- The ICRC reviewed the new Capital Expenditure Initiation and Approval Manual ACTEW provided as part of its April 2013 submission. The ICRC also examined a number of new business case documents provided by ACTEW.[119]

The ICRC considered that ACTEW's new capital expenditure planning processes appeared to be a significant improvement over those reviewed by Cardno. However, the ICRC also noted the new process was at an early stage of adoption and that the 'true test' would be how rigorously the new arrangements were applied in practice.

Nonetheless, the ICRC concluded that the new process had reduced anomalies, and allowed ACTEW to present a more soundly-based capital works program over the ICRC's two-year forecast period. The ICRC considered that the first biennial recalibration would provide it with an opportunity to see whether actual expenditure matched the forecast capital allowance and the extent to which project evaluations had adhered to the new capital expenditure planning processes.[120]

116 This minor adjustment reflected the application of a continuing efficiency factor that had been recommended by Cardno in its November 2012 report to the ICRC, and which ACTEW advised had been inadvertently excluded from its capital expenditure forecasts. See ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 141.

117 See Cardno, Review of ACTEW's Capital and Operating Expenditure, Final Report, November 2012.

118 ACTEW, Response to the Draft Report Regulated Water and Sewerage Services, 12 April 2013, pp. 45-51.

119 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 136.

120 ibid, pp. 136-137.

9.3.2 ACTEW's SOFC

In its SOFC, ACTEW proposed forecast capital expenditure for 2013-14 to 2017-18 consistent with its April 2013 submission.[121] In response to queries from the Panel, it subsequently revised this forecast expenditure to correct the application of the continuing efficiency factor, so that it is applied cumulatively (in line with Cardno's intention).[122] This forecast expenditure is shown in Table 9.9 below.

Table 9.9: ACTEW SOFC (amended) – Forecast capital expenditure (net of capital contributions) ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water	24.25	37.67	43.04	34.30	32.16
Sewerage	31.87	64.86	87.37	81.21	59.67

Source: ACTEW, Attachment A1 PTRM FY14-FY18 Water_amended 18sept2014.xlsm and Attachment A2 PTRM FY14-FY18 Sewerage_amended 18sept2014.xlsm. This is ACTEW's SOFC forecast revised to take account of the continuing efficiency factor. Figures adjusted for inflation of 2.5% per annum.

9.3.3 Other submissions

In other submissions received by the Panel to date, two stakeholders raised concerns about the transparency of ACTEW's actual expenditure and ACTEW's competency in budgeting for major capital projects.[123] The Ratepayers Association of the ACT also raised concerns about the potential for the 'gold plating' of ACTEW's water and sewerage infrastructure.[124]

9.3.4 Cardno's advice

To assist it in reviewing the forecast capital expenditure to be included in the RAB, the Panel asked Cardno to:

- undertake a strategic review of ACTEW's governance processes for capital expenditure decision-making and provide advice as to whether these processes are a) reasonable, and b) sufficient to manage the risks in delivering its capital program, and
- review ACTEW's forecast capital expenditure for the period 2013-14 to 2017-18 and recommend the level of forecast expenditure it considers to be prudent and efficient.

The Panel considered it appropriate to assess the progress ACTEW had made in implementing its new capital expenditure planning processes, given the concerns raised by the ICRC and Cardno around this issue previously (see Box 9.1), the size of the proposed sewerage capital expenditure program, and the Panel's draft decision to adopt a five-year regulatory period.

In addition, as part of these reviews, the Panel asked Cardno to consider the circumstances (including the information available) prevailing at the time of the ICRC's final decision (ie, June 2013), and to advise whether there had been any substantive change in these circumstances that the Panel should take into account. Cardno's detailed analysis is contained in its full report, which is available on the Panel's website.[125] An overview of its findings is provided below.

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121 ibid, p. 33. See also ACTEW, Attachment A1 PTRM FY14-FY18 Water.xlsm and Attachment A2 PTRM FY14-FY18 Sewerage.xlsm.

122 That is, 0.4% in the first year, 0.8% in the second year etc. In its final decision the ICRC applied 0.4% in each year. See ACTEW, Attachment A1 PTRM FY14-FY18 Water_amended 18sept2014.xlsm and Attachment A2 PTRM FY14-FY18 Sewerage_amended 18sept2014.xlsm.

123 See Executive Committee UP999, Submission on the Review of ICRC Price Direction for Regulated Water and Sewerage, 15 August 2014, p. 5 and Ratepayers Association of ACT, Submission, 18 August 2014, p. 2.

124 Ratepayers Association of ACT, Submission, 18 August 2014, p. 2. Gold plating is said to occur when capital expenditure is undertaken in excess of the efficient level required to meet the applicable service standards. It has the effect of increasing revenue and prices above the levels required had capital expenditure been kept to an efficient level.

125 Cardno, Independent review of ICRC price decision, Technical report, November 2014.

9.3.4.1 Cardno's findings on ACTEW's governance processes

Cardno reviewed ACTEW's recently implemented capital delivery framework, ACTEW's progress in approving investments through this framework, and a sample of approval documentation. Based on this review, Cardno was "satisfied that ACTEW has in place a reasonable governance framework for delivering its capital expenditure."[126] It also found that the new governance processes are generally sufficient to manage the risks in delivering ACTEW's capital program "as there is increased rigour in the development and approval of Business Cases and Technical Reports."

Cardno also noted that the new processes had been applied to only a small proportion of the expenditure in the first two years of the regulatory period. In addition, it considered that ACTEW faces a significant challenge to deliver its proposed level of expenditure for the final two years of the period (discussed further below).

9.3.4.2 Cardno's recommendations on forecast capital expenditure

In reviewing the forecast capital expenditure included in ACTEW's SOFC (Table 9.9), and considering whether there had been substantive change in the circumstances that prevailed at the time of the ICRC's final decision, Cardno sought more information from ACTEW. Based on this information, Cardno advised the Panel that ACTEW's most recent capital expenditure program for the period 2013-14 to 2017-18 is significantly different to the one available to it when it made its recommendations to the ICRC in November 2012, and to the program the ICRC based its final decision on in June 2013. In particular, in the most recent capex program:

- Total expenditure for the full five-year period is $431 million, which is $17 million ($2012-13) lower than Cardno recommended as prudent and efficient in its November 2012 report, and $33 million ($2012-13) lower than ACTEW proposed in its April 2013 submission.
- Expenditure for the first two years of the period is $50 million ($2012-13) lower than ACTEW proposed in its April 2013 submission, indicating that ACTEW expects to significantly underspend compared to the amount the ICRC allowed for in its final decision for these two years.
- The profile of expenditure across the five-year period is significantly different to that proposed in ACTEW's April 2013 submission.[127] In particular, ACTEW now forecasts significant peaks in expenditure in 2016-17 and 2017-18, as some of the underspend in the first two years is 'caught up'.
- There has been slippage in the projected delivery of the program as a whole, and in the large value projects at the Lower Molonglo Water Quality Control Centre (LMWQCC).
- Most of the expenditure proposed for 2016-17 and 2017-18 has not yet been approved through ACTEW's new capital delivery framework.[128]

Cardno considered that the above differences constitute a substantive change in circumstances from those prevailing when ACTEW originally developed its forecasts. It also considered that there is a significant risk to the successful delivery of the forecast capital program towards the end of the current regulatory period.[129] Accordingly, Cardno recommended that:

- the prudent and efficient level of ACTEW's forecast capital expenditure, based on the information presently available, be as per ACTEW's most recent capital expenditure program, and
- the level of expenditure in 2016-17 and 2017-18 ($2012-13) be reduced $10 million given the risk surrounding successful delivery of the projects.

Cardno's recommended prudent and efficient forecast capital expenditure is set out in Table 9.10 below.

126 ibid, p. 33.

127 ibid.

128 ibid, p. 43.

129 ibid.

Table 9.10: Cardno recommendation – Forecast capital expenditure ($m, $2012-13)

	2013-14	2014-15	2015-16	2016-17	2017-18
ACTEW's current capital expenditure forecasts	43.0	62.1	83.5	134.7	108.1
Less adjustment for expenditure at risk of deliver				-10.0	-10.0
Recommended prudent and efficient capital expenditure	**43.0**	**62.1**	**83.5**	**124.7**	**98.1**

Source: Cardno, Independent review of ICRC price decision, Technical report, 6 November 2014, p 48. Figures net of capital contributions.

9.3.5 Panel's considerations and draft decision on forecast capital expenditure

Having considered the information discussed above, the Panel reached the view that ACTEW's most recent capital expenditure program for 2013-14 to 2017-18 is the best available estimate of the prudent and efficient level of its forecast capital expenditure for this period. On this basis, the Panel's draft decision is to accept the first part of Cardno's recommendation.

However, the Panel's draft decision is not to accept Cardno's recommended $10 million adjustment in each of the final two years of the period. The Panel acknowledges Cardno's view that ACTEW's understanding of its business risk profile may improve over time, and that this could result in the deferral of some expenditure.[130] However, the Panel does not consider that this provides a sufficient basis for making an adjustment of this magnitude to ACTEW's forecast capital expenditure program.

The Panel also notes Cardno's view that ACTEW's forecast capital expenditure in 2016-17 and 2017-18 ($121 million on average per year ($2012-13)) is about 50% higher than the forecast expenditure in the next highest year (2015-16). While this is a material increase, the Panel is aware that in the last regulatory period ACTEW delivered capital expenditure at or in excess of $200 million in four out of the five years.[131] Therefore, the Panel does not consider that the increase *per se* is a good indicator of delivery risk.

The Panel's draft decision on forecast capital expenditure is set out in Table 9.11 below.

Table 9.11: Draft decision – Forecast capital expenditure ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water	25.96	26.99	24.44	30.95	45.94
Sewerage	18.11	38.23	65.57	117.78	76.43
Total capital expenditure	**44.07**	**65.22**	**90.02**	**148.73**	**122.38**

In relation to the concerns other stakeholders raised about ACTEW's forecast capital expenditure, the Panel notes that it has made a draft decision to include an *ex post* capital expenditure review in the measures to deal with expenditure risk in this regulatory period (see section 6.5). This will mean the ICRC must review the capital expenditure ACTEW actually incurs in this period, so only expenditure it deems to be prudent and efficient is included in opening value of the RAB for its next price direction.

In addition, as section 6.3.3 discussed, the Panel intends to suggest to the ICRC that ACTEW be required to submit a report to the ICRC each year, which sets out the actual operating and capital expenditure it incurred in the previous financial year, and an explanation for any major deviation from the expenditure allowances approved in the price direction.

The Panel considers these requirements will provide assurance to customers that only prudent and efficient capital expenditure is recovered through water and sewerage prices and increase the transparency of ACTEW's actual expenditure.

130 ibid.

131 ICRC, Draft Report: Regulated Water and Sewerage Services, February 2013, p. 26.

9. 4 Depreciation

Under the building block methodology, the depreciation allowance allows the regulated business to recover its investment in the assets used in the provision of regulated services over the economic life of the assets. Regulators usually determine the value of this building block having regard to:

- the value of the various asset classes that comprise the RAB
- the depreciation profile assumed for the recovery of capital (eg, straight line, front-end loaded or back-end loaded),[132] and
- the economic lives[133] of the assets used in the provision of services (referred to as the remaining economic life for existing assets and standard economic life for new assets).

9.4.1 ICRC's final decision

In its final decision, the ICRC adopted a straight line deprecation profile and calculated separate depreciation allowances for the ECD, non-ECD water assets (new and existing assets) and sewerage assets (new and existing assets). The depreciation allowances for these three asset categories were calculated by dividing:

- the value of these three asset categories in each year of the regulatory period, *by*
- a notional estimate of the remaining and standard lives of each asset category.[134]

Table 9.12 sets out the ICRC's final decision on depreciation.

Table 9.12: ICRC final decision – Depreciation ($m, nominal)

	2013-14	2014-15
Water assets		
ECD	$4.22	$4.26
Non-ECD Water	$16.10	$16.85
Total Water	**$20.32**	**$21.11**
Sewerage assets	**$16.25**	**$16.94**
Total Water plus Sewerage	**$36.57**	**$38.04**

Source: ICRC, Price Direction Attachment 2: Pricing Model, Forecast RAB tab.

132 These three alternative profiles result in the following:
- Straight line deprecation results in a constant proportion of the asset value being recovered over the economic life of the assets and tends to be used when the demand is expected to be constant over the economic life of the asset.
- Front-end loaded depreciation results in a greater proportion of the asset value being recovered in the early years of the economic life of the asset and tends to be used when demand is expected to fall over time.
- Back-end loaded depreciation results in a greater proportion of the asset value being recovered in the latter years of the asset life and tends to be used when the demand is expected to increase over time.

133 In certain circumstances the economic life of the assets may differ from the technical life of the assets. For example, if an asset is to be bypassed, the economic life may be substantially shorter than the technical life.

134 In 2013-14 the remaining asset lives adopted by the ICRC were 96.7 years for ECD assets, 60.7 years for non-ECD water assets (or 60.6 years for existing water assets and 66 years for new water assets) and 41.6 years for sewerage assets (or 40.5 years for existing sewerage assets and 66 years for new sewerage assets).

9.4.2 ACTEW's SOFC

In its SOFC, ACTEW contended that the ICRC made the following errors when calculating:[135]

1. The remaining lives of the non-ECD water assets and sewerage assets as at 1 July 2013. According to ACTEW, the ICRC erred by:
   - dividing the actual value of the RAB by a forecast value of depreciation for 2012-13 that was developed in 2008, rather than using outturn depreciation for 2012-13, and
   - including the value of the ECD in the calculation of remaining life of non-ECD assets.
2. The depreciation allowance within the regulatory period. ACTEW claims the ICRC erred by:
   - using the same average asset life to calculate the depreciation allowance for existing and new assets, rather than using the remaining life estimate for assets in existence at the start of the regulatory period and the standard life estimate for assets to be commissioned in 2013-14 and 2014-15, and
   - applying the remaining asset life to the opening asset value, rather than the depreciated value of the assets in each year.

ACTEW also contended that while these errors do not have an impact on its revenue requirement over the long-term, they reduce its cashflows in the short term.[136]

In addition, ACTEW contended that depreciation should be calculated using accounting and engineering based estimates of the lives of new and existing assets, rather than the notional estimates adopted by the ICRC, which it claims are "materially higher than the actual economic or accounting lives".[137] ACTEW's position on this issue is consistent with the position it took in its original submission to the ICRC in July 2012, but differs from its position in its subsequent April 2013 submission to the ICRC, when ACTEW noted that:

- for assets in existence as at 1 July 2013, the notional approach used by the ICRC should be used to provide customers with "certainty", but the ICRC should review its approach at the next regulatory period,[138] and
- for assets to be commissioned during this regulatory period, the ICRC should use a weighted average standard asset life that reflects the expected life of assets that are forecast to be constructed.

9.4.3 Panel's considerations and draft decision

To test ACTEW's contentions on depreciation, the Panel conducted a detailed review of both:

- the pricing model used in the ICRC's final decision,[139] and
- the material ACTEW submitted to the ICRC in support of its proposed asset lives and its proposed application of these asset lives.

The results of this review are set out below, along with the Panel's draft decision on the provision to be made for depreciation between 2013-14 and 2017-18.

9.4.3.1 Errors in the calculation of depreciation

The Panel's review of the ICRC's final decision pricing model found that a number of errors were made in the calculation of depreciation and that these errors resulted in ACTEW's total depreciation allowance

135 ACTEW, Statement of Facts and Contentions, 31 July 2014, sections 2.3 and 4.3.

136 ibid, p. 21.

137 ibid, p. 34.

138 ACTEW, Response to the Draft Report Regulated Water and Sewerage Services, 12 April 2013, p. 71.

139 ICRC, Price Direction Attachment 2: Pricing Model, Forecast RAB tab.

being lower in 2013-14 and 2014-15 than it should have been. It was necessary therefore to make some revisions to the ICRC's final decision on ACTEW's depreciation allowance for 2013-14 and 2014-15 to address these issues and a number of other methodological issues, which are outlined below.

9.4.3.2 Asset lives used to calculate depreciation

Table 9.13 sets out the asset lives ACTEW proposed for new and existing water and sewerage assets and the asset lives adopted by the ICRC in its final decision.

Table 9.13: ICRC and ACTEW – Asset life estimates (years)

	ICRC final decision	ACTEW SOFC	ACTEW revised
Remaining asset lives for existing assets as at 1 July 2013			
ECD	97.7	na	na
Water (excluding water security projects)	50.1	na	51.4
Water (including water security projects)	na	53.6	58.8
Sewerage	41.5	34.2	41.3
Standard asset lives for new assets to be commissioned in the regulatory period			
Water	66	34.1	53.5
Sewerage	66	32.2	36.0

Source: ICRC, Price Direction Attachment 2: Pricing Model, Forecast RAB tab (measured at the end of 2012-13), ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 34 and Attachment 17.10 of the April 2013 submission and ACTEW, Response to Part B – Actew Asset Listing Jun 13.xls, 24 September 2014 (adjusted to correct some minor errors).

The Panel understands from its review of prior ICRC decisions that, with the exception of the ECD assets, the asset lives used to calculate depreciation have been based on notional estimates of the life of new and existing assets, and no analysis has recently been undertaken to determine whether they reflect the economic lives of the underlying assets.[140]

In principle, the Panel agrees with ACTEW that depreciation should, to the extent possible, be calculated using the **economic** lives of the assets used in the provision of services, because this better reflects the cost of the asset over time and also promotes:

- the efficient use of the assets by customers over time
- efficient planning and investment in the assets over time, and
- intergenerational equity, because customers in each generation only pay for those assets that are used in the provision of services to them.

However, the Panel has identified a number of issues with the analysis ACTEW provided the ICRC in support of its proposed economic lives and the way it has sought to use these lives.

140 In the 2004 and 2008 price directions, the remaining life of both water and sewerage assets was assumed to be 44 years while the life of new water and sewerage assets was assumed to be 66 years. In the 2013 price direction, the remaining economic lives of water and sewerage assets were updated to reflect the inclusion of the sewerage and water assets commissioned in the 2008-2013 regulatory period, which were assumed to have a life of 66 years. As far as the Panel can ascertain from the material presented in these three decisions, the asset lives were not based on an engineering or other economic life analysis.

ICRC, Final Report and Price Direction – Investigation into prices for water and wastewater services in the ACT, March 2004, p. xviii, ICRC, Final Report and Price Determination, Water and Wastewater Price Review, April 2008, p. 86 and ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 145.

First, there are a number of inconsistencies between the information ACTEW has used to calculate the standard and remaining economic lives[141] and the content of its regulatory proposal.

Given these issues, the Panel sought further clarification from ACTEW. ACTEW responded by providing the updated estimates set out in Table 9.13.

Second, rather than applying asset-specific economic lives to each asset or asset class in its RAB, ACTEW calculated depreciation across the following asset categories using a weighted average asset life approach:

- all water assets in existence as at 1 July 2013
- all sewerage assets in existence as at 1 July 2013
- new water assets to be commissioned in this regulatory period, and
- new sewerage assets to be commissioned in this regulatory period.

The Panel has two concerns with this proposed approach.

The first is that aggregating depreciation in the manner proposed by ACTEW means that there is less transparency around the depreciation associated with particular assets or asset classes. This can be problematic if, in the future, an asset has to be removed from the RAB, for example, because it is sold, disposed of, or becomes redundant.

The second and more important concern is using a weighted average life measure means that depreciation will not actually be recovered over the economic lives of the underlying assets and the prices payable by customers will not be set in a manner that promotes the efficient use of the assets, efficient investment in the assets and intergenerational equity.

Box 9.2 sets out a simplified example of the impact of using a weighted average life versus an asset-specific economic life to calculate depreciation. As this example highlights, the use of a weighted average asset life can result in:

- current customers paying a higher amount for the use of longer lived assets, because the costs must be recovered over a shorter period than the economic life of the assets
- future customers paying nothing for the use of longer lived assets at the end of weighted average asset life even though the assets are still used in the provision of services, and
- customers in the medium term continuing to pay for the use of shorter lived assets even though those assets may no longer be in use.

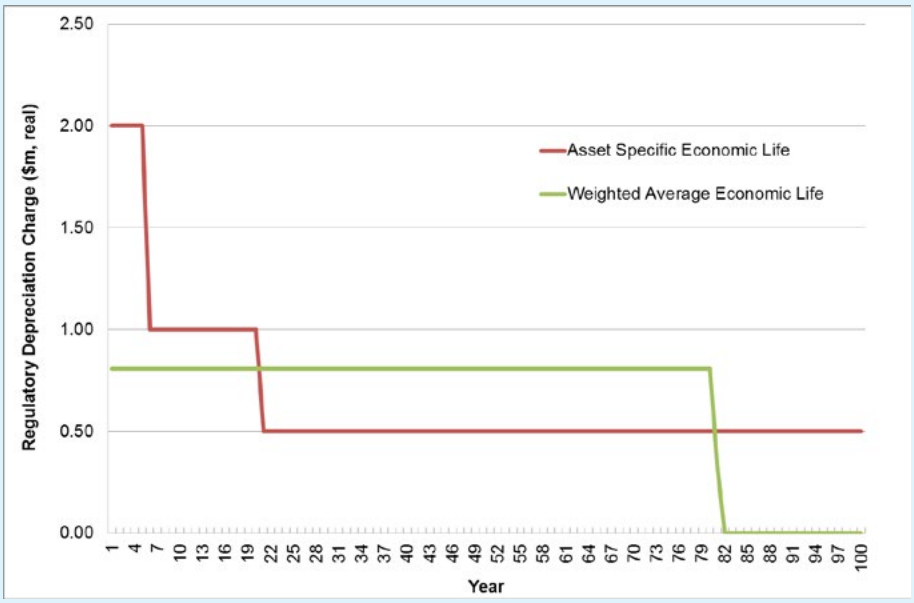
141 These calculations are set out in Attachment 17.10, which was provided to the ICRC as part of ACTEW's April 2013 response to the draft report.

Box 9.2: Weighted average asset life versus asset specific economic life

The distortionary effect that a weighted average asset life can have on intergenerational equity can be seen in the following simplified example, which assumes that:

- The asset base consists of: Asset 1 (cost $50 m and a 100 year economic life); Asset 2 (cost $10 m and a 20 year economic life); and Asset 3 (cost $5 m and a five year economic life).
- The costs of these assets are recovered using either:
  - the weighted average approach (option 1) – under this option the $160 m would be recovered over 80.4 years ($0.8 m pa), or
  - the actual economic lives of the assets (option 2) – under this option the cost of Asset 1 would be recovered over 100 years, Asset 2 over 20 years and Asset 3 over five years (years 1-5: $2 m pa, years 6-20: $1 m pa and 21-100: $0.5 m pa).

In present value terms, the business will recover the same amount under these options. However, the amount of depreciation recovered by current and future customers will differ, as illustrated in the figure below.



As this figure highlights, if the weighted average approach is used (Option 1), customers in year six (year 21) will still be paying for Asset 3 (Asset 2) even though the asset is no longer in use, while customers in years 42-100 will pay nothing for the use of Asset 1 even though it continues to be used. In contrast, if the actual economic life option is used customers will only pay for the assets used in the provision of their services.

Because of these effects, regulators generally require depreciation to be calculated at an asset class level by:[142]

- disaggregating the value of the RAB and forecast capital expenditure into asset classes (eg, dams, reservoirs, water supply mains, water treatment plants, water pump stations, meters, IT, buildings, vehicles, land and other non-depreciable assets), and
- applying asset class-specific economic lives to each of the depreciable asset classes.

9.4.3.3 Panel's draft decision on asset lives

Ideally, and having regard to the benefits cited above about the use of the asset specific economic lives, the Panel's preference is to calculate depreciation by:

142 See for example IPART, Final Report, Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services, June 2012, pp. 87-89, ESCOSA, Final Determination - SA Water's Water and Sewerage Revenues 2013-14-2015-16, May 2013, pp. 160-161, ACCC, Draft Decision on State Water Pricing Application: 2014-15 – 2016-17, Attachment 6, March 2014 and AER, Post Tax Revenue Model Handbook, December 2010, p. 4.

- disaggregating the value of the water and sewerage assets in existence at the commencement of the regulatory period into asset classes[143] and applying an asset class specific *remaining* economic life to each asset class, and
- disaggregating the value of ACTEW's proposed capital expenditure for the regulatory period into asset classes and applying an asset class specific *standard* economic life to each asset class.

However, implementing this approach is likely to take a considerable amount of time. so the Panel decided to only apply the asset class approach to:

- forecast capital expenditure in this regulatory period, and
- the water security projects (for which asset lives vary between 5 and 150 years, and for which reliable data is available to the Panel).

For the remaining assets in existence as at 1 July 2013, the Panel is willing, given the timing constraints outlined above, to accept the use of a weighted average approach and to adopt ACTEW's estimates, which are based on an accounting-based measure of the asset lives.[144,145]

The difficulty the Panel faced in implementing its preferred approach is that the information ACTEW provided Cardno on its revised capital expenditure program (see Table 9.11) does not set out the standard life for each project. In most cases, the Panel has been able to fill this gap by using the asset life information ACTEW provided for its April 2013 capital expenditure program. However, there are approximately 60 new projects in the revised program for which asset life information is not available. Therefore, for the purpose of the draft decision, it has been necessary to make the following simplifying assumptions about the lives of these projects:

- where it was clear from the project description what type of asset is to be commissioned, the Panel used the standard asset life assumptions provided by ACTEW,[146] and
- where it was unclear what type of asset is to be commissioned, the Panel used the weighted average asset life for those water and/or sewerage projects that do have an assumed asset life.

If this information is not forthcoming before the final report, it should be addressed through the *ex post* capital expenditure review process, which will be conducted by the ICRC ahead of the next regulatory period.

The Panel's draft decision on the asset lives to be used in the calculation of depreciation is set out in Table 9.14.

While it is difficult to make direct comparisons between the Panel's draft decision and the ICRC's final decision (given the use of different methodologies), the Panel's estimates of the remaining economic lives of the water (excluding water security) and sewerage assets in existence as at 30 June 2013 are not materially different to the ICRC's. For the other assets, the Panel's estimates of the standard lives for forecast water and sewerage capital expenditure are approximately 20% to 40% *lower* than the ICRC's final decision, while its estimate of the remaining life of the ECD is approximately 50% higher. Although the differences are much greater for these assets, the Panel notes that while they may affect ACTEW's revenue requirement in the short term, all other things being equal, ACTEW will receive the same revenue in net present value terms over the long run.

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143 The term asset class is used in this context to refer to the following types of asset groupings:
Water: dams and weirs, water treatment plants, water mains, valves, flow meters.
Sewerage: Sewer mains, sewerage treatment plants, sewerage pump stations, meters.

144 ACTEW's estimate of the remaining economic life of the water assets (excluding the water security projects) has been calculated by dividing the Net Book Value of these assets by the annual accounting based depreciation allowance for water. The same approach has also been applied for sewerage.

145 The Panel's use of ACTEW's estimates, which are based on accounting measures rather than the approach used by the ICRC, means that no further adjustments need to be made to address the errors outlined in section 9.4.3.1.

146 For example, the Panel has assumed the 'SCADA data storage upgrade' project has a standard life of 15 years, which is what ACTEW has assumed for other SCADA projects.

Table 9.14: Draft decision – Asset lives (years)

Asset			Economic Lives
Remaining asset lives for existing assets as at 1 July 2013			
Water security projects	ECD	Dams and weirs	148.9
		Valves	29.7
		Pressure sensors, transmitters and meters	9.7
		Flow meters	19.7
		Weighted average remaining life as at 1 July 2013	*147.2*
	M2G	Cathodic protection	19.2
		Valves	29.2
		Flow meters	19.2
		Water mains	99.2
		Telemetry	9.2
		Pump Sets	24.2
		Weighted average remaining life as at 1 July 2013	*56.5*
	Greenhouse gas abatement activities (treated as CSO) (set equal to the weighted average life of ECD and M2G)[147]		124.3
	Cotter Discovery Trail (treated as CSO)		10.0
Water assets (excluding water security projects) (weighted average as at 1 July 2013)			51.4
Sewerage (weighted average as at 1 July 2013)			41.3
Standard asset lives for new assets to be commissioned in the regulatory period			
Water (sample of assets)		Water mains and reticulation	80
		Treatment plant (electrical, mechanical and civil works)	30-60
		Pump station (mechanical)	40
		Reservoirs (roof and tank)	50 – 100
		Dams mechanical	60
		Unclassified (set equal to the weighted average life for those water projects that have an assumed asset life)	54.9
Sewerage (sample of assets)		Sewer mains and reticulation	80
		Treatment plant	30-60
		Pump station	20-60
		Vent station	20
		Unclassified (set equal to the weighted average life for those water projects that have an assumed asset life)	39.3
Corporate		Buildings	60
		SCADA	15
		Unclassified (based on corporate equipment asset life)	5

147 The greenhouse gas abatement activities were part of the expenditure ACTEW incurred when developing the water security projects. These activities included:

- the use of biodiesel during construction ·
- the implementation of a hydro generator for energy recovery in the M2G pipeline, and
- the procurement of Carbon Sink Forestry Offsets.

To set a price for customers approximately equal to what they would have been paid without the greenhouse gas abatement activities, the life of the greenhouse gas abatement assets were assumed to have the same weighted average life as the water security projects

9.4.3.4 Draft decision on depreciation

Table 9.15 sets out the Panel's draft decision on the depreciation allowance to be included in ACTEW's revenue requirement in this regulatory period. With the exception of the water security projects, the depreciation allowances in this table have been calculated using the straight line depreciation method[148] and the economic asset lives set out in Table 9.14.

Table 9.15: Draft decision – Depreciation ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water	24.52	25.86	27.14	28.49	30.09
Sewerage	16.64	18.06	20.19	23.52	27.26

9. 5 Indexation of the RAB

To ensure that the **real** value of the RAB is maintained over time, most Australian regulators make provision for inflation by multiplying the value of the RAB in each year of the regulatory period by forecast inflation. The purpose of maintaining the **real** value of the RAB over time is to ensure that customers in each time period contribute to the recovery of investments from which they derive benefits in accordance with their share of those benefits.

9.5.1 ICRC's final decision

In its final decision, the ICRC decided to move away from this standard regulatory practice and to model ACTEW's revenue requirement by applying a nominal return to a non-indexed RAB.[149] No provision was therefore made for indexation.

9.5.2 ACTEW's SOFC

In its SOFC, ACTEW contended that the ICRC's decision not to index the RAB will:[150]

- expose it to the risk that actual inflation will differ from forecast inflation, and
- result in a real increase in its debt costs because the revenue it receives will no longer provide a natural hedge against the costs of servicing its inflation linked bonds.

ACTEW also noted that the ICRC's decision not to index the RAB is at odds with standard regulatory practice.[151]

9.5.3 Other submissions

Of the other submissions received by the Panel to date, two commented on the indexation of the RAB. Dr Dwyer stated that infrastructure owners should not be "entitled to perpetually revalue upwards the cost of the infrastructure and charge consumers accordingly".[152] Mr Cox, on the other hand, stated that:[153]

148 Under the straight line depreciation methodology, assets are depreciated by an equal amount in each year of their economic life, so that their real written down value follows a straight line over time, from the initial value of the asset to zero at the end of the asset's life.

149 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. xvii.

150 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 15.

151 ibid.

152 Dr T. Dwyer, Submission to the Review of ICRC Price Increases in ACTEW Water and Sewerage, 2014, p. 2.

153 Mr Kevin Cox, Submission to the Review of ICRC Price Increases in ACTEW Water and Sewerage, undated, p. 1.

"The ICRC has demonstrated that the current method of financing and repaying loans to build water supply means that current users of water are paying more of the capital while future generations pay less. This is caused by the accounting procedures used to allocate capital costs across the generations and is unfair on the current generation."

9.5.4 Panel's considerations and draft decision

To decide whether an indexed or non-indexed RAB approach should be adopted, the Panel considered the building block methodology principles set out in section Box 7.1 and also had regard to:

- the issues raised by Dr Dwyer and Mr Cox
- the reasons stated by the ICRC for adopting a non-indexed RAB, and
- ACTEW's stated risk-management preference for an indexed RAB.

In submissions to both the ICRC and the Panel, Dr Dwyer argued that applying an inflation indexation to the value of the RAB results in over-recovery of economic costs. However, both an indexed RAB and non-indexed RAB approach recover the same net present value of revenues over time. The effect of adopting a non-indexed RAB is to increase ACTEW's revenue requirement in the near term and decrease it in later years.

The reason the ICRC gave for adopting a non-indexed RAB was to achieve financial viability outcomes for ACTEW. In particular, the effect of the ICRC's decision to adopt a firm-specific rate of return was to decrease ACTEW's revenues to the point that ICRC was concerned that ACTEW could not meet its debt repayment obligations:[154]

"Unfortunately, as the Commission now recognises, changing one of the elements of the traditional approach without recognising the implications of persisting with the other will further increase the financial pressure on ACTEW, perhaps undermining its financial stability. The Commission has now concluded that adopting the firm specific approach to measuring the cost of capital needs to be coupled with applying that rate of return, uncorrected for inflation, to a RAB that has not been indexed for inflation".

The statement made by the ICRC in this context raises an important question about how concerns about ACTEW's financial viability should be dealt with. As noted in Chapter 7 the Panel's preference is to deal with any financial viability issues by making transparent NPV-neutral adjustments to ACTEW's revenue requirement once the efficient cost of service provision is established, rather than to make permanent revisions to the value of the building blocks.

Setting this issue aside, for the reasons set out in Chapter 10, the Panel's draft decision is not to adopt a firm-specific WACC. Therefore, the ICRC's rationale for moving away from an industry-standard indexed RAB approach does not apply in this case. When coupled with the fact that an indexed RAB provides a more constant revenue requirement over time and is more consistent with the intergenerational equity principle set out in Box , the Panel decided to make provision for inflation when calculating the value of the RAB.

The provision the Panel has made for indexation in this regulatory period is set out in Table 9.16. The indexation values in this table have been calculated assuming an inflation rate forecast of 2.5%. The 2.5% inflation rate forecast is based on the mid-point of the RBA's target inflation band of 2% to 3% (ie, 2.5%).[155]

154 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 4.

155 This forecast is consistent with the inflation rate forecasts adopted by both the ICRC (in other parts of its model) and proposed by ACTEW in its SOFC.

Table 9.16: Draft decision – Indexation of the RAB ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water	34.57	35.48	36.37	37.29	38.47
Sewerage	16.64	17.35	18.63	20.88	23.24

10 Rate of return and net tax liabilities

Once it made its draft decision on the value of the RAB, the Panel reviewed the rate of return and net tax liabilities components of the original price direction. Under the building block methodology, the rate of return is used to calculate the return on capital building block.[156] In capital-intensive businesses like ACTEW's water business, this allowance accounts for a large proportion on the total revenue requirement.

Regulators typically determine the rate of return based on the estimated weighted average cost of capital (WACC).[157] Depending on whether they use a pre-tax or post-tax regulatory model, they may also incorporate tax directly as a separate cost building block in the revenue requirement.

The Panel notes that while the concept of the WACC is widely accepted and used, there is no theoretically correct reference point for estimating this cost for the purpose of determining the regulatory rate of return. Therefore to reach its draft decision, the Panel first considered what reference point is most appropriate for this review. In particular, the Panel considered:

- the ICRC's final decision and rationale for using a firm-specific reference point to estimate the WACC parameters (without an explicit allowance for net tax liabilities)
- the issues ACTEW raised in its SOFC, including its proposal to use a benchmark efficient entity reference point to estimate the WACC and adopt a post-tax WACC (with an explicit allowance for net tax liabilities), and
- the issues raised by other stakeholders, particularly the contention that the approach for calculating the rate of return should take account of ACTEW's public ownership.

The Panel exercised its judgement to decide on the most appropriate reference point, taking into account the requirements of the Act, the approach most commonly used by Australian regulators in applying the building block methodology, and the requirement to comply with competitive neutrality principles.

Once it decided on the appropriate reference point, the Panel applied this approach to estimate the WACC and make its draft decision on the rate of return and the net tax liabilities allowance for this regulatory period.

The sections below provide an overview of the Panel's draft decision, and then discuss its considerations in more detail.

10. 1 Overview of the Panel's draft decision

The Panel's draft decision is that the appropriate reference point for estimating the WACC in this case is the benchmark efficient entity. Using this reference point, the Panel determined that the appropriate nominal post-tax WACC for the 2013- 2018 regulatory period is 7.20%.

Table 10.1 sets out the Panel's draft decision on the value of each of the parameters that are used to calculate the WACC and the resultant WACC, as well as its draft decision on the value of imputation credits (gamma) to be used in calculating the allowance for net tax liabilities.

156 The return on capital is calculated as the value of the Regulatory Asset Base (RAB) multiplied by the allowed rate of return.

157 The WACC is the sum of the rates of return expected by equity and debt investors in the business, weighted by the proportions of equity and debt used to finance assets in the business.

Table 10.1: Draft decision – WACC (nominal)

Parameter	Panel's draft decision	Approach to parameter estimation
Risk-free rate	3.22%	40-day average of the yields on the 10-year Commonwealth Government Security using data from Bloomberg (Series ID: GACGB10 Index)
Debt margin	3.13%	40-day average (approximated by 2-month average) of the credit spreads for the 10-year BBB Australian corporate bonds using data from the RBA (Series ID: FNFCBBB10M)
Debt raising cost	0.125%	Debt raising costs for the 10-year term-to-maturity assumption
Equity beta	0.70	Point estimate for the equity beta
Market risk premium	7.23%	40-day average of Bloomberg's daily implied MRPs
Gearing	60%	Point estimate for the gearing ratio
Cost of debt	6.48%	Risk-free rate + Debt margin + Debt raising cost
Cost of equity	8.28%	Based on the Capital Asset Pricing Model (CAPM) where cost of equity = risk-free rate + beta x MRP
Post-tax WACC	**7.20%**	**Post-tax WACC = Cost of debt x 60% + Cost of equity x 40%**
Gamma	0.50	Based on regulatory decisions made at the same time as the ICRC's final decision
Inflation	2.5%	Mid-point of the RBA target band

The Panel's draft decision on the WACC is higher than the ICRC's final decision for the years 2013-14 and 2014-15 (4.42%), and lower than the WACC ACTEW proposed in its SOFC (8.95%).

The Panel estimated the WACC as at 31 May 2013. This reflects the timing of the ICRC's final decision and is consistent with the timing ACTEW used to estimate the proposed WACC in its SOFC.[158]

10. 2 Appropriate approach for estimating the WACC

As noted above, there is no theoretically correct method for estimating the WACC for the purpose of setting a rate of return for a regulated business, and several different models and formulae can be used. However, in general, regulators aim to set a rate of return that reflects the return that investors would expect to earn in a competitive market. This is consistent with the view that economic regulation should, as far as possible, seek to mimic what would occur in a workably competitive market in terms of encouraging greater efficiency (see Chapter 3). (Box 10.1 provides more information on the role of the rate of return.)

158 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 25.

Box 10.1: Role of the rate of return

A key objective when determining the rate of return is to allow the regulated business to earn a return on capital that is sufficient to promote efficient investment but not over-investment. Therefore, an appropriate rate of return is one that reflects an opportunity cost of capital – the return on capital available to investors in the next best-value investment opportunity adjusted for the relative risks of the projects.

Setting the rate of return in this way is important to provide efficient price signals to consumers and create an incentive for the regulated business to make efficient investments. Setting the rate of return lower than the opportunity cost may discourage the regulated business from undertaking efficient investment and encourage customers to consume too much of the services and the resources required to provide them.[159] On the other hand, setting the rate of return higher than the opportunity cost may encourage the regulated business to over-invest and customers to consume less than the efficient level of services.

From a regulated business' perspective, if the rate of return is too low it will reduce its revenues and may affect its financial viability. From customers' perspective, if the rate of return is too high, they will pay too much for the services and the regulated service provider may earn excess profits. Either outcome would distort price signals to customers, the regulated service provider and its investors, and result in a misallocation of society's resources.[160]

10.2.1 ICRC's final decision

In its final decision, the ICRC decided to depart from the approach it had previously used to estimate the WACC for the purpose of setting the rate of return for ACTEW's water business, by using a firm-specific approach. In particular, the ICRC set the cost of debt parameter based on its estimate of ACTEW's **actual** cost of debt, and the debt-to-equity or gearing ratio based on ACTEW's **actual** gearing ratio.

In addition, the ICRC noted that a firm-specific cost of equity should be set between upper and lower bounds for this cost, with the lower bound being the ACT Government's borrowing rate of 4.25%, and the upper bound being 7% to 8%.[161] However, it then set the cost of equity at 2.8% for the first two years of the regulatory period, which is below the lower bound of this range.

Further, the ICRC indicated that, as a result of its decision to use a firm-specific approach, "… the need to model tax liabilities is eliminated. As such, there is no benefit to adopting a post-tax approach."[162] In line with this view, the ICRC did not include an explicit allowance for net tax liabilities in the revenue requirement.[163]

Table 10.2 sets out the ICRC's final decisions on the WACC for the first two years of the regulatory period.

159 It could also make investment unattractive to investors.

160 In addition, the Panel notes that if a publicly-owned, regulated monopoly is deemed by its owners to operate as if it has a lower cost of capital than a benchmark entity, then an inefficiently high level of investment may be undertaken at the expense of another activity (eg, health care). Water will also have alternative uses (eg, environmental flows) and its use through ACTEW should not be cross-subsidised.

161 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 65. Note that a firm-specific cost of equity for ACTEW cannot in fact be observed as ACTEW is not a publicly listed company (so its actual equity beta and subsequent cost of equity cannot be observed).

162 ibid, p. 33.

163 That is, tax liabilities taking into account (or net of) dividend imputation credits.

Table 10.2: ICRC final decision – WACC in 2013-14 and 2014-15

Parameter	ICRC final decision	Approach to parameter estimation
Nominal cost of equity	2.80%	Set below the lower bound identified for this parameter as a transitional measure
Nominal cost of debt	5.50%	Reflects ACTEW's estimated actual debt costs
Level of gearing	60%	Reflects ACTEW's actual level of gearing
Nominal WACC	**4.42%**	**WACC = Cost of debt x 60% + Cost of equity x 40%**

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 69.

10.2.2 ACTEW's SOFC

In its SOFC, ACTEW contended that the following components of the ICRC's final decision on the rate of return should be reviewed:

- the decision to adopt a firm-specific approach for calculating the WACC
- the methods the ICRC used to estimate the cost of equity and the cost of debt, and the values it adopted for these parameters, and
- the decision not to include an explicit allowance for net tax liabilities in the revenue requirement.

ACTEW contended that the ACT Government's competitive neutrality policy applies to ACTEW and this policy precludes the use of a firm-specific approach. It also argued that this approach results in a less efficient allocation of resources, and leads to the absence of a clear methodology for estimating the cost of equity.[164]

ACTEW proposed that the WACC be estimated using a benchmark entity approach, and that an explicit allowance for net tax liabilities be included in the revenue requirement. Table 10.3 sets out ACTEW's proposal on WACC.[165]

Table 10.3: ACTEW SOFC – WACC

Parameter	ACTEW Proposal (Data as at 31 May 2013)	Approach to parameter estimation
Risk-free rate	5.24%	10-year average of the nominal Commonwealth Government Security yields interpolated to 10 years
Debt margin	2.46%	10-year average of the yields on Bloomberg's 7-year BBB index extrapolated to 10 years
Debt raising cost	0.125%	Consistent with the ICRC's 2008 final decision.
Equity beta	0.90	Outlined in SFG's expert report in Attachment 15 to the Response to the Draft Report
Market risk premium	6.00%	Historical market risk premium (Long-term benchmark)
Gearing	60%	Benchmark firm gearing ratio
Cost of debt	7.83%	
Cost of equity	10.64%	
Nominal post-tax WACC	**8.95%**	

Source: ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 27.

164 ibid, pp. 7-16.

165 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 27.

10.2.3 Issues raised by other stakeholders

In contrast to the position taken by ACTEW, other submissions to the Panel contended that ACTEW's public ownership should be recognised in the approach for determining the rate of return. For example, in addressing ACTEW's SOFC, Dr Dwyer submitted that: [166]

> "The discussion on page 9 in paragraphs 2 and 3 about economic efficiency and firm specific approaches completely ignores the fact that economic efficiency means the securing of desired supply at least cost."

Executive Committee UP999 also contended that: [167]

"The Panel must conduct this Review with regard to ACTEW's role as a publicly owned utility and not that of a private sector corporation and take this into account."

10.2.4 Panel's considerations and draft decision

As noted above, the Panel assessed the approaches for estimating the WACC used by the ICRC in its final decision and proposed by ACTEW in its SOFC and the views of other stakeholders, taking into account the extent to which they are consistent with:

- the requirements of the Act
- the approach most commonly used by Australian regulators in applying the building block method, and
- competitive neutrality principles.

Based on this assessment and in the Panel's judgement, the benchmark efficient entity approach is the appropriate approach for estimating the WACC and determining the rate of return for this regulatory period.

10.2.4.1 Requirements of the Act

As Chapter 4 discussed, section 20(2) of the Act sets out a range of specific matters the Panel must have regard to in making its decisions. The Panel considers that, in general, a benchmark efficient entity approach is more consistent with these matters than a firm-specific approach. For example, subsection (i) requires the Panel to have regard to "the borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry". In the Panel's view:

- A benchmark efficient entity approach, which sets the rate of return in line with the efficient debt and equity costs in the regulated industry, takes account of this matter, as using efficient financing costs allows the regulated business to attract the necessary investment capital to maintain a reliable service supply while minimising the costs to consumers.
- A firm-specific approach, which sets the rate of return in line with the actual debt and equity costs of the regulated business, may not take sufficient account of this matter, as the actual costs may be higher or lower than the efficient cost. If they are lower, it could result in prices that are insufficient to meet the borrowing, capital and cash flow requirements of the regulated business in the long term, and/or discourage the business from making efficient investment.[168]

The Panel considers that the approach the ICRC used to determine the cost of equity may not strike an appropriate balance between the requirements of section 20(2) of the Act. In particular:

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166 Dr T. Dwyer, Submission to the Review of ICRC Price Increases in ACTEW Water and Sewerage, 2014, p. 3.

167 Executive Committee UP999, Submission to the Review of ICRC Price Increases in ACTEW Water and Sewerage, 15 August 2014, p. 4.

168 If it is higher than efficient costs then the business could earn excess profits and has an incentive to over-invest.

- By not setting out the method it used to estimate the cost of equity for the first two years of the regulatory period, the ICRC's final decision on the WACC creates uncertainty. This hampers ACTEW's incentives for efficient investment, and thus may not take sufficient account of section 20(2)(i) of the Act.
- By setting the cost of equity for the first two years of the period below the 'lower bound' it had previously determined, the ICRC departed from the principle that revenues should reflect the costs of maintaining a reliable supply of services (in line with section 20(2)(e) of the Act).

10.2.4.2 Approach commonly used by other Australian regulators

In applying the building block methodology, Australian regulators most commonly use the efficient benchmark entity approach to estimate the WACC and determine the rate of return. As Chapter 7 discussed, this methodology involves estimating the revenue the regulated business requires having regard to the **efficient cost** of providing the regulated services. The reference point for the efficient cost is a prudent service provider operating efficiently, **not the actual business**. This creates an incentive for the business to improve its efficiency, because it rewards it for spending less than the efficient cost and penalises it for spending more.

In setting the rate of return, most regulators aim to provide the regulated business with a return on capital that reflects the efficient financing costs of a benchmark efficient entity (or 'typical firm') and the risks involved in delivering the regulated services.[169] In principle, this creates an incentive for the business to source debt and equity financing efficiently, while taking account of the risks associated with different financing strategies.

The Panel recognises that, in some circumstances, using a firm-specific approach to estimate the WACC and set the rate of return may be appropriate.[170] However, in its view there are no such circumstances in this case.

10.2.4.3 Requirement to comply with competitive neutrality principles

As Chapter 3 discussed, the ACT Government has signed the Competition Principles Agreement (CPA) with all other state and territory governments. The CPA obliges it to apply competitive neutrality principles to all significant government-owned businesses. The objective of these principles is to eliminate resource allocation distortions arising out of the public ownership of entities engaged in significant business activities, for the benefit of consumers and taxpayers.

The Panel agrees with ACTEW that the obligation to comply with competitive neutrality principles applies to the regulation of ACTEW's water and sewerage prices, and that using a firm-specific approach for setting the rate of return conflicts with these principles. The Panel also considers that using any approach that takes account of ACTEW's public ownership in setting the rate of return would conflict with this obligation.

However, the Panel considers that a benchmark entity approach is consistent with competitive neutrality principles. In particular, this approach complies with the specific obligations the CPA imposes, including obligations related to commercial returns, debt neutrality and the payment of tax equivalents (and not only the broad objective of allocative efficiency).

The Panel notes that its view is consistent with the findings of the Australian Energy Market Commission (AEMC) as part of its review of the rate of return provisions in the National Gas Rules and National

169 This is an estimate of the financing costs of a typical firm with an efficient capital structure. Reflecting efficient financing costs allows the regulated service provider to attract the necessary investment capital to maintain a reliable service supply while minimising the costs to consumers.

170 For example, IPART made a firm-specific adjustment to the gearing ratio used in its estimation of the WACC applying to Essential Energy's water business from 1 July 2014. IPART, Essential Energy's water and sewerage services in Broken Hill – Final report, June 2014, p. 98. The Panel also notes that economist, Stephen King, has taken the view that a (lower) firm-specific rate of return should be applied to publicly-owned electricity network businesses and that prices (in this case for electricity) are distorted through the compensation of a government-owned business for sovereign risk, which it does not face. See http://economics.com.au/?p=9138 and http://economics.com.au/?p=9198.

Electricity Rules. In its 2012 discussion paper, the AEMC cited several problems that result from discriminating between public or private ownership structures in estimating the cost of debt, and found that such treatment "fails to recognise that competitive neutrality principles also apply to correct resource allocation distortions that can result in the input as well as output markets of a government-owned monopoly business."[171]

All businesses – even publicly-owned regulated monopolies – compete for economic resources. That is, they compete with their counterparts and the rest of the economy more generally for inputs such as capital and labour. In principle, the resources embodied in the assets of a regulated water and sewerage business have the same opportunity cost irrespective of that business' ownership.

10. 3 Panel's estimation of the WACC

Under the benchmark efficient entity approach, the WACC is calculated as the sum of the **cost of debt** and **the cost of equity** of a benchmark entity, weighted by the proportions of debt and equity financing in the entity's capital structure. In line with common regulatory practice, the Panel estimated the post-tax WACC for this regulatory period using the following formula:

$$\text{WACC} = E(R_d) \times \frac{D}{V} + E(R_e) \times \frac{E}{V}$$

Where:

$E(R_d)$ is the expected cost of debt,

$E(R_e)$ is the expected cost of equity, and

$\frac{D}{V}$ and $\frac{E}{V}$ are the proportions of debt and equity in the entity's capital structure, respectively.

In doing so, it made a draft decision on the value of the cost of debt, the cost of entity and gearing ratio. The Panel's draft decision on each of these parameters is outlined below while Appendix 8 and Appendix 9 provide more detail on the analysis and methodologies underlying the decision.

10.3.1 Cost of debt

The cost of debt is the rate that a business is expected to pay to debt holders to fund its assets through debt financing, and is generally calculated as follows:

$$R_d = R_f + DM$$

Where:

R_f is the risk-free rate. The risk-free rate measures the return an investor would derive from an asset with certainty of return being achieved. This rate cannot be observed directly, but can be approximated by the yield to maturity on government bonds.

DM is the debt margin. The debt margin represents the compensation above the risk-free rate required by debt holders for credit, liquidity and maturity risks.

In some jurisdictions, the cost of debt also includes an allowance for debt-raising costs, while in other jurisdictions this allowance is included in the forecast operating expenditure allowance.

For the reasons set out in Appendix A8.1, in applying the above formula to estimate the cost of debt, the Panel decided to use:

171 See AEMC, National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012, and National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, Directions Paper, 2 March, 2012, p. 120.

- a 10-year term-to-maturity when measuring the risk-free rate and debt margin
- a 40-day averaging period when measuring the risk-free rate and debt margin
- a BBB credit rating when measuring the cost of debt, and
- a 12.5 basis points allowance for debt-raising costs.

In line with these decisions, the Panel estimated:

- the risk-free rate to be 3.22% as at 31 May 2013
- the debt margin for a BBB corporate bond to be 3.13% as at 31 May 2013, and
- the overall cost of debt to be 6.48% as at 31 May 2013.

The Panel's estimate of the cost of debt is higher than the value used in the ICRC's final decision (5.5%, see Table 10.2) and lower than ACTEW proposed (7.83%, see Table 10.3).

10.3.2 Cost of equity

The cost of equity is the return that a business is expected to pay to shareholders to fund its assets through equity financing, and is usually estimated by regulators using the Sharpe-Lintner Capital Asset Pricing Model (S-L CAPM):

$$E(R_e) = R_f + \beta_e \times (E(R_m) - R_f) \text{ or}$$

$$E(R_e) = R_f + \beta_e \times (MRP)$$

Where:

$E(R_e)$ is the expected return on a stock e

R_f is the risk-free rate

β_e is the beta of a stock e

$MRP\ (E(R_m) - R_f)$ is the market risk premium.

For the reasons set out in Appendix A8.2, in using this model to estimate the cost of equity the Panel decided to use:

- a risk-free rate of 3.22% (as discussed above)
- an equity beta of 0.7, and
- a market risk premium of 7.23%.

In line with these decisions, the Panel estimated the cost of equity to be 8.28% as at 31 May 2013. This estimate is higher than the value used in the ICRC's final decision (2.8%) and lower than ACTEW proposed (10.64%).

10.3.3 Gearing ratio

Under the benchmark entity approach to calculating the WACC, regulators usually adopt a benchmark gearing ratio rather than the actual financial structure of the regulated business. This approach provides the business with an incentive to adopt efficient capital structures, and ensures that customers do not bear the costs associated with a sub-optimal capital structure.

For the reasons set out in Appendix A8.3, the Panel has decided to adopt a gearing ratio of 60%.

10.3.4 Resulting estimate of the WACC

Using the decisions on the cost of debt, cost of equity and gearing ratio set out above, the Panel estimated the post-tax nominal WACC to be 7.20% as at 31 May 2013. Table 10.4 compares the Panel's draft decision on the WACC to the ICRC's final decision and ACTEW's proposal. It shows that the Panel's draft decision is 2.78% higher than the ICRC's final decision and 1.75% lower than ACTEW's proposal:

- The 2.78% difference between the Panel's draft decision and the ICRC's final decision in 2013-14 and 2014-15 is primarily due to the different positions taken on the cost of equity. Whereas the Panel determined the cost of equity using the S-L CAPM, the ICRC adopted a value of 2.8% for these two years. While the ICRC did not provide information on how this value was calculated, the Panel understands from the ICRC's final decision that it adopted a 2.8% cost of equity to:
  - counter some of the effect of its decision to move from a real to a nominal (unindexed) RAB modelling framework (discussed in section 9.4.3.4), and
  - transfer some of the intergenerational equity issue associated with the water security projects back to the ACT Government (see section 8.3).
- The 1.75% difference between the Panel's draft decision and ACTEW's proposal is primarily due to the Panel's draft decision to use:
  - a short-term averaging period rather than the long-term averaging period ACTEW proposed, which resulted in a lower risk-free rate than ACTEW proposed
  - an equity beta of 0.7, which is 0.2 lower than ACTEW proposed, and
  - a market risk premium of 7.23%, which is higher than the 6% ACTEW's proposed.

To test the reasonableness of its draft decision on the WACC, the Panel compared this decision to the WACC adopted by other regulators around the time the ICRC made its final decision. As Table 10.5 indicates, the Panel's 7.2% WACC is broadly in line with decisions made by other regulators at that time.

Table 10.4: Panel's draft decision on the WACC compared to the ICRC's final decision and ACTEW's proposal

Parameter	Panel's draft decision	ICRC's final decision 2013-14 and 2014-15	ACTEW's SOFC
Risk-free rate	3.22%	-	5.24%
Debt margin	3.13%	-	2.46%
Debt raising cost	0.125%	-	0.125%
Equity beta	0.70	-	0.90
Market risk premium	7.23%	-	6.00%
Gearing	60%	60%	60%
Cost of debt	6.48%	5.50%	7.83%
Cost of equity	8.28%	2.80%	10.64%
Nominal post-tax WACC	**7.20%**	**4.42%**	**8.95%**

Table 10.5: WACC decisions by other regulators (May 2013 – June 2013)

Regulator (State)	Regulated entity	Date of Decision	Nominal vanilla WACC
ESC (VIC)	Greater Metropolitan Water Businesses	Jun 13	7.15%
ESC (VIC)	Regional Urban Water Businesses	Jun 13	7.15%
ESC (VIC)	Rural Water Businesses	Jun 13	7.15%
IPART (NSW)	Hunter Water Corporation	Jun 13	7.50%
IPART (NSW)	Gosford City Council and Wyong Shire Council	May 13	7.39%
ESCOSA (SA)	SA Water	May 13	6.85%

Note: The real WACCs have been converted to nominal WACCs.

Source: ESC, Price review 2013: Greater metropolitan water business final decision, June 2013; ESC; Price review: Regional urban water business final decision, June 2013; ESC, Price review 2013; Rural water businesses final decision, June 2013; IPART, Hunter Water Corporation's water, sewerage, stormwater drainage and other services: Review of prices from 1 July 2013 to 30 June 2017, June 2013. IPART, Gosford City Council and Wyong Shire Council: Prices for water, sewerage and stormwater drainage services from 1 July 2013 to 30 June 2017; ESCOSA, Final Determination - SA Water's Water and Sewerage Revenues 2013-14-2015-16, May 2013.

10. 4 Allowance for net tax liabilities

As noted in section 10.2.1, the ICRC indicated that as a result of its decision to use a firm-specific approach, "… the need to model tax liabilities is eliminated. As such, there is no benefit to adopting a post-tax approach."[172] In line with this view, the ICRC did not include an explicit allowance for net tax liabilities in the revenue requirement,[173] even though ACTEW is required to make tax-equivalent payments.

The Panel considers that even under a firm-specific approach, provision should be made for net tax liabilities. In line with standard regulatory practice it has decided to use a post-tax regulatory model,[174] so that appropriate tax allowances will be calculated for ACTEW as part of the revenue requirement.[175] This provides ACTEW with the cash flow needed to make the requisite tax payments.

To calculate this tax allowance, the Panel must make a decision about the value of dividend imputation credits (gamma). While franked dividends are not generally paid by publicly owned businesses, in order to maintain competitive neutrality it is necessary to make an assumption of the value of imputation credits for a hypothetical private investor in the business.

For the reasons set out in Appendix A8.4, the Panel's draft decision is to adopt a gamma value of 0.5. This is higher than ACTEW's proposal of 0.25, and has the effect of reducing the allowance for net tax liabilities and, in turn, water and sewerage charges.[176]

172 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 33.

173 That is, tax liabilities taking into account (or net of) dividend imputation credits.

174 Post-tax models are commonly used by regulators, for example the ESC, IPART and the AER.

175 Tax liabilities can be incorporated into the return on capital through estimating the return required to cover both tax and an appropriate post-tax return. This is called a pre-tax WACC. Alternatively, tax liabilities can be incorporated as a separate building block rather than being part of the return on capital. In this case the return on capital is a post-tax WACC. This model, which the Panel has adopted, is generally considered by regulators to more accurately estimate the tax liability that would be achievable by a similar well-managed, privately owned business. See for example, IPART, The incorporation of company tax in pricing determinations – Final decision, December 2011, p. 1.

176 A lower gamma value corresponds to a higher revenue requirement and higher prices, while a higher gamma corresponds to a lower revenue requirement and lower prices. The reduction in ACTEW's revenue requirement from adopting a gamma of 0.25 over 0.5 is between $1 million and $2 million per year, maintaining all other elements of the Panel's draft decision.

11 Forecast operating expenditure

The next component of the original price direction the Panel reviewed was the forecast operating expenditure included in ACTEW's revenue requirement. In ACTEW's case, this building block is intended to recover:

- the efficient operating, maintenance and administration costs it incurs in delivering its regulated services, usually in the year the costs are incurred ('controllable operating expenditure'), and
- the Water Abstraction Charge (WAC) and the Utilities Network Facilities Tax (UNFT) it is required to pay to the ACT Government.

To make its draft decision on each of these components of forecast operating expenditure, the Panel considered the ICRC's final decision, ACTEW's SOFC and other stakeholders' submissions. It also sought expert advice from Cardno.

The sections below provide an overview of the Panel's draft decision on forecast operating expenditure for this regulatory period, and then discuss its considerations on each component in more detail.

11. 1 Overview of the Panel's draft decision

The Panel's draft decision on the forecast operating expenditure over the regulatory period are set out in the tables below.

Table 11.1: Draft decision – Forecast operating expenditure water ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Controllable operating expenditure	62.75	66.15	66.91	67.94	70.32
WAC	25.01	27.81	28.16	28.53	28.90
UNFT	4.10	4.52	4.74	4.97	5.09
Total operating expenditure	**91.86**	**98.48**	**99.81**	**101.44**	**104.31**

Table 11.2: Draft decision – Forecast operating expenditure sewerage ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Controllable operating expenditure	67.70	69.29	70.64	73.33	76.27
UNFT	3.39	3.72	3.89	4.07	4.25
Total operating expenditure	**71.09**	**73.01**	**74.53**	**77.40**	**80.52**

In making this decision, the Panel:

- Accepted ACTEW's forecast controllable operating expenditure, but adjusted it to reflect the ICRC's approach to treating the costs associated with the Uriarra Village sewerage project and the removal of carbon costs.
- In relation to WAC, decided to:
  - take into account the higher dam release forecast associated with its higher water sales forecast (see Chapter 12), and
  - use the actual 2014-15 WAC rate when calculating charges from 2014-15 onwards.
- Accepted ACTEW's forecast UNFT, which, from 2014-15, reflects the actual 2014-15 UNFT rate.

11. 2 Controllable operating expenditure

As noted above, controllable operating expenditure includes the efficient operating, maintenance and administration costs ACTEW incurs in delivering its regulated services.

11.2.1 ICRC's final decision

The ICRC's final decision on ACTEW's forecast controllable operating expenditure for 2013-14 and 2014-15 is set out below.[177]

Table 11.3: ICRC final decision – Forecast operating expenditure ($m, nominal)

	Water		Sewerage	
	2013-14	2014-15	2013-14	2014-15
Controllable operating expenditure	62.75	66.15	67.70	69.29
WAC	22.68	22.68	-	-
UNFT	4.10	4.29	3.39	3.54
Total operating expenditure	**89.53**	**93.12**	**71.09**	**72.83**

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 153.

In making this decision, the ICRC accepted the forecast operating expenditure ACTEW had proposed in its April 2013 submission in response to the draft decision for 2013-14 and 2014-15, subject to the following adjustments:

- the ICRC did not allow ACTEW's pass-through claim of $4.86 million for costs relating to the Uriarra Village water and sewerage projects, which were incurred in the previous regulatory period, and
- the ICRC decided to reduce the on-going sewage treatment costs for the Uriarra Village treatment plant by $0.143 million per year, to reflect the costs of operating a package plant.[178]

The ICRC also decided that the actual carbon costs ACTEW incurred should be passed through to customers at the first biennial recalibration.

The ICRC's final decision recognised that ACTEW's April 2013 submission included substantially revised and lower operating expenditure forecasts[179] in line with:

- Cardno's recommendations in relation to ACTEW's original submission,[180] and
- ACTEW's actual operating expenditure since the re-integration of its Water Division from 1 July 2012.[181]

177 Consistent with its decision to adopt the biennial recalibration process, the ICRC did not make a decision about operating expenditure forecasts beyond 2014-15.

178 ibid, p. 129. This reflect the fact that, on the basis of advice it received from Cardno, the ICRC decided that a prudent and efficient service provider would have built a package sewerage plant rather than the membrane bioreactor treatment plant built by ACTEW.

179 ACTEW's April 2013 forecast operating expenditure was lower than the amounts proposed in its July 2012 submission, and lower than the amounts recommended by Cardno.

180 See Cardno, Review of ACTEW's Capital and Operating Expenditure, Final Report, November 2012.

181 With the re-integration of the ACTEW Water Division, the Utilities Management Agreement (UMA) between ACTEW and ActewAGL ceased to apply and certain functions previously undertaken by ActewAGL on ACTEW's behalf were transferred back to ACTEW. As a result, ACTEW was no longer required to pay a contractor margin to ActewAGL (which had applied in addition to the payments made for service provision).

The ICRC found that the additional information submitted by ACTEW on operating expenditure (and in particular the step changes in expenditure) provided a better basis for the assessment of the efficiency of these costs compared to the information provided in the July 2012 submission.[182] Therefore, it largely accepted ACTEW's forecast operating expenditure for 2013-14 and 2014-15.

However, the ICRC indicated that it would: [183]

> "… take the necessary steps in concert with ACTEW to ensure that for each of the biennial recalibrations throughout the next regulatory period there is a higher degree of confidence that ACTEW's proposed operating expenditure is at an efficient level. This will reassure the ACT community that water and sewerage services are being provided as efficiently as possible."

11.2.2 ACTEW's SOFC

In its SOFC, ACTEW submitted proposed operating expenditure forecasts for 2013-14 to 2017-18.[184] These forecasts are consistent with the forecasts in ACTEW's April 2013 submission to the ICRC's draft decision, with one adjustment. The Uriarra component of sewerage operating costs has been removed. ACTEW informed the Panel that this has the same effect on its forecast revenue requirement as the ICRC's final decisions to reflect the operating costs of a package plant and treat the recovery of the prudent and efficient costs of this infrastructure[185] as a notional CSO.[186]

ACTEW's proposed forecast controllable operating expenditure for 2013-14 to 2017-18 is set out in Table 11.4 and Table 11.5.

Table 11.4: ACTEW SOFC – Forecast operating expenditure water ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Controllable operating expenditure	62.75	66.15	66.91	67.95	70.33
WAC	22.65	24.06	26.49	26.60	26.81
UNFT	4.10	4.52	4.74	4.97	5.09
Total operating expenditure	**89.51**	**94.73**	**98.14**	**99.52**	**102.24**

Table 11.5: ACTEW SOFC – Forecast operating expenditure sewerage ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Controllable operating expenditure	67.27	68.84	70.18	72.86	75.79
UNFT	3.39	3.72	3.89	4.07	4.25
Total operating expenditure	**70.66**	**72.56**	**74.07**	**76.93**	**80.05**

Source: ACTEW, Statement of Facts and Contentions, July 2014, p 32. Figures adjusted for inflation of 2.5% per annum.

182 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 127.

183 ibid.

184 ibid, pp. 31-32.

185 In excess of the revenue received from the standard sewerage charges paid by Uriarra residents.

186 ACTEW, Email responses to questions, 1 September 2014.

11.2.3 Other submissions

In two other submissions received by the Panel to date, stakeholders raised concerns about the transparency of ACTEW's actual operating costs and the prudence of some actual operating costs.[187] In addition, a third submission recommended that ACTEW's efficiency should be assessed by benchmarking it against other comparable utilities, commenting that the "question of whether the operator is delivering good value can best be answered by benchmarking the costs of supply against other similar jurisdictions".[188]

11.2.4 Cardno's advice to the Panel on operating expenditure

Cardno undertook a review of ACTEW's forecast controllable operating expenditure for the Panel. As part of this review, it analysed ACTEW's service standards and compared ACTEW's performance with other water service providers in Australia. It also made recommendations on the prudent efficient level of forecast operating expenditure for the period 2013-14 to 2017-18. Cardno's detailed analysis is contained in its full report, which is available on the Panel's website.[189]

In summary, Cardno found that: [190]

> "ACTEW's service standards appear less onerous than other water utilities in Australia which suggests that its costs for providing its services could be relatively less than these other water utilities. However, … ACTEW has the highest sewerage operating costs per property when compared with its peers and amongst the highest water operating costs per property. Taken together, these factors suggest that there is scope for efficiency gains in ACTEW's operating costs."

Cardno also found that ACTEW had not included an explicit allowance for productivity improvements in the revised forecasts in the April 2013 submission. However, it accepted ACTEW's contention that the forecasts assumed zero population growth, and this could be considered a proxy productivity gain.[191]

In relation to the prudence and efficiency of ACTEW's forecast controllable operating expenditure Cardno concluded that the revised forecasts from ACTEW's April 2013 submission "should be adopted as prudent and efficient."[192] However, it added that, for the future, ACTEW should consider whether its forecasting and internal budgeting approach adequately accounts for:

- operating expenditure arising from new capital investments
- operating expenditure arising from population growth (eg, increased treatment plant throughput), and
- efficiency gains through improved work practices, lower input costs, the adoption of new technology and other sources.[193]

187 See Executive Committee UP999, Submission on the Review of ICRC Price Direction for Regulated Water and Sewerage, 15 August 2014, p. 5 and Ratepayers Association of ACT, Submission, 18 August 2014, p. 2.

188 Mr Kevin Cox, Submission to Review of ICRC Price Increases in ACTEW Water and Sewerage, undated, p. 1.

189 Cardno, Independent review of ICRC price decision, Technical report, November 2014.

190 ibid, p. 16.

191 ibid, p. 28.

192 ibid.

193 ibid.

11.2.5 Panel's considerations and draft decision

After considering the information in the sections above, the Panel reached the view that the forecast controllable operating expenditure for the period 2013-14 to 2017-18 set out in ACTEW's SOFC[194] is the best available estimate of the efficient level of these costs. In support of this view, the Panel notes that:

- the base year and step change approach that ACTEW applied in deriving this controllable operating expenditure forecast is an accepted regulatory approach to estimating these costs
- this controllable operating expenditure forecast is lower than the recommended prudent and efficient expenditure in Cardno's November 2012 report to the ICRC (see Table 11.6), and
- this controllable operating expenditure forecast is consistent with the forecast in ACTEW's April 2013 submission, which Cardno recommended be adopted as prudent and efficient.

Table 11.6: Comparison – Forecast controllable operating expenditure ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
ACTEW's July 2012 submission	137.71	143.99	148.51	155.86	160.13
Cardno's November 2012 report	134.44	139.83	142.85	148.29	150.39
ACTEW's April 2013 submission	130.61	135.58	137.70	141.43	146.75
ACTEW's July 2014 SOFC	130.02	135.00	137.10	140.81	146.13

Sources: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 128. ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 32. Figures adjusted for inflation of 2.5% per annum.

However, the Panel considers two adjustments to ACTEW's forecast controllable operating expenditure are appropriate. The first relates to ACTEW's proposal to remove the Uriarra Village sewerage project component of forecast sewerage operating expenditure, on the grounds that this has the same effect on the revenue requirement as the ICRC's decision to adjust forecast costs down. While the Panel accepts that ACTEW's proposed approach may be administratively simpler, it considers the ICRC's approach more transparent.[195] Therefore, the Panel has decided to adopt the same approach as the ICRC and to:

- add back the negative adjustment made by ACTEW to sewerage operating expenditure in its SOFC for the on-going costs relating to the Uriarra Village sewerage project, and
- adjust these operating costs downwards to reflect Cardno's estimate of the efficient costs of operating a package plant.

The second adjustment relates to carbon costs. Given the removal of the carbon price from 1 July 2014,[196] the Panel considers it appropriate to remove costs associated with this price from ACTEW's forecast controllable operating expenditure. The Panel notes that this forecast does not include an explicit allowance for carbon costs, either through the base year or step changes. However, the escalation factors for electricity and chemical costs include the impact of the carbon price on these costs. Therefore, a small proportion of ACTEW's total forecast operating expenditure reflects the cost of carbon. ACTEW has indicated that the impact of the carbon price on these costs is, on average, no greater than around $40,000 per year.[197] Accordingly, the Panel has adjusted total forecast operating expenditure down by this amount.

194 The Panel notes that this forecast is based on ACTEW's April 2013 pricing submission, with an adjustment for the treatment of the costs associated with the Uriarra Village sewage treatment plant.

195 In addition the Panel notes that in its SOFC ACTEW claimed that this decision was not part of its application for review.

196 Under the original terms of reference there is a requirement to consider the impact of a price on carbon on the provision of water and sewerage services.

197 ACTEW, email responses to questions, 9 September 2014.

The Panel's draft decision on controllable operating expenditure is set out in the table below. It is worth noting that Panel has not made any provision in this expenditure for the additional water treatment costs associated with its decision to adopt higher water sales forecast because it does not have sufficient information to make such an adjustment.

Table 11.7: Draft decision – Forecast controllable operating expenditure ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water	62.75	66.15	66.91	67.94	70.32
Sewerage	67.70	69.29	70.64	73.33	76.27
Total operating expenditure	130.46	135.44	137.69	141.42	146.75

In relation to the concerns stakeholders raised about the transparency of ACTEW's operating expenditure, the Panel notes that, as section 6.3.3 discussed, it is recommending that ACTEW be required to submit a report to the ICRC each year, setting out its actual operating and capital expenditure in the previous financial year, and explaining any major deviation from the expenditure allowances approved in the price direction. This reporting requirement would increase the transparency of ACTEW's actual expenditure.

In addition, the Panel is mindful that the regulatory framework applying to ACTEW should provide sufficient incentives for it to improve the efficiency of its operating and capital expenditure, so it intends to suggest to the ICRC that it investigate the potential use of an operating and capital expenditure incentive scheme in the next regulatory period (see section 6.3.3).

11. 3 WAC and UNFT

The WAC is a '$ per kL' charge levied by the ACT Government on all water abstracted from ACT water sources. It is applied to meet the costs of a range of water planning and management activities across a number of ACT Government agencies. In addition, the WAC includes components intended to reflect the scarcity value of water and environmental costs.[198] The contributions of the individual components to the total WAC are not separately identified.

The UNFT is a '$ per km of network length' charge payable by any entity in the ACT, either government or non-government owned, which has network facilities in the ACT.[199]

ACTEW is required to pay both the WAC and the UNFT and incurs both of these uncontrollable costs on an annual basis.

11.3.1 ICRC's final decision and ACTEW's SOFC

The ICRC's final decision on the revenue allowances for the WAC and UNFT in 2013-14 and 2014-15 is set out in Table 11.3 above. ACTEW's SOFC proposal for these allowances for 2013-14 to 2017-18 is set out in Table 11.4 and Table 11.5.

In the 2014-15 budget, the ACT Government announced a 5% increase in both the WAC and the UNFT.[200] These increases were not known or forecast at the time of the ICRC's final decision; however the ICRC has passed them through into 2014-15 prices.[201]

198 See http://www.environment.act.gov.au/__data/assets/pdf_file/0008/576062/ACT_Water_Abstraction_Charge.pdf.

199 A 'network facility' is defined as any part of the infrastructure of a utility network not fixed to land subject to either a lease, a licence granted by the Territory or any right prescribed by regulation. 'Utility networks' include networks for transmitting and distributing electricity, gas, sewerage, water and telecommunications.

200 See Chapter 3, section 3.4, p. 153 at http://apps.treasury.act.gov.au/budget/budget-2014-2015/budget-paper-3. The 2014-15 budget indicated that the UNFT would increase by 5% each year over the forward estimates period (ie, to 2017-18).

201 ICRC, Commission determines ACTEW regulated water and sewerage service prices for 2014-15, Media Release, 24 June 2014.

In its SOFC, ACTEW proposed that the WAC and UNFT allowances in its operating expenditure forecasts be adjusted to account for this increase, with any further pass-through events assessed relative to the levels of these charges in 2014-15.[202]

11.3.2 Panel's considerations and draft decision

As section 6.5.3 discussed, in keeping with its draft decision not to include a biennial recalibration mechanism, the Panel has made a draft decision to expand the scope of the cost pass-through mechanism to include changes in the annual amount payable by ACTEW to the ACT Government for the WAC and the UNFT.

The Panel notes that, unlike previous price directions that have only passed through changes in the WAC and UNFT **rates**, the Panel has decided that the pass-through amount should reflect differences in the total amount payable to the ACT Government in each year,[203] which is calculated as follows:

- $\text{WAC charge}_t = \text{Actual dam releases}_t \times \text{WAC rate}_t$
- $\text{UNFT charge}_t = \text{Actual network length}_t \times \text{UNFT rate}_t$

In other words, the cost pass-through amount should reflect differences in the rates, the dam releases and the network lengths that were assumed when calculating ACTEW's revenue requirement. This approach will ensure that ACTEW does not receive or incur a windfall gain or loss as a result of changes in these uncontrollable costs.

While the cost pass-through mechanism will allow ACTEW to recover the actual WAC and UNFT charges it pays, the Panel requires an estimate of these costs to establish ACTEW's revenue requirement and set prices.

To determine what provision should be made for the WAC, the Panel has:

- for 2013-14, adopted the same allowance as the ICRC, and
- for 2014-15 onwards, multiplied:
  - the new WAC rate that was announced in the 2014-15 budget, *by*
  - the dam releases implied by the Panel's draft decision on forecast water sales (see Chapter 12).[204]

To determine what provision should be made for the UNFT, the Panel has made a draft decision to adopt ACTEW's forecast network length in its original pricing submission. ACTEW provided this forecast for the purpose of calculating the UNFT, and the ICRC adopted this forecast in making its final decision on the UNFT allowance for 2013-14 and 2014-15.

The Panel notes that ACTEW's forecast network length reflects its expectation that the network will grow by 2% per year (for both water and sewerage) in this regulatory period. Given Cardno's advice that, population growth of 7% to 8% could be expected over this period,[205] the Panel considers ACTEW's forecast network length is reasonable.

The Panel's draft decision on the WAC and UNFT are set out in the table below.

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202 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 30.

203 This is broadly in line with the approach previously adopted by the ICRC and the approach adopted by the AER.

204 These dam releases have been calculated using the historic ratio of water releases to water sales. Historically water releases have been around 15% higher than water sales. The difference is made up of network losses (or leakage) and water sales to Queanbeyan City Council. See Attachment 2 to the Price Direction: Pricing Model - Regulated Water and Sewerage Services (June 2013) at http://www.icrc.act.gov.au/water-and-sewerage/price-directions/.

205 Cardno, Independent review of ICRC price decision, Technical report, November 2014, p. 28.

Table 11.8: Draft decision – Water WAC and UNFT ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
WAC	25.01	27.81	28.16	28.53	28.90
UNFT	4.10	4.52	4.74	4.97	5.09

Table 11.9: Draft decision – Sewerage UNFT ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
UNFT	3.39	3.72	3.89	4.07	4.25

12 Forecast demand

The final component of the original price direction the Panel reviewed was the forecast demand used in converting the net revenue requirement (discussed in Chapter 13) into water and sewerage charges. This includes:

- **forecast water sales,** which are used to determine the volumetric component of the water charge and, under the current tariff structure, are broken down into water consumed at the tier 1 and tier 2 levels
- **forecast water and sewerage customer numbers,** which are used to determine the fixed annual charges for water supply charges and sewerage supply charges, respectively, and
- **forecast billable fixtures**, which are used to determine additional sewerage supply charges for non-residential customers that have more than two billable fixtures.

Deciding on the demand forecasts for the regulatory period is a critical part of the price regulation process, as these forecasts have a large impact on the resulting price levels. For any given revenue requirement, a higher demand forecast will lead to lower prices, while a lower demand forecast will lead to higher prices. It is important that the forecasts adopted by the regulator are neither overly conservative (or customers will pay higher prices than necessary to recover the regulated business' efficient costs), nor overly buoyant (or the regulated business may earn insufficient revenue to cover its efficient costs). [206]

Because it is already part way through this regulatory period, actual demand data is available for the first year of this period (2013-14), so the Panel used this data. To reach its draft decision on the forecast demand in the remaining four years of the period, the Panel considered:

- the ICRC's final decision for the first two years of the regulatory period, and its rationale for making that decision and rejecting ACTEW's proposal on forecast demand
- ACTEW's proposal (both originally, in its SOFC and in information provided in response to the Panel's request), including that all forecast demand measures be updated annually in 2014-15 to 2017-18 due to the uncertainty surrounding demand forecasts, and that forecast water sales be updated using a methodology based on the Breusch-Ward model, and
- Cardno's expert advice on the appropriate methodology for forecasting water sales for the remaining four years of the regulatory period, and its recommended water sales forecasts for these years.

The sections below provide an overview of the Panel's draft decision on forecast water sales, customer numbers and billable fixtures, and then discuss its considerations and draft decision in more detail.

12. 1 Overview of the Panel's draft decision

The Panel's draft decision is to adopt the multi-year demand forecasts shown in Table 12.1 for the purpose of calculating ACTEW's maximum water and sewerage charges for this regulatory period.

206 In addition to revenues and prices, demand forecasts affect other components of a standard price determination process because they have a direct impact on capital expenditure estimates (particularly where the growth in demand is a major driver of system augmentation), and operating and maintenance expenditure (particularly for categories of expenditures that are volume-related, such as electricity for pumping and chemicals for treatment). The level of water sales also affects the WAC, which is relevant for the calculation of the net revenue requirement (see Chapter 13).

Table 12.1: Draft decision – Demand forecasts

	Actual	Forecasts			
	2013-14	2014-15	2015-16	2016-17	2017-18
Water					
Tier 1 water sales (GL)	23.76	24.07	24.99	25.85	26.66
Tier 2 water sales (GL)	18.17	19.97	19.61	19.32	19.10
Total water sales (GL)	**41.93**	**44.04**	**44.59**	**45.17**	**45.76**
Water customer numbers	162,951	166,992	171,134	175,378	179,728
Sewerage					
Sewerage customer numbers	162,609	166,678	170,849	175,124	179,506
Billable fixtures (non-residential)	60,274	61,597	62,949	64,331	65,743

The Panel considers the adoption of multi-year demand forecasts is appropriate given the importance of these forecasts in the price regulation process, and is in keeping with general regulatory practice. The Panel accepts that the uncertainty surrounding demand forecasts means there is a risk that actual demand will deviate from forecast demand over the remainder of the regulatory period. However, in its view, the level of this risk is far lower in the current regulatory period than the previous period (see section 6.2). The Panel also considers that ACTEW's proposal for addressing this risk – an annual demand adjustment mechanism, in conjunction with a revenue cap – allocates too much of the risk to customers, and has the potential to lead to price instability within the regulatory period.

As Chapter 6 discussed, the Panel has decided to adopt a hybrid price and revenue cap form of price control, which includes a demand volatility adjustment mechanism to account for deviation between actual and forecast water sales in excess of a 7% deadband. The Panel considers this approach more appropriately allocates demand-related risk between ACTEW and customers.

The Panel's draft decision on forecast water sales for 2014-15 to 2017-18 reflects Cardno's advice. These forecasts are between 3.5% and 7.6% higher than the forecast water sales ACTEW provided in response to the Panel's information request, and 15-20% higher than the 38 GL forecasts used by the ICRC to calculate prices in 2013-14 and 2014-15.

The Panel's draft decision on water and sewerage customer numbers and billable fixture numbers reflects the revised and corrected estimates of these numbers provided by ACTEW over the five years from 2008-09 to 2013-14,[207] and the historical annual growth in these numbers implied by the estimates. Its draft decision on customer numbers is higher than that adopted by the ICRC in 2013-14 and 2014-15, and its draft decision on billable fixtures is slightly lower.

12. 2 Forecast water sales

Forecast water sales are used to calculate the volumetric charge paid by water customers. This is an inclining block charge, with two consumption tiers:

- Tier 1, which is defined as consumption up to 0.548 kL on average per day of the billing period (equivalent to 200 kL pa), and
- Tier 2, which is defined as consumption in excess of 0.548 kL on average per day of the billing period (greater than 200 kL pa).

207 The most recent five-year period for which actual data is available.

Traditionally, water sales forecasts have been based on historical data combined with expected customer growth and forecast weather patterns. However, as Chapter 3 discussed, the imposition (and subsequent lifting) of water restrictions during severe drought conditions has increased the uncertainty of projecting water demand. In addition, ongoing changes in the mix of housing in the ACT (with an increasing proportion of apartments and units) and changes to customer behaviour and water-using appliances have added further complexity to determining demand forecasts.

12.2.1 ICRC's final decision

In its original proposal, ACTEW provided water sales forecasts for the first year of the regulatory period only (40.864 GL, comprising tier 1consumption of 21.2 GL and tier 2 sales of 19.665 GL). Because of the uncertainty of projecting demand, it also proposed that water sales forecasts be updated annually using the forecasting model developed by Professors Breusch and Ward.

The ICRC's final decision was to reject this proposal, and to:

- adopt its own "conservative" water sales forecasts of 38 GL for each of the first two years of the regulatory period (comprising tier 1 consumption of 21.2 GL and tier 2 sales of 16.8 GL), and
- determine water sales forecasts for the remaining years as part of the biennial recalibration process.

The ICRC raised a number of concerns about the Breusch-Ward model, and noted that "statistical modelling was not providing an adequate tool for making sales forecasts in current circumstances"[208] because of an apparent "structural break" between historic and current levels of consumption. It considered that such a structural break could reflect permanent changes in water consumption behaviour resulting from increased awareness of water security and increased investment in water saving technologies during the Millennium drought.

The ICRC characterised its total water sales forecast of 38 GL per year as "conservative" because it was lower than ACTEW's proposal, and in line with the level of water sales observed between 2008-09 and 2009-10 when water restrictions were in place.[209]

12.2.2 ACTEW's SOFC and response to request for further information

In its SOFC, ACTEW maintained its original proposal that, for the purposes of setting prices, forecasts of water sales should be made on an annual basis using the Breusch-Ward model. ACTEW offered to provide up-to-date data for the model "to allow prices to be set for 2015-16 as part of [the Panel's] review".[210]

The Panel asked ACTEW to provide actual demand data for 2012-13 and 2013-14, along with water sales forecasts for the last four years of the regulatory period. In its response, ACTEW reiterated its proposal that demand forecasts be made annually, but nevertheless provided the requested information, shown in Table 12.2. ACTEW derived these water sales forecasts using the Breusch-Ward model.

Table 12.2: ACTEW SOFC – Actual and forecast water sales (GL)

	Actual		Forecast			
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Tier 1	23.03	23.76	24.87	24.87	24.86	24.86
Tier 2	17.40	18.17	17.69	17.69	17.68	17.68
Total	**40.43**	**41.93**	**42.56**	**42.55**	**42.55**	**42.54**

Source: ACTEW, Information return: demand forecasts, 5 August 2014.

208 ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 106.

209 Actual water sales data subsequently provided by ACTEW confirm the ICRC's forecasts to be conservative. For example, in 2013-14, actual water sales were close to 42 GL (see Table 12.2).

210 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 31.

12.2.3 Cardno's advice

To assist it in making its decision on water sales forecasts, the Panel asked Cardno to:

- review ACTEW's proposed methodology for forecasting water sales, and provide advice as to whether this methodology and the resulting demand forecasts are reasonable for the purpose of setting prices, and
- provide alternative forecasts if it concludes that ACTEW's forecasts are not reasonable.

Cardno's detailed analysis is contained in its report, which is available on the Panel's website. The section below summarises its key findings and advice.

12.2.3.1 Cardno's findings on ACTEW's proposed methodology

Cardno noted that the Breusch-Ward model proposed by ACTEW was not designed for the purpose of predicting demand over the medium term, and has a number of drawbacks when used for this purpose. These include the following:

- The model does not take account of demographic changes, and population is assumed to be constant in the medium-term forecast derived by the model (or explained by the model autoregressive error factor in the short term). This is notable, given that population is an obvious driver of water consumption, and there is robust data available on expected population growth.
- Instead, the model relies on weather as its key predictive variable, even though weather is more difficult to predict than population growth. As a result, the central scenario is based on historic weather averages for all years in the price period, resulting in virtually constant demand.
- The model is based on a set of sample data that is not representative of ACTEW's wider customer base (all are existing customers since 2001). These customers' water consumption is considerably above the average, and a substantial "correction factor" is required to adjust their average demand to the population average.
- The model appears only to have been tested using "in sample data". When additional data was added to the model (ie, when it was updated), this resulted in significant changes to the regression coefficients and the predicted outcomes. If the addition of a relatively small amount of new sample data significantly changes the model's medium-term predictions, confidence in its predictive power is reduced.

Based on its own modelling, Cardno found that there is an 89% chance of ACTEW's forecasts being exceeded in aggregate over the proposed five-year regulatory period.[211]

For the above reasons, Cardno concluded that ACTEW's proposed model is not suitable for forecasting water sales for the purpose of determining prices over the remainder of the regulatory period. It recommended an alternative forecasting methodology, which draws on the high-level approach set out in the National Water Commission's paper, *Integrated Resource Planning for Urban Water*.[212]

Broadly, the key differences between Cardno's recommended and ACTEW's proposed approach for forecasting water sales is that Cardno's approach takes account of population projections as well as weather and water restrictions. It also disaggregates water sales to a 'per property' level,[213] taking into account changes in the composition of the housing stock (which recognises the addition of new, more "water efficient" housing).

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211 See Cardno, Independent review of ICRC price decision, Technical report, November 2014, p. 84. There is uncertainty around any forecast. The probability of a forecast being exceeded (or not met) lies between 0% and 100%. In making its draft decision, the objective of the Panel is to adopt what it considers to be the best estimate of forecast water sales. A forecast with a near 90% chance of being exceeded is unlikely to meet this objective.

212 Institute for Sustainable Futures (on behalf of the National Water Commission), Waterlines Report Series No.41, March 2011.

213 ACTEW's model considers per capita consumption, but only for the purposes of estimating tier 1 and 2 consumption.

Table 12.3 compares Cardno's and ACTEW's broad approaches to forecasting water sales. Box 12.1 summarises the main steps in Cardno's recommended forecasting methodology.

Table 12.3: Comparison of Cardno and ACTEW approaches in forecasting water sales

ACTEW approach	Cardno approach
• Uses weather as a predictor	• Uses weather as a predictor
• Uses restrictions as a predictor	• Uses restrictions as a predictor
• Does not take into account population (assumed to cancel out the effects of behaviour and housing stock changes)	• Uses population growth as a predictor (ie, trends in customer growth)
• Does not allow for behaviour change	• Accounts for behaviour change (where possible)
• Does not take into account changes in housing stock	• Uses available data about the effect of new properties
• Considers price elasticity	• Ignores price elasticity but assumes it is part of the behaviour change following restrictions
• Builds a regression model of daily average (and median) consumption using a sample of billing data by customer category	• Builds a regression model for consumption using annual average data, by customer category

Box 12.1: Main steps of Cardno's water sales forecasting methodology

Cardno's forecasting methodology comprises the following eight main steps: [214]

(1) **Calculate consumption per property**, based on actual consumption data for the period 2001-02 to 2013-14.

(2) **Apply the weather and restrictions data** ACTEW used in applying the Breusch-Ward model to attempt to explain changes in per property consumption and total volumes by customer type.

(3) **Analyse detailed meter-reading data** (4.5 million records from 2006 to 2014) to reconcile residential housing and units consumption with ACTEW's figures. This analysis revealed that newer housing stock consumes less water than the housing stock existing as at 2007. It also indicated behavioural change between the new and old housing stock.

(4) **Adjust the predicted per property consumption to account for changes in the housing stock**, particularly the likely impacts of new, more "water efficient" housing.

(5) **Estimate the growth in the customer base**, by analysing historic trends in customer growth and taking account of ABS population trends. For the purpose of forecasting changes in customer numbers, Cardno adopted historic growth rates for different types of dwellings, with the number of customers in residential houses and residential units assumed to increase at their five-year historic average annual growth rate.

(6) **Assess the accuracy of population forecasts**, by comparing population projections made by the ABS and the ACT Government to actual observed population at various time horizons.

(7) **Analyse weather variance distribution** (sensitivity analysis), by examining the variance in the annual averages of the weather data collated for the Breusch-Ward model.

(8) Analyse the data to determine the split between tier 1 and tier 2 consumption, using a **method based on the actual spilt of consumption as observed by ACTEW**.

Using its recommended methodology, Cardno provided the alternative forecast water sales shown in Table 12.4. In contrast to ACTEW's forecasts, which predict water sales will remain essentially static over the remainder of the regulatory period, Cardno's forecasts show an increase in 2014-15 and then a steady – albeit modest – increase in annual water sales, reaching 45.8 GL in 2017-18. The main factors underpinning these forecasts are summarised in Box 12.2.

214 Further detail on Cardno's model can be found in its report, which can be found on the Panel's website.

Table 12.4: Cardno – Recommended water sales forecasts (GL)

	2014-15	2015-16	2016-17	2017-18
Tier 1	24.07	24.99	25.85	26.66
Tier 2	19.97	19.61	19.32	19.10
Total	**44.04**	**44.59**	**45.17**	**45.76**

Source: Cardno, Independent review of ICRC price decision, Technical report, November 2014, p. 84.

Box 12.2: Summary of Cardno's analysis of water sales

- Average per property water consumption in the ACT is falling because the growth in the housing stock is increasingly focussed on units, which tend to use less water than freestanding houses.
- In addition, newer freestanding houses are consuming less water than older ones.
- Cardno has assumed that there is no 'bounce back' in water consumption following the period of water restrictions, which is a further limiting factor on the growth of water consumption. After examining the post-drought experience in the ACT, NSW and Queensland, Cardno notes that the evidence for the extent and timing of any rebound in consumption following restrictions is varied, and concludes that it is still too early to forecast a significant, non-weather related underlying bounce back in demand following the end of a long period of restrictions.
- The housing stock in the ACT (ie, the number of water customers) is forecast to continue to grow. Cardno's forecasts are based on the historic (five-year) growth rates by type of dwelling. Based on these historic trends, the number of freestanding houses is growing at an annual rate of over 1.5%, while additions to the stock of units are rising by close to 4.7% per year.
- The growth in the housing stock (and hence customer) numbers more than offsets the underlying decrease in per property water consumption in terms of total water sales.
- Cardno's model assumes a return to historically average weather conditions (as measured by the cumulative evaporation index).[215]
- The combination of the rising housing stock and the return to average weather conditions results in a steady increase in forecast water sales over the proposed regulatory period.

12.2.4 Panel's considerations and draft decision

For the reasons discussed in section 12.1, the Panel decided to adopt multi-year water sales forecasts for the remainder of the regulatory period. It is satisfied that through its chosen form of price control (hybrid price and revenue cap), the risk associated with this decision can be allocated appropriately between ACTEW and its customers.

After considering the ICRC's final decision on water sales forecasts for 2013-14 and 2014-15, the Panel decided not to adopt these forecasts. The Panel notes that the ICRC's view of these water sales forecasts as "conservative" is borne out by the revised actual consumption data ACTEW provided to this review. As Table 12.2 above shows, ACTEW's actual water sales in 2013-14 were close to 42 GL, which is more than 10% higher than the forecast sales of 38 GL used in making the original price direction.[216] The Panel also notes that Cardno's modelling indicates there is 95% probability that actual water sales will exceed 38 GL in 2014-15 and 2015-16.[217]

215 This is the reason for the jump in forecast water sales in 2014-15 compared with the actual 2013-14 result (44 GL versus 42 GL). Cardno's model incorporates a "cumevap" variable, which is a cumulative evaporation index. All other things being equal, high levels of evaporation will boost water demand, while low evaporation is consistent with lower water sales. Cumevap in 2013-14 was 52.7mm, while Cardno's central forecast scenario assumes a return to the historic average of 60mm. Each point of increase in cumevap results in 2.7 kl more consumption per freestanding house, so that a 7 point increase gives an extra 20 kl per house (which is about 10% of household consumption). Such large variations have been observed historically (eg, ACTEW's data shows an annual jump of 14% in water sales in 2012-13).

216 The Panel notes that a discrepancy between forecast and actual demand data is common as actual water usage is influenced by many variables, including weather patterns, which are difficult to predict

217 Cardno, Independent review of ICRC price decision, Technical report, November 2014, p. 84.

After considering the information ACTEW provided on its actual sales in 2012-13 and 2013-14 and its forecast sales for 2014-15 to 2017-18, and Cardno's expert advice and recommendations, the Panel made a draft decision to accept Cardno's advice and adopt its recommended water sales forecasts for the purposes of this price direction. The Panel's considerations in making this decision include the following:

- The Panel is not aware of any other demand forecasting model used by Australian regulators of utilities that excludes customer numbers (or population as a proxy for customer numbers) as a key explanatory variable when forecasting demand over the medium term. The Panel appreciates the Breusch-Ward model was not designed to forecast over the medium term because ACTEW's proposal is for demand forecasts to be updated annually (so that population-related variables are less relevant). However, the Panel's decision to adopt multi-year forecasts for the remainder of the regulatory period means Cardno's model is more suitable, as it takes into account the growth in different categories of customers (by type of dwelling) over the medium term.
- The Panel accepts ACTEW's arguments that the impact of population (or customer) growth on water sales **may** be offset by the adoption of water saving measures by consumers. However, it notes that ACTEW has not provided evidence to quantify these impacts. In contrast, Cardno's model attempts to disaggregate the competing factors of population growth and declining per capita water consumption. It does this by forecasting growth in customer numbers by type of dwelling, and taking into account the different behaviour in consumption associated with newer dwellings. In the Panel's view, this represents a robust approach to assess the impact of water saving measures.
- ACTEW's forecasts suggest that water sales will remain relatively static over the projection period (see Table 12.2). Even allowing for changing behaviour (such as the continuing adoption of water saving measures), the Panel does not consider a zero growth rate in water usage to be realistic, given the expected growth in customer numbers.
- Cardno's approach is broadly consistent with National Water Commission guidelines. As these guidelines fall under the remit of the National Water Initiative, the Panel has had regard to this in line with the requirements of the original terms of reference as matters of relevance to its determination (see section 4.2).
- Cardno's modelling indicates there is an 89% probability that actual water sales will exceed ACTEW's forecasts over the five-year regulatory period.[218]

12. 3 Forecast water and sewerage customer numbers and billable fixtures

Forecast water and sewerage customer numbers are used to determine the fixed annual service charges for water and sewerage respectively. Forecast billable fixture numbers are used to calculate the additional supply charge payable by non-residential customers for sewerage services.

12.3.1 ICRC's final decision

The ICRC's final decision was to adopt forecasts for customer numbers and billable fixtures for the first two years of the regulatory period (see Table 12.5) and determine forecasts for the remainder of the period through the biennial recalibration process. The ICRC based its forecasts for 2013-14 and 2015-16 on the historic growth in these numbers during the previous regulatory period (2008-09 to 2012-13).

Table 12.5: ICRC final decision – Forecast customer numbers and billable fixtures

	2013-14	2014-15
Water customer numbers	159,126	162,578
Sewerage customer numbers	153,918	157,491
Billable fixtures (non-residential)	61,150	62,673

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p. 118.

218 ibid.

12.3.2 ACTEW's SOFC and response to request for further information

ACTEW did not raise any concerns in its SOFC about the approach the ICRC used to derive its final decision on forecast customer numbers and billable fixtures. However, in its response to the Panel's request for further information on its forecast demand, ACTEW provided updated historical estimates of the number of water and sewerage supply charges between 2008-09 to 2013-14, and of the number of fixture charges in 2012-13 and 2013-14 (see Table 12.6).

ACTEW noted that this updated data differed from the historical information it provided to the ICRC for the original price direction "due to the correction of errors used to derive estimates from ACTEW's consumer count data".[219] The estimated numbers of sewerage supply charges, in particular, are substantially higher than those previously provided to the ICRC.

Table 12.6: ACTEW – Revised water and sewerage supply and fixture numbers

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Water	144,165	146,853	149,794	153,256	158,258	162,951
Sewerage	143,707	146,397	149,406	152,870	157,922	162,609
Billable Fixtures	54,073	56,788	58,324	59,250	59,726	60,274

Source: ACTEW, Information return: demand forecasts, 5 August 2014. For fixtures, ACTEW provided updated estimates for 2012-13 and 2013-14 only. The data for 2008-09 to 2011-12 are those adopted by the ICRC in its final decision.

12.3.3 Panel's considerations and draft decision

In the Panel's view, the ICRC's decision to use historic growth rates to derive forecast customer numbers and billable fixture numbers was appropriate. Therefore, it used a similar approach to derive these forecasts for the remaining four years of the regulatory period:

- for water customer numbers, the Panel applied an annual growth rate of 2.48% to ACTEW's revised estimate of water supply charges in 2013-14
- for sewerage customer numbers, it applied an annual growth rate of 2.50% to ACTEW's revised estimate of sewerage supply charges in 2013-14, and
- for billable fixtures numbers, it applied an annual growth rate of 2.20% to ACTEW's revised estimate of fixtures charges in 2013-14.

These annual growth rates reflect the average annual growth rates implied by ACTEW's revised estimates for the most recent five-year period (2008-09 to 2013-14).[220,221]

The Panel's draft decision on forecast customer numbers and billable fixtures is shown in Table 12.7.

Table 12.7: Draft decision – Customer numbers and billable fixtures

	Actual	Forecast			
	2013-14 (actual)	2014-15 (forecast)	2015-16 (forecast)	2016-17 (forecast)	2017-18 (forecast)
Water customers	162,951	166,992	171,134	175,378	179,728
Sewerage customers	162,609	166,678	170,849	175,124	179,506
Billable fixtures	60,274	61,597	62,949	64,331	65,743

219 ACTEW, Information return: demand forecasts, 15 August 2014, p. 6.

220 In this instance, the Panel has chosen to base the growth rates on the *revised* historical data rather than the information available to the ICRC at the time of the original pricing direction because the original information contained errors.

221 This approach of using growth rates based on the most five-year period is consistent with the methodology adopted by Cardno in its forecasts of water sales.

13 Net revenue requirement and 'true up' adjustment

In line with the price setting method discussed in Chapter 7, and the draft decision set out in Chapters 8 to 11, the Panel made a draft decision on:

- ACTEW's net revenue requirement in each year of this regulatory period (1 July 2013 – 30 June 2018) by:
  - using the building block methodology to calculate the total revenue requirement for this period, and
  - deducting expected income from other sources and expenditure that should be treated as if funded through a CSO.
- The 'true up' adjustment required to account for ACTEW's expected over (or under) recovery of the net revenue requirement in 2013-14 and 2014-15 when setting prices for the remaining three years of the period.

The sections below provide an overview of the Panel's draft decision and then discuss its considerations in more detail.

13. 1 Overview of the Panel's draft decision

The Panel's draft decision on ACTEW's net revenue requirement and the 'true up' adjustment are shown in Table 13.1.

Table 13.1: Draft decision – Net revenue requirement and 'true up' adjustment ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water					
Total revenue requirement	181.68	191.96	196.29	201.05	207.56
Less other income and expenditure treated as CSO	16.22	16.55	16.90	17.25	17.61
Net revenue requirement	**165.46**	**175.41**	**179.39**	**183.80**	**189.95**
'True up' adjustment (negative=adjustment for over-recovery; positive=adjustment for under recovery)	**-2.59**	**-8.10**	**na**	**na**	**na**
Sewerage					
Total revenue requirement	120.22	125.14	131.34	141.35	152.18
Less other income and expenditure treated as CSO	10.94	11.21	11.48	11.76	12.05
Net revenue requirement	**109.27**	**113.93**	**119.86**	**129.58**	**140.13**
'True up' adjustment (negative=adjustment for over-recovery; positive=adjustment for under recovery)	**0.26**	**-0.76**	**na**	**na**	**na**

* The total revenue requirement is calculated as the sum of the following building blocks: return on capital, depreciation, operating expenditure, net tax liabilities, the water abstraction charge and utilities network facilities tax.

The Panel's draft decision on ACTEW's net revenue requirement is:

- approximately $34 million (6%) **higher** than the ICRC's final decision for the **first two years** of the period (water: $26.6 million and sewerage: $7.7 million), and
- approximately $267 million (15%) **lower** than ACTEW's SOFC proposal for the **full five-year period** (water: $159 million and sewerage: $108 million).

The Panel's draft decision on the 'true up' adjustment reflects its expectation that ACTEW will recover:

- $10.6 million **more** revenue from the provision of water services in 2013-14 and 2014-15 than the net revenue requirement for these two years, and
- $0.5 million **more** revenue from the provision of sewerage services in 2013-14 and 2014-15 than the net revenue requirement for these two years.

The model the Panel used to calculate prices for ACTEW's water and sewerage services in the remaining three years of the regulatory period (discussed in Chapter 14) applied the 'true up' adjustments to the net revenue requirements for these years in a way that smoothed the impact on prices and was neutral in net present value terms.

13. 2 Total revenue requirement

To determine ACTEW's total revenue requirement for the provision of water services and sewerage services in this regulatory period, the Panel made a draft decision on the value of the building blocks discussed in Chapter 7, using the conclusions reached in Chapters 8 to 11. It then summed the value of the building blocks, as shown in Table 13.2 and Table 13.3.

Table 13.2: Draft decision – Water total revenue requirement ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Return on capital	64.99	66.71	68.37	70.10	72.32
Depreciation	24.52	25.86	27.14	28.49	30.09
Operating expenditure	62.75	66.15	66.91	67.94	70.32
Water abstraction charge (WAC)	25.01	27.81	28.17	28.53	28.90
Utilities Network facilities tax	4.10	4.52	4.74	4.97	5.09
Net tax liabilities	0.30	0.91	0.97	1.02	0.83
Total revenue requirement	**181.68**	**191.96**	**196.29**	**201.05**	**207.56**

Table 13.3: Draft decision – Sewerage total revenue requirement ($m, nominal)

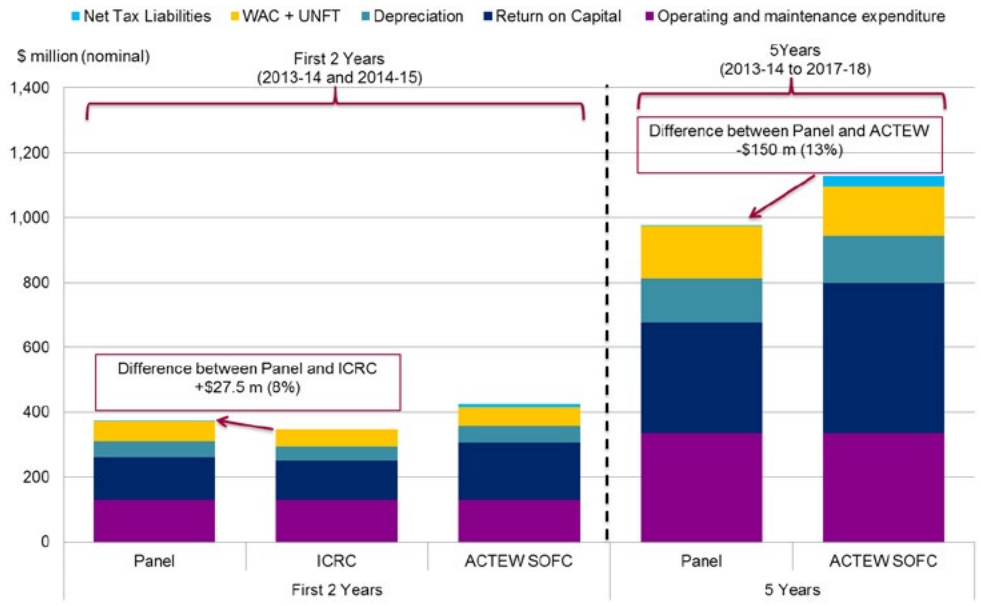
	2013-14	2014-15	2015-16	2016-17	2017-18
Return on capital	31.29	32.62	35.02	39.26	43.70
Depreciation	16.64	18.06	20.19	23.52	27.26
Operating expenditure	67.70	69.29	70.64	73.33	76.27
Utilities Network facilities tax (UNFT)	3.39	3.72	3.89	4.07	4.25
Net tax liabilities	1.19	1.46	1.60	1.18	0.70
Total revenue requirement	**120.22**	**125.14**	**131.34**	**141.35**	**152.18**

The Panel's draft decision on the total revenue requirement for water and sewerage services is approximately:

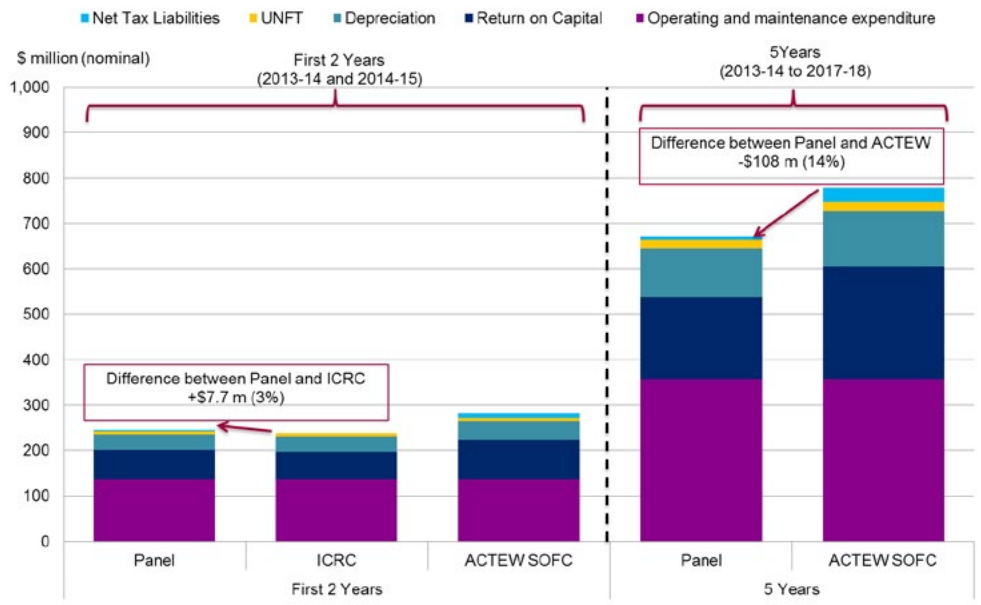
- $35 million (6%) **higher** than the ICRC's final decision for the **first two years** of the regulatory period (water: $27.5 million and sewerage: $7.7 million), and
- $258 million (14%) **lower** than ACTEW's SOFC proposal for the **full five-year period** (water: $150 million and sewerage: $108 million). (See Figure 13.1.)

Figure 13.1: Comparison of total revenue requirement

Water services



Sewerage services



The $35 million difference between the Panel's draft decision and the ICRC's final decision for the **first two years** of the period is largely due to the Panel's draft decision to:

- adopt a benchmark approach to determining the rate of return, rather than a firm specific approach[222]
- index the value of the RAB to ensure the real value of the assets is maintained over time[223]
- increase the allowance for the WAC to reflect its decision to adopt a higher water sales and higher dam release forecast[224]
- calculate the depreciation allowance for forecast capital expenditure and the water security projects by using an estimate of the economic lives of these assets rather than a notional estimate,[225] and
- make provision for net tax liabilities. [226]

Figure 13.2 provides further insight into the source of the difference between the Panel's draft decision and the ICRC's final decision for the first two years. It shows the Panel's decision to adopt a benchmark rate of return accounts for most of this difference, although a significant proportion of the increase associated with this is offset by the Panel's decision to index the RAB.

222 This decision added $115 million to the total revenue requirement for 2013-14 and 2014-15.

223 This decision reduced the total revenue requirement for 2013-14 and 2014-15 by $98 million.

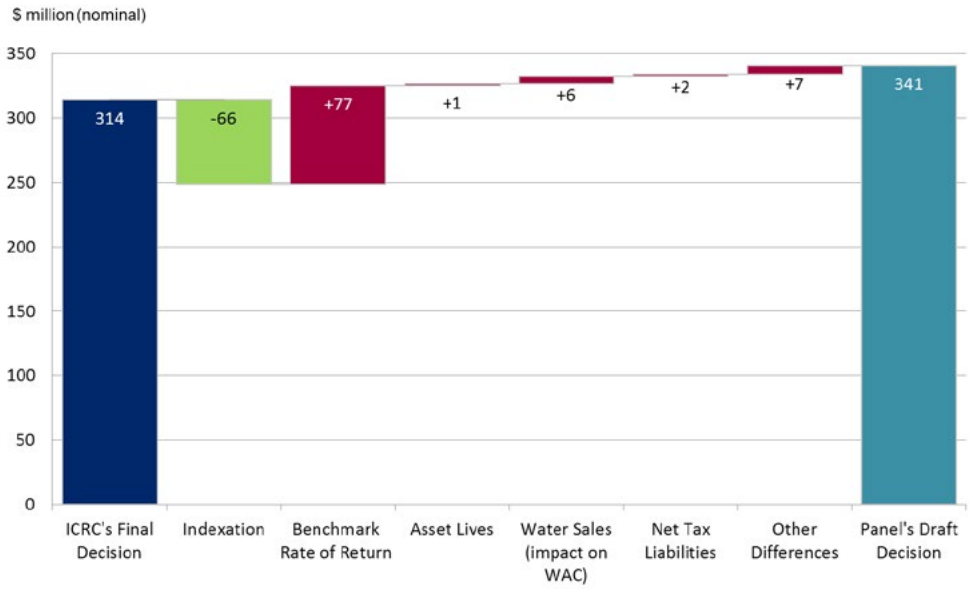
224 This decision added $6 million to the total revenue requirement for 2013-14 and 2014-15.

225 This decision added $2 million to the total revenue requirement for 2013-14 and 2014-15.

226 This decision added $5 million to the total revenue requirement for 2013-14 and 2014-15.

Figure 13.2: Difference between the Panel's draft decision and the ICRC's final decision on total revenue requirement (2013-14 and 2014-15)

Water



Sewerage

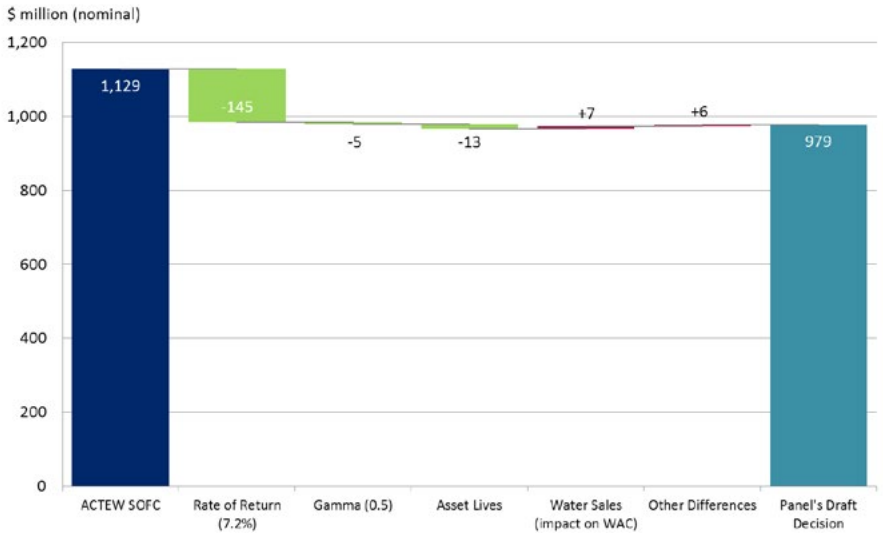
The $258 million difference between the Panel's draft decision and ACTEW's proposal for the **full five years** largely reflects the Panel's decisions to adopt:

- a lower rate of return than proposed by ACTEW, which resulted in lower return on capital
- an updated capital expenditure forecast, which resulted in lower return on capital and depreciation allowances
- a higher value of gamma than proposed by ACTEW, which resulted in a lower net tax liabilities allowance, and
- a higher water sales and dam release forecast than proposed by ACTEW, which resulted in a higher WAC allowance.

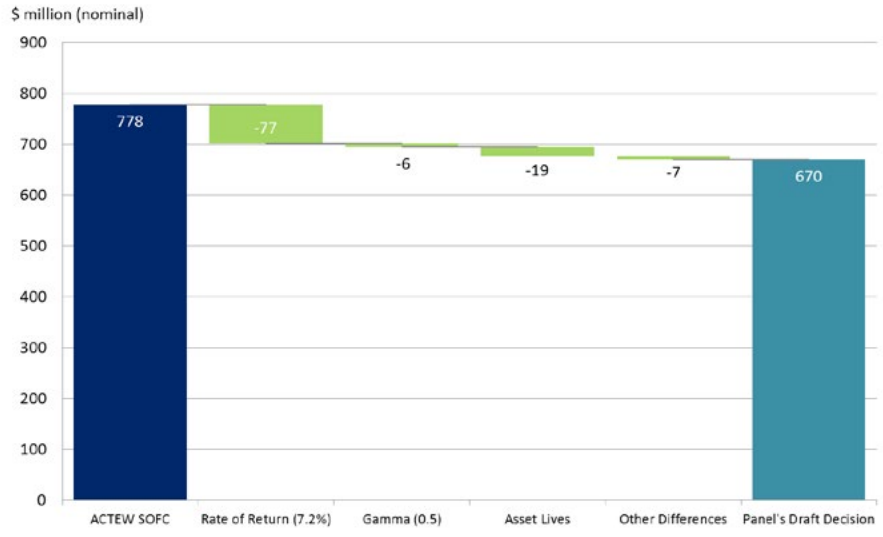
Further insight into the source of the difference between the Panel's draft decision and ACTEW's SOFC proposal over the full five year period can be found in Figure 13.3. As this figure highlights, the Panel's draft decision to adopt a 7.2% rate of return accounts for most of the difference.

Figure 13.3: Difference between the Panel's draft decision and ACTEW's SOFC proposal for total revenue requirement (full regulatory period: 2013-14 to 2017-18)

Water



Sewerage



13. 3 Deductions for other sources of income and expenditure that should be treated as a CSO

ACTEW derives revenue from a number of sources unrelated to its regulated water and sewerage services, which must be deducted from its total revenue requirement to determine the net revenue to be recovered from the charges for these services. These include:

- charges for bulk water provided to the Queanbeyan City Council
- special purpose (subvention) payments by the Commonwealth,[227] and
- miscellaneous charges and income from other sources.

227 These payments are made to reflect the cost disadvantage of operating in an inland location in the provision of water and wastewater service for the national capital.

ACTEW did not raise any issues about the ICRC's estimates of the value of these other income sources. Therefore, the Panel adopted these estimates (which are constant in real terms)[228] for the full regulatory period.

ACTEW also undertakes a number of activities that would be better characterised as Community Service Obligations (CSO) than activities related to the provision of regulated water and sewerage services, and so should not be recovered through water and sewerage charges. This includes expenditure on:

- the Cotter Dam Discovery Trail
- the greenhouse gas abatement activities associated with the water security projects, and
- the Uriarra Village sewerage services, over and above what would be recovered from local residents through the standard sewerage charge.

The Panel decided to treat these expenditures in the same manner as the ICRC, which was to treat them as if they were funded by the ACT Government through a CSO (see section 9.2.3). The Panel also adopted the same broad approach as the ICRC to calculate the value of these projects, except that it calculated the depreciation component using asset-specific economic lives.[229] This resulted in a small difference between the Panel's and the ICRC's estimates.

Table 13.4 sets out the Panel's draft decision on the deductions to be made from ACTEW's total water and sewerage revenue requirement over the regulatory period.

Table 13.4: Draft decision – Revenue deductions ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water					
Income from other sources	14.45	14.82	15.19	15.57	15.96
Expenditure treated as if funded through CSO*	1.76	1.74	1.71	1.68	1.65
Total deductions	**16.22**	**16.55**	**16.90**	**17.25**	**17.61**
Sewerage					
Income from other sources	10.35	10.61	10.88	11.15	11.44
Expenditure treated as if funded through CSO **	0.59	0.60	0.60	0.61	0.62
Total deductions	**10.94**	**11.21**	**11.48**	**11.76**	**12.05**

Notes: * This value differs from that calculated by the ICRC because the Panel has assumed a shorter economic life for the Cotter Discovery Trail (10 years versus 66 years) and a longer economic life for the greenhouse gas abatement activities (124 years versus 66 years) than the ICRC assumed.

** This value differs from the ICRC's calculations because the ICRC's calculation excluded the costs of the Uriarra Village sewerage rectification works (see section 9.2). It also differs because the Panel has adopted a shorter economic life for the Uriarra package plant than assumed by the ICRC (30 years versus 66 years).

228 In $2012-13 dollars the value of other income for water was assumed by the ICRC to be $14.10 million, whereas for sewerage it was assumed to be $10.10 million.

229 The economic lives for these three projects were:

- 10 years for the Cotter Discovery Trail – this assumption was based on information that ACTEW provided on the assumed life for outdoor landscaping;
- 30 years for the Uriarra Package Plant – this assumption was based on advice contained in Cardno's original report to the ICRC on the assumed life for a sewerage plant; and
- 125 years for the greenhouse gas abatement activities – this assumption was based on the weighted average economic life of the ECD and M2G projects.

13. 4 Net revenue requirement

To calculate the net revenue requirement for water and sewerage services, the Panel deducted the amounts set out in Table 13.4 from the total revenue requirements in Table 13.2 and Table 13.3. These calculations are shown in Table 13.5.

Table 13.5: Draft decision – Net revenue requirement ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water					
Total revenue requirement	181.68	191.96	196.29	201.05	207.56
Less other income and expenditure treated as CSO	16.22	16.55	16.90	17.25	17.61
Net revenue requirement	**165.46**	**175.41**	**179.39**	**183.80**	**189.95**
Sewerage					
Total revenue requirement	120.22	125.14	131.34	141.35	152.18
Less other income and expenditure treated as CSO	10.94	11.21	11.48	11.76	12.05
Net revenue requirement	**109.27**	**113.93**	**119.86**	**129.58**	**140.13**

The differences between the Panel's draft decision on the net revenue requirement, the ICRC's final decision and ACTEW's SOFC proposal are shown in Table 13.6.

Table 13.6: Difference between the Panel's draft decision, the ICRC's final decision and ACTEW's SOFC - Net revenue requirement ($m, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Water					
Panel's draft decision	**165.46**	**175.41**	**179.39**	**183.80**	**189.95**
ICRC's final decision	154.91	159.38	na	na	na
Difference between the Panel's decision and the ICRC's final decision	***10.56***	***16.02***	na	na	na
ACTEW's SOFC proposal*	194.41	203.08	211.40	218.27	225.62
Difference between the Panel's decision and ACTEW's proposal	***-28.95***	***-27.67***	***-32.02***	***-34.47***	***-35.67***
Sewerage					
Panel's draft decision	**109.27**	**113.93**	**119.86**	**129.58**	**140.13**
ICRC's final decision	105.95	109.51	na	na	na
Difference between the Panel's decision and the ICRC's final decision	***3.33***	***4.42***	na	na	na
ACTEW's SOFC proposal*	127.56	132.96	141.42	153.59	165.39
Difference between the Panel's decision and ACTEW's proposal	***-18.29***	***-19.03***	***-21.56***	***-24.01***	***-25.26***

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, pxxiii and ACTEW, Statement of Facts and Contentions, 31 July 2014, Attachment 1 and Attachment 2, updated to reflect changes to the opening value of water assets as advised by ACTEW on 1 September 2009.

13. 5 'True up' adjustment

As Chapter 7 discussed, the Panel decided that when calculating water and sewerage charges it should take into account the value of any over or under recovery of revenue by ACTEW in the first two years of the regulatory period. The Panel calculated the value of the 'true-up' adjustment as the difference between:

- the Panel's draft decision on ACTEW's net revenue requirement for water and sewerage services in 2013-14 and 2014-15 (adjusted to account for the difference in taxes that would be payable if the ICRC's prices applied in the first two years), and
- the net revenue that ACTEW is expected to earn from the provision of water and sewerage services in 2013-14 and 2014-15 given:
  - the water and sewerage charges adopted by the ICRC in these two years, and
  - outturn demand in 2013-14 and expected demand in 2014-15 (see Chapter 12).

Table 13.7 sets out this calculation and the Panel's draft decision on the value of the 'true up' for 2013-14 and 2014-15 that needs to be taken into account in the last three years of the regulatory period. The calculations underlying the Panel's estimate of the net revenue ACTEW will earn in 2013-14 and 2014-15 are set out in Table 13.8.

Table 13.7: Draft decision – 'True up' adjustment 2013-14 and 2014-15 ($m, nominal)

	2013-14	2014-15
Water		
(a) Net revenue requirement	165.46	175.41
(b) Adjustment to reflect modified net tax liabilities	1.50	2.80
(c) Adjusted net revenue requirement ((a)+(b))	166.96	178.21
(d) Net revenue expected to be earned by ACTEW	169.55	186.30
(e) True-up ((c)-(d)) (Negative: over recovery, Positive: under recovery)	**-2.59**	**-8.10**
Sewerage		
(a) Net revenue requirement	109.27	113.93
(b) Adjustment to reflect modified net tax liabilities	-0.26	-0.23
(c) Adjusted net revenue requirement ((a)+(b))	109.02	113.70
(d) Net revenue expected to be earned by ACTEW	109.01	114.69
(e) True-up ((c)-(d)) (Negative: over recovery, Positive: under recovery)	**0.26**	**-0.76**

Table 13.8: Net revenue expected to be earned by ACTEW in 2013-14 and 2014-15

	2013-14			2014-15			2013-14 and 2014-15
	Charges	Outturn Demand1	Revenue ($ million)	Charges	Expected Demand2	Revenue ($ million)	Total Revenue ($ million)
Water							
Fixed ($ pa)	$100	162,951	**$16.30**	$102.56	166,992	**$17.13**	**$33.42**
Tier 1 ($/kL)	$2.55	23,760,000	**$60.59**	$2.64	24,069,261 kL	**$63.54**	**$124.13**
Tier 2 ($/kL)	$5.10	18,170,000	**$92.67**	$5.29	19,968,689 kL	**$105.63**	**$198.30**
Total	na	na	**$169.55**	na	na	**$186.30**	**$355.85**
Sewerage							
Supply charge ($ pa)	$492.02	162,609	**$80.01**	$505.41	166,678	**$84.24**	**$164.25**
Fixtures charge – non-residential customers ($ pa)	$481.18	60,274	**$29.00**	$494.28	61,597	**$30.45**	**$59.45**
Total	na	na	**$109.01**	na	na	**$114.69**	**$223.70**

ACTEW, Information return: demand forecasts, 15 August 2014.

Based on outturn customer numbers, billable fixtures and water sales in 2013-14 and forecasts for 2014-15 (see Table 12.1).

As Table 13.17 shows, ACTEW is expected to earn approximately:

- $10.6 million more revenue from the provision of water services in 2013-14 and 2014-15 than the adjusted net revenue requirement. This over recovery stems from the fact that outturn demand was much higher in 2013-14 than the ICRC projected when setting prices (42 GL versus 38 GL) and is expected by Cardno to be even higher in 2014-15 (44 GL versus 38 GL).
- $0.5 million more revenue from the provision of sewerage services in 2013-14 and 2014-15 than the adjusted net revenue requirement. This over recovery stems from the fact that sewerage customer numbers and billable fixture numbers are expected to be higher in 2014-15 than was assumed by the ICRC (see Table 12.7).

14 Prices for water and sewerage services

In making its draft decision on the maximum water and sewerage charges and price path for this regulatory period, the Panel:

- maintained the current tariff structure, in line with its decision in Chapter 5 that the tariff structure was outside the scope of this review due to time constraints
- adopted the maximum prices determined by the ICRC's original price direction for the first two years of the period (see Chapter 7)
- set prices for the remaining three years of the period consistent with enabling ACTEW to recover the net revenue requirement set out in Chapter 13 (adjusted for the value of the 'true up') given the demand forecasts set out in Chapter 12, and
- selected a price path for the remaining three years of the period consistent with providing stable prices in the current period and into the next regulatory period (consistent with clause 1(e) of the original terms of reference).

The section below provides an overview of the Panel's draft decision on the maximum water and sewerage charges and price path for this regulatory period, and its estimate of indicative maximum charges under this decision. The subsequent sections discuss this draft decision in more detail.

14. 1 Overview of the Panel's draft decision

The Panel's draft decision is to adopt the maximum water and sewerage charges and price path set out in Table 14.1.

Table 14.1: Draft decision – Maximum water and sewerage charges and price path

	2013-14	2014-15	2015-16	2016-17	2017-18
	Prices payable under original price direction		Price path for remaining years*		
Water					
Fixed ($ pa)	100	102.56	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)
Tier 1 (0-200 kL pa) ($/kL)	2.55	2.64	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)
Tier 2 (0-200 kL pa) ($/kL)	5.10	5.29	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)
Sewerage					
Supply charge ($ pa)	492.02	505.41	(1+CPI)×(1+2.4%)	(1+CPI)	(1+CPI)
Fixtures charge – non-residential customers ($ pa)	481.18	494.28	(1+CPI)×(1+2.4%)	(1+CPI)	(1+CPI)

* Also subject to operation of cost pass-through mechanism.

If it is assumed that the cost pass-through mechanism described in section 6.5 is not triggered and the inflation rate (CPI) in the last three years of the regulatory period is 2.5% pa, then this price path will result in:

- a **5.2% reduction** in water charges in 2015-16 with charges to then remain constant in nominal terms in the remaining two years, and
- a **4.9% increase** in sewerage charges in 2015-16 and charges rising by CPI in the remaining two years.

14. 2 Water price path and indicative maximum charges

The tariff structure for water services consists of:

- a fixed supply charge, and
- a two-tier inclining block volumetric price, with tier 1 prices applying to consumption between 0 and 584L/day[230] and tier 2 prices applying to consumption in excess of 548L/day.

As previously discussed, the Panel adopted the prices payable under the ICRC's original price direction for 2013-14 and 2014-15, and set maximum water charges for the remaining three years using the method set out in Chapter 7. In simple terms, this method involves dividing:

- the present value of ACTEW's net revenue requirement for water services between 1 July 2015 and 30 June 2018 (see Table 13.5) *plus* the present value of the 'true-up' adjustment (see Table 13.7),[231,232] *by*
- the expected demand for water services (water customer numbers and tier 1 and tier 2 water sales) over the period 1 July 2015 – 30 June 2018 (see Table 12.1).

The Panel identified several different price paths that would allow ACTEW to recover the net revenue requirement by the end of the regulatory period.[233] It decided to adopt the maximum charges and price path set out in Table 14.2 to minimise price fluctuations within the remainder of the regulatory period.

Table 14.2: Draft decision – Water charges price path

	2013-14	2014-15	2015-16	2016-17	2017-18
	Prices payable under original price direction		Price path for remaining years*		
Water					
Fixed ($ pa)	100	102.56	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)
Tier 1 (0-200 kL pa) ($/kL)	2.55	2.64	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)
Tier 2 (0-200 kL pa) ($/kL)	5.10	5.29	(1+CPI)×(1-7.5%)	(1+CPI)×(1-2.4%)	(1+CPI)×(1-2.4%)

* Also subject to operation of cost pass-through mechanism.

Table 14.3 sets out the **indicative** water charges payable over the remaining three years of the period, assuming an inflation rate (CPI) of 2.5% pa and no material changes in ACTEW's costs or Government charges (eg, the WAC and UNFT) that would trigger the cost pass-through mechanism described in section 6.5. It shows that the indicative charges for 2015-16 are approximately 5.2% lower than the 2014-15 charges payable under the ICRC's original price direction. This is due to two factors:

- First (and most significantly), although the Panel's draft decision on the net revenue requirement for water services is higher than the ICRC's final decision, its draft decision on water sales forecasts is 6 to 8 GL (15-20%) higher than the forecasts used by the ICRC to calculate prices in 2013-14 and 2014-15.

230 Equivalent to 50kL per quarter or 200kL pa.

231 The term 'true-up' is used in this context to refer to the difference between ACTEW's 2013-14 and 2014-15 net revenue requirement and the revenue that is expected to be earned in these two years under prices set by ICRC.

232 A negative true-up means that there has been an over recovery in the first two years of the regulatory period.

233 For example, the Panel could set a 6.5% price decrease in 2014-15, followed by CPI price increases in each of the two subsequent years. However, this price path would mean that prices would have decreased in 2013-14, increased in 2014-15, fallen in 2015-16, and increased in 2016-17 and 2017-18. Alternatively, the Panel could specify a price path of annual 2% price reductions. However, this price path would result in prices in 2017-18 that are lower those required to recover the revenue requirement in 2017-18, meaning that prices would likely need to rise in the following regulatory period.

- Second, ACTEW is expected to earn approximately $10.6 million more revenue than the net revenue requirement for these two years (see Table 13.7). The 'true up' adjustment takes this over recovery into account, effectively reducing the revenue that needs to be recovered through prices in the balance of the regulatory period.

Table 14.3: Draft decision – Indicative maximum water charges ($, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
	Prices payable under original price direction		Indicative estimates		
Water					
Fixed ($ pa)	100.00	102.56	97.21	97.21	97.21
Tier 1 (0-200 kL pa) ($/kL)	2.55	2.64	2.50	2.50	2.50
Tier 2 (0-200 kL pa) ($/kL)	5.10	5.29	5.01	5.01	5.01
% Change on Previous Year					
Fixed ($ pa)	0.2%	2.6%	-5.2%	0.0%	0.0%
Tier 1 (0-200 kL pa) ($/kL)	4.9%	3.5%	-5.2%	0.0%	0.0%
Tier 2 (0-200 kL pa) ($/kL)	4.9%	3.7%	-5.2%	0.0%	0.0%

Note: Indicative estimates assume inflation of 2.5% pa and no material changes in costs or Government charges that would trigger the cost pass-through mechanism.

ACTEW's SOFC did not set out its proposed water or sewerage charges because it argued that these charges should be calculated on an annual basis using updated demand forecasts (and correcting for any under or over recovery from the previous year). However, the Panel requested that it provide the prices implied by the proposed revenue requirement in its SOFC and submission on demand forecasts, and ACTEW eventually provided this information (see Table 14.4).

The indicative water charges under the Panel's draft decision are 20%–28% **lower** than those implied by ACTEW's SOFC. This reflects:

- the $153 million difference between the Panel's draft decision on the net revenue requirement for water services and ACTEW's SOFC proposal ($900 million versus $1.053 billion – see Chapter 13), and
- the 1.5 GL to 3.2 GL difference between the Panel's draft decision on water sales forecasts and ACTEW's submission on demand forecasts (see Chapter 12).

Table 14.4: ACTEW SOFC – Implied water charges ($, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Fixed ($ pa)	122.12	125.17	128.30	131.51	134.80
Tier 1 (0-200 kL pa) ($/kL)	2.97	3.05	3.12	3.20	3.28
Tier 2 (0-200 kL pa) ($/kL)	5.95	6.09	6.25	6.40	6.56

Source: ACTEW spreadsheet entitled ACTEW Prices Implied by SOFC and Water Sales Forecasts – ACTEW updates 14Oct2014.xlsm.

14. 3 Sewerage price path and indicative charges

The tariff structure for sewerage services consists of:

- a fixed supply charge, and
- a fixtures charge for non-residential customers, which is payable per flushing fixture in excess of two fixtures.

As for water charges, the Panel adopted the sewerage prices payable under the ICRC's original price direction for 2013-14 and 2014-15, and set the maximum sewerage charge price path for the remaining three years using the method set out in Chapter 7.

In a similar manner to water, the Panel identified several different price paths that would allow ACTEW to recover the net revenue requirement for sewerage services by the end of the period (net of the value of the true-up adjustment). It decided to adopt the maximum charges and price path set out in Table 14.5 having regard to:

- the stability of combined water and sewerage bills for the remainder of the current regulatory period, and
- the potential impact on price fluctuations changes going into the next regulatory period.

Table 14.5: Draft decision – Maximum sewerage charges and price path

	2013-14	2014-15	2015-16	2016-17	2017-18
	Prices payable under original price direction		Price path for remaining years*		
Supply charge ($ pa)	492.02	505.41	(1+CPI)×(1+2.4%)	(1+CPI)	(1+CPI)
Fixtures charge – non-residential customers ($ pa)	481.18	494.28	(1+CPI)×(1+2.4%)	(1+CPI)	(1+CPI)

* Also subject to operation of cost pass-through mechanism.

Table 14.6 provides the Panel's indicative estimates of sewerage charges in the last three years of the regulatory period, which have been calculated assuming an inflation rate (CPI) of 2.5% pa and the cost pass-through mechanism described in section 6.5 is not triggered.

Table 14.6: Draft decision – Indicative maximum sewerage charges ($, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
	Prices payable under original price direction		Indicative estimates*		
Sewerage					
Supply charge ($ pa)	492.02	505.41	530.34	543.60	557.18
Fixtures charge ($ pa)	481.18	494.28	518.66	531.62	544.91
% Change on Previous Year					
Supply charge ($ pa)	-18.1%	2.7%	4.9%	2.5%	2.5%
Fixtures charge ($ pa)	-18.1%	2.7%	4.9%	2.5%	2.5%

*Note: Indicative estimates assume inflation of 2.5% pa and no material changes in costs or Government charges that would trigger the cost pass-through mechanism.

In contrast to water charges, the Panel's indicative sewerage charges for 2015-16 are around 4.9% higher than the 2014-15 charges payable under the ICRC's original price direction. This reflects the following factors:

- the Panel's draft decision on the net revenue requirement for sewerage services is higher than that used by the ICRC to set prices in 2013-14 and 2014-15
- the revenue over recovery for sewerage services (ie, the value of the 'true-up' adjustment) in the first two years is smaller than that for water services, and
- the difference between the Panel's and ICRC's final decision on sewerage customer and fixture forecasts is not as significant as it is for water sales.

Table 14.7 sets out the sewerage charges that ACTEW informed the Panel could be inferred from its SOFC proposal. The Panel's indicative sewerage charges are 14% **lower** than those implied by ACTEW's SOFC. The difference in this case reflects:

- the $110 million difference between the Panel's draft decision on the net revenue requirement for sewerage services over the regulatory period and ACTEW's SOFC proposal ($611 million versus $721 million – see Chapter 13), and
- the small difference between the Panel's draft decision on sewerage customer numbers and billable fixtures and ACTEW's demand forecast (see Chapter 12).

Table 14.7: ACTEW SOFC – Implied sewerage charges ($, nominal)

	2013-14	2014-15	2015-16	2016-17	2017-18
Supply charge ($ pa)	588.03	602.74	617.80	633.25	649.08
Fixtures charge ($ pa)	575.08	589.46	604.20	619.30	634.78

Source: ACTEW spreadsheet entitled ACTEW Prices Implied by SOFC and Water Sales Forecasts – ACTEW updates 14Oct2014.xlsm.

15 Effect on customers, inflation and ACTEW's financial viability

Before making its draft decision on the water and sewerage charges set out in Chapter 14, the Panel assessed whether the level of these prices is appropriate, having regard to the impacts they are likely to have on:

- residential and non-residential customers (social impacts)[234]
- general price inflation,[235] and
- ACTEW's financial viability.[236]

The sections below provide an overview of the Panel's assessment, and then discuss its findings on each impact in more in more detail.

15. 1 Overview of the Panel's assessment

The Panel's assessment is that the water and sewerage charges set out in Chapter 14 are likely to have minor impacts on customers if it assumed that inflation remains around 2.5% and there are no material changes in ACTEW's costs or Government charges (eg, the WAC and UNFT) that would trigger a cost pass-through. In particular:

- **For residential customers**, these prices are likely to result in relatively stable annual bills over the regulatory period, and are unlikely to have a material impact on the bills faced by vulnerable consumers or the number of customers seeking assistance from financial hardship programs. For a typical residential customer using 200kL of water per annum, the annual bill is expected to be approximately:
  - 2% **higher** in 2018-19 than the equivalent bill today, and
  - 3% **lower** in 2018-19 than the equivalent bill in 2012-13.
- **For non-residential customers**, the prices are expected to result in bill impacts that range from a 7% decrease to a 2% increase over the five-year period.

In addition, the Panel's assessment is the prices are expected to have no material effect on general inflation, and are consistent with ACTEW remaining financially viable and able to continue to operate, maintain, renew and develop the assets required to deliver its water and sewerage services.

Based on this assessment, the Panel is satisfied that the water and sewerage charges set out in Chapter 14 do not need to be modified to ameliorate undesirable impacts on customers, general inflation or ACTEW's financial viability.

15. 2 Effect on residential customers

To better understand the effect that the water and sewerage charges set out in Chapter 14 are likely to have on residential customers, the Panel has examined:

234 This is consistent with section 20(2)(g) of the Act, which requires the Panel to consider the social impacts of the decision.

235 This is consistent with section 20(2)(j) of the Act, which requires the Panel to consider the effect on general price inflation over the medium term.

236 This is consistent with section 20(2)(i) of the Act, which requires the Panel to consider the borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry.

- the change in annual water and sewerage bills that will occur as a result of its draft decision for varying levels of water consumption
- the likely impact on vulnerable customers
- the extent to which the annual water and sewerage bill payable by a typical residential customer in the ACT differs from that payable in other jurisdictions, and
- the relative change in water and sewerage charges in the ACT over the last 10 years compared with what has occurred in other jurisdictions.

15.2.1 Changes in water and sewerage bills

- Table 15.1 sets out combined water and sewerage bills for residential customers (with varying levels of water consumption) over the five-year regulatory period. The indicative bills for 2015-16, 2016-17 and 2018-19 assume inflation of 2.5% per annum and that there are no material changes in ACTEW's costs or Government charges (eg, the WAC and UNFT) that would trigger the cost pass-through mechanism.
- This table shows that in 2017-18, the annual bill for a typical residential customer using 200kL of water per annum is likely be around 2% higher than the equivalent bill today and 3% lower than the equivalent bill in 2012-13 (see grey shaded cells). The table also shows that annual bills for all residential customers except those consuming in excess of 500kL of water are likely to fall over the regulatory period.

Table 15.1: Indicative impacts on residential water and sewerage bills ($, nominal)

Annual water consumption (kL)	Annual bill						Change from current bill (2014-15 to 2017-18)	Change over regulatory period (2012-13 to 2017-18)
		Prices set by the ICRC and paid by customers		Panel Draft Decision indicative estimates*				
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18		
50 kL	822	720	740	753	766	780	40	-42
% change		*-12%*	*3%*	*2%*	*2%*	*2%*	*5%*	*-5%*
100 kL	943	847	872	878	891	905	33	-39
% change		*-10%*	*3%*	*1%*	*2%*	*2%*	*4%*	*-4%*
150 kL	1,065	975	1,004	1,003	1,016	1,030	26	-35
% change		*-8%*	*3%*	*0%*	*1%*	*1%*	*3%*	*-3%*
200 kL	1,209	1,125	1,160	1,151	1,164	1,178	18	-31
% change		*-7%*	*3%*	*-1%*	*1%*	*1%*	*2%*	*-3%*
250 kL	1,429	1,357	1,400	1,379	1,392	1,406	5	-24
% change		*-5%*	*3%*	*-2%*	*1%*	*1%*	*0%*	*-2%*
300 kL	1,672	1,612	1,665	1,629	1,643	1,656	-9	-16
% change		*-4%*	*3%*	*-2%*	*1%*	*1%*	*-1%*	*-1%*
400 kL	2,158	2,122	2,194	2,131	2,144	2,158	-36	-1
% change		*-2%*	*3%*	*-3%*	*1%*	*1%*	*-2%*	*0%*
500 kL	2,644	2,632	2,723	2,632	2,645	2,659	-64	15
% change		*0%*	*3%*	*-3%*	*1%*	*1%*	*-2%*	*1%*
750 kL	3,859	3,907	4,045	3,886	3,899	3,913	-133	53
% change		*1%*	*4%*	*-4%*	*0%*	*0%*	*-3%*	*1%*

*Note: Indicative bills assume inflation of 2.5% pa and no material changes in costs or Government charges that would trigger the cost pass-through mechanism.

15.2.2 Impacts on vulnerable customers

The Panel recognises that difficulties in paying water and sewerage bills can place considerable stress on some households. However, in light of the modest bill impacts discussed above, the Panel considers the prices set out in Chapter 14 are unlikely to have a material impact on vulnerable consumers.

The Panel notes that there are programs in place to assist households facing difficulties paying water and sewerage bills. For example:

- The ACT Government provides a rebate on water charges for eligible applicants.[237]
- ACTEW's *Staying Connected* program includes provisions for flexible and affordable payment plans and stops recovery action while eligible customers are on the program.
- Hardship assistance is also available through application to the ACT Civil and Administrative Tribunal (ACAT) for those water and sewerage customers who have had their supply disconnected – or been given a notice or warning about disconnection – because of unpaid accounts. In 2013-14, ACAT received 81 applications for this assistance.

Because bill impacts are modest, the Panel does not expect its pricing decision to contribute to greater numbers of customers seeking hardship assistance.

15.2.3 Comparison with bills payable in other jurisdictions

Table 15.2 compares the annual water and sewerage bill for a residential customer consuming 200kL of water payable in the ACT (under the Panel's draft decision) and in other jurisdictions (under their current regulatory decision).[238] The Panel has estimated the bills for future years where the regulated price path allows reasonable estimates to be made. While comparisons between jurisdictions should always be treated with caution,[239] this table suggests that water and sewerage bills in the ACT are not out of line with those payable in other jurisdictions.

237 Eligible applications are the primary holder of the following concession cards: Centrelink Pensioner Concession Card, Centrelink Low Income Health Care Card, Veteran's Affairs Pensioner Card, DVA Gold Card holders and asylum seekers.

238 The Panel received a submission from the Executive Committee of the Units Plan 999 (UP999) owners' corporation, which raised a number of concerns about the affordability of water and sewerage bills in the ACT. The UP999 submitted its own bills analysis to demonstrate that the "ACT has the highest charges" when compared to other major Australian utilities. However, in this analysis, the bills in four of the five comparative jurisdictions were underestimated. The Panel has therefore conducted its own comparative analysis.

Executive Committee UP999, Submission on the Review of ICRC Price Direction for Regulated Water and Sewerage, 15 August 2015

239 This is because bill calculations rely on many assumptions about a range of diverse parameters, including consumption profiles, property values and the operation of pass-through mechanisms.

Table 15.2: Major utility annual water and sewerage bills ($, nominal)

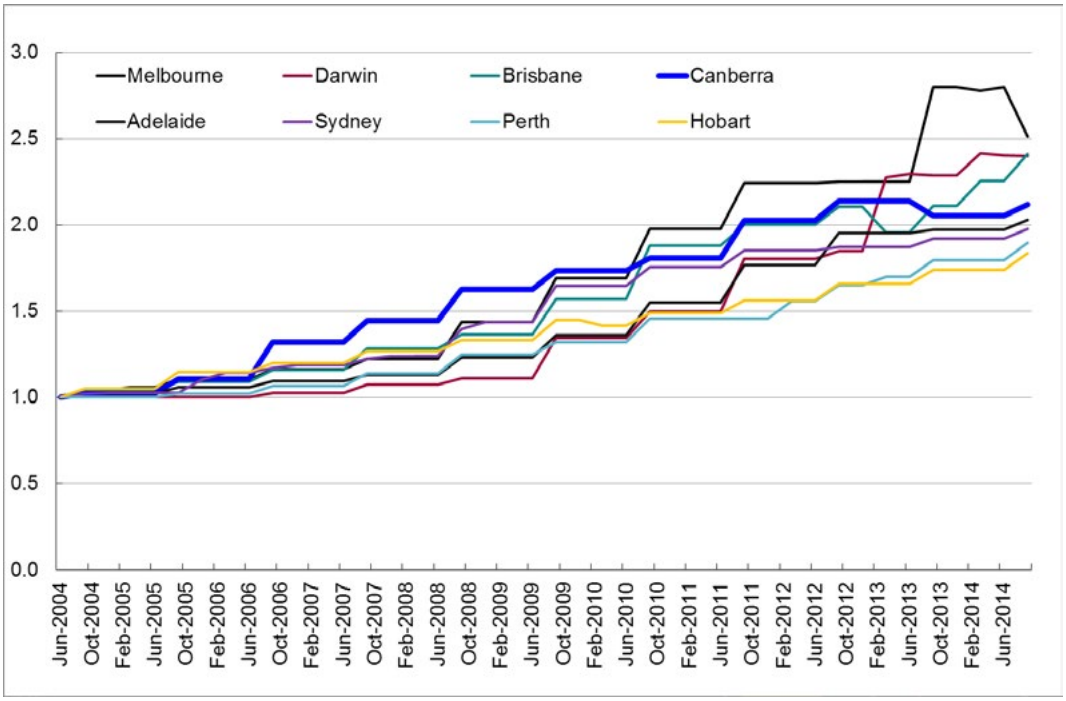
	NWC	Panel Estimates				
Utility	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
TasWater	943	994	1,047			
City West Water	963	1,165	1,067	1,091	1,119	1,147
Hunter Water	1,026	1,049	1,079	1,075	1,075	
Barwon Water	1,154	1,164	1,129	1,109	1,109	1,110
Sydney Water	1,116	1,130	1,153	1,120		
ACTEW (ICRC / Panel's draft decision from 2015-16)	1,209	1,125	1,160	1,151	1,164	1,178
South East Water	1,021	1,279	1,195	1,225	1,256	1,287
WC (Perth)	1,120	1,249	1,228			
Yarra Valley Water	1,106	1,366	1,264			
Queensland Urban Utilities	1,218	1,267	1,353			
ACTEW SOFC proposal		1,332	1,365	1,399	1,434	1,470
SA Water (Adelaide)	1,387	1,344	1,369			
Unitywater	1,407	1,338	1,421			
Gold Coast Water	1,544	1,616	1,697			

Source: National Water Commission, utility websites.

15.2.4 Relative change in water and sewerage bills over the last 10 years

Figure 15.1 shows the 10-year relative change for water and sewerage prices in each of Australia's eight capital cities, as measured by the Australian Bureau of Statistics' 'water and sewerage' CPI sub-group. It shows that the price of water and sewerage services in Canberra has approximately doubled over the last decade (~7.6% pa increase), and that this is consistent with the experience across Australia over that period.

Figure 15.1: 10-year relative water and sewerage price change



Source: Australian Bureau of Statistics, series 6401.0 Consumer Price Index.

15. 3 Effect on non-residential customers

- To assess the effect that the water and sewerage charges set out in Chapter 14 are likely to have on non-residential customers, the Panel has examined the average annual water and sewerage bill that will be payable by non-residential customers with varying water consumption levels and billable fixture numbers. As with the residential customer bill analysis, the indicative bills for 2015-16, 2016-17 and 2018-19 assume inflation of 2.5% per annum and that there are no material changes in ACTEW's costs or Government charges that would trigger the cost pass-through mechanism.The results of this analysis are set out in Table 15.3.

Table 15.3: Indicative impacts on non-residential water and sewerage bills ($, nominal)

Annual water consumption (kL)	Number of billable fixtures	Annual bill						Change from current bill (2014-15 to 2017-18)	Change over regulatory period (2012-13 to 2017-18)
			Prices set by the ICRC and payable by customers		Panel Draft Decision indicative estimates*				
		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18		
1,000	10	10,949	9,994	10,311	10,326	10,469	10,615	3%	-3%
	50	34,445	29,241	30,082	31,072	31,734	32,412	8%	-6%
	100	63,816	53,300	54,796	57,005	58,315	59,658	9%	-7%
2,000	10	15,809	15,094	15,601	15,340	15,483	15,629	0%	-1%
	50	39,305	34,341	35,372	36,086	36,748	37,426	6%	-5%
	100	68,676	58,400	60,086	62,019	63,329	64,672	8%	-6%
5,000	10	30,389	30,394	31,471	30,383	30,526	30,672	-3%	1%
	50	53,885	49,641	51,242	51,129	51,791	52,469	2%	-3%
	100	83,256	73,700	75,956	77,062	78,372	79,714	5%	-4%
10,000	10	54,689	55,894	57,921	55,454	55,596	55,743	-4%	2%
	50	78,185	75,141	77,692	76,200	76,861	77,540	0%	-1%
	100	107,556	99,200	102,406	102,133	103,443	104,785	2%	-3%

*Note: Indicative bills assume inflation of 2.5% pa and no material changes in costs or Government charges that would trigger the cost pass-through mechanism.

As this table shows, prices for non-residential customers are expected to remain relatively stable over the five years to 30 June 2018.

Bills for customers with large numbers of billable fixtures will rise at the highest rate over the remaining three years of the regulatory period. These customers are likely to see a maximum bill increase of around 4% in 2015-16, and then increases at the rate of inflation.

Across the various consumption bands, the bill impacts range from 7% decreases to 2% increases over the five years.

15. 4 Effect on inflation

To assess the effect the water and sewerage charges in Chapter 14 are likely to have on general price inflation, the Panel employed the approach IPART uses for similar assessments.[240] This involved multiplying:

- the contribution that water and sewerage costs in the ACT make to the consumer price index (CPI) (all groups, eight capital cities), by
- the annual average change in the water and sewerage bill for a customer consuming 200 kL per annum, measured in real terms.

Currently, water and sewerage costs in Canberra, contribute 0.02% towards the consumer price index (all groups, 8 capital cities).[241] Under the Panel's draft decision, the indicative annual average increase of a water and sewerage bill for a customer consuming 200 kL per annum is -3% (in real terms). Therefore, the approximate annual impact on general price inflation is a reduction in inflation of 0.0007% points.[242]

240 IPART, Final Report, Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services, June 2012, p. 186.

241 Australian Bureau of Statistics, Consumer Price Index 16th Series Weighting Pattern (cat. no. 6471.0).

242 0.02% x -3% = -0.0007% (all values rounded to one significant figure).

15. 5 Effect on ACTEW's financial viability

The building block methodology is designed to enable a regulated business to recover its efficient costs. Nevertheless, the resulting prices (in conjunction with other measures) may adversely affect the business' financial capacity and viability in the short-term.

Robust financial health of utility businesses is generally considered to be in the best interests of customers. If a service provider is not financially viable it may not be able to guarantee services to customers. Poor financial health may also lead to under-investment in assets and/or their maintenance, which could in turn lead to higher lifetime expenditure on assets (and consequently higher prices) and poorer quality services.

Therefore, the Panel explicitly tested how its draft direction is likely to affect ACTEW's financial position. To do this, the Panel used projected cash flows to calculate a selection of financial ratios over the regulatory period, and considered ACTEW's overall debt capacity. The financial ratios the Panel selected are similar to those used by the ESC and IPART in considering financial viability, and are based on measures used by Moody's in assessing the credit rating of regulated utilities. They are:

- Funds from operations (FFO) interest cover ratio, which provides an indication of ACTEW's ability to make interest payments.
- Net debt gearing ratio, which measures the proportion of ACTEW's overall regulatory capital structure that is made up by debt and provides an indication of its ability to repay its debt (or increase borrowings in the short term if required).
- FFO to net debt ratio, which provides an indication of whether ACTEW's debt servicing ability is improving, remaining stable or declining.
- Retained cash flow to capital expenditure ratio, which provides an indication of ACTEW's ability to finance a prudent portion of capex after paying dividends.

Table 15.4 sets out the target levels of the financial ratios used by ESC, IPART and OFWAT (UK) to assess financial viability, as well as those that NERA recently recommended the ESC use as target levels based on Ba and Baa credit ratings.

Table 15.4: Target levels of financial ratios

	ESC[243]	IPART[244]	OFWAT[245]	NERA[246]	
Target credit rating	Not Stated	Baa2		Ba	Baa
FFO interest cover	>1.5	1.7 - 2.5	3	1.8 - 2.5	2.5 - 4.0
Net debt gearing ratio	<70%	60% to 91%	<65%	70% to 85%	55% to 70%
FFO to net debt	>10%	6% to 10%	0.13	6% to 10%	10% to 15%
Retained cash flow to capital expenditure	>0.35	Not Stated	Not Used	0.5 to 1.0	1 to 1.5

The Panel has decided to adopt the target levels NERA recommended for a "Ba" rated business[247] (see grey shaded cells in Table 15.4) as a reference for assessing ACTEW's financial viability, noting that:

243 ESC, Assessing The Financial Viability of Victorian Water Businesses, Summary of views and proposed new indicator, June 2014.

244 IPART, Financeability tests in price regulation, Research - Final Decision, December 2013.

245 Ofwat, Financeability and Financing the Asset Base: A Discussion Paper, March 2011. The metrics for a combined water and wastewater business are shown.

246 NERA, Assessing the Financeability of Regulated Water Service Providers, A report for the Essential Services Commission, 30 October 2013.

247 ibid.

- the ratios are listed in order of importance, and
- only the 'bottom' of the range for each metric is relevant for assessing financial viability.

The results of the Panel's analysis of the effect that the water and sewerage charges set out in Chapter 14 will have on ACTEW's modelled financial ratios are set out in Table 15.5.

Table 15.5: ACTEW modelled financial ratios

	Target	2013-14	2014-15	2015-16	2016-17	2017-18
FFO interest cover	>1.8	2.14	2.29	2.15	2.12	2.10
Net debt gearing ratio	<85%	56%	57%	58%	62%	58%
FFO to net debt	>6%	6.3%	6.9%	6.3%	5.6%	5.6%
Retained cash flow to capex	>0.5	1.0	0.8	0.5	0.3	0.4

As this table shows, ACTEW satisfies the 'FFO interest cover' and 'net debt to RAB' ratios for the entire regulatory period. However, ACTEW fails to satisfy the target minimum ratios for 'FFO to net debt' and 'retained cash flow to capex' in the last two years of the regulatory period.

This outcome is not uncommon. The ESC specifically states that it does not expect a utility to achieve all the financial ratio benchmarks in every year. Moreover, the financial ratios are not given equal weight by Moody's or utility regulators. For example:

- Moody's weights 'FFO interest cover' and 'net debt to RAB' as three times more significant than the other ratios.[248]
- IPART weights 'FFO interest cover' and 'net debt to RAB' as more significant than the other ratios.[249]
- The ESC considers the 'FFO interest cover' ratio to be the primary indicator of financial viability.
- OFWAT does not use 'retained cash flow to capex' as an indicator. The target level adopted by the ESC for this indicator is much lower than the level expected for an investment grade credit rating.

Having regard to ACTEW's overall financial performance, the relative weight put on the measures by other regulators and financial institutions, and ACTEW's debt headroom, the Panel is satisfied that the charges set out in Chapter 14 are consistent with ACTEW remaining financially viable and being able to continue to operate, maintain, renew and develop the assets required to deliver services.

248 ibid, p. 12.

249 IPART, Financeability tests in price regulation, Research - Final Decision, December 2013, p. 11.

Appendix 1 Compliance with section 20(2) and the terms of reference

The table below provides an overview of where in the draft report, and how, the Panel has taken into account the matters set out in Section 20(2) and the terms of reference.

Table A1.1: Compliance with Section 20(2) and the terms of reference

Section 20(2)	Draft report chapter(s)	How the Panel has taken the matter into account
(g) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies (including policies relating to the level or structure of prices for services) and standard of regulated services	7	Consideration of the appropriate method to be used to determine prices, use of the building block methodology and similar principles to other regulators, which in broad terms are designed to mimic the price and service outcomes expected in a workably competitive market.
	9 and 10	Consideration of the efficient costs of service provision, including assessment of: • the prudence and efficiency of capital expenditure in the previous regulatory period • the reasonableness and sufficiency of capital expenditure governance in this regulatory period • the prudence and efficiency of forecast capital and operating expenditure in this regulatory period. Informed by independent expert advice.
	11	Consideration of the appropriate approach for setting the rate of return on capital.
	13	Consideration of the extent to which there has been an over or under recovery of revenue in the first two years of the regulatory period (the 'true-up' adjustment) and the removal of income from other sources from the total revenue requirement, to calculate the net revenue to be recovered through water and sewerage charges.
	15	Consideration of customer bill impact analysis.
(h) standards of quality, reliability and safety of the regulated services	9 and 11	Assessment of the prudence and efficiency of forecast capital and operating expenditure in this regulatory period, given current service obligations. Informed by independent expert advice.
(i) the need for greater efficiency in the provision of regulated services to reduce costs to consumers and taxpayers	6 and 7	Consideration of the appropriate method to be used to determine prices, including the potential for incentive schemes to be used in conjunction with the building block methodology in the future. Consideration of the appropriate form of price control, length of regulatory period and other risk allocation measures from the perspective of according ACTEW an incentive to seek out efficiencies.
	9 and 11	Consideration of the efficient costs of service provision, including assessment of: • the prudence and efficiency of capital expenditure in the previous regulatory period • the reasonableness and sufficiency of capital expenditure governance • the prudence and efficiency of forecast capital and operating expenditure in this regulatory period. Informed by independent expert advice.
(j) an appropriate rate of return on any investment in the regulated industry	10	Consideration of the appropriate approach for setting the return on capital, taking into account the requirements of the Act, the approach most commonly used by Australian regulators in applying the building block method (ie the benchmark entity approach), the requirement to comply with competitive neutrality principles and the conditions prevailing in financial markets at the time of the original price determination.

Section 20(2)	Draft report chapter(s)	How the Panel has taken the matter into account
(k) the cost of providing the regulated services	9, 10 and 11	Consideration of regulatory best practice with respect to determining the building block methodology inputs.
(l) the principles of ecologically sustainable development mentioned in subsection (5) of the Act	9 and 11	Consideration of environmental costs in capital and operating expenditure building blocks. Informed by independent expert advice.
(m) the social impacts of the decision	8	Consideration of the intergenerational equity issues posed by the water security projects.
	9 and 11	Consideration of regulatory treatment of CSOs identified by the ICRC
	15	Consideration of customer bill impact analysis.
(n) considerations of demand management and least cost planning	9	Consideration of forecast water demand over the regulatory period and capital planning processes. Informed by independent expert advice.
(o) the borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry	6, 8 and 15	Consideration of the impact on ACTEW's short-term financial viability, ie assessment of whether ACTEW will be able to maintain an investment grade BBB rating, during the regulatory period in the context of determining the level of the deadband, the treatment of the water security projects and the impact of water and sewerage charges.
(p) the effect on general price inflation over the medium term	15	Consideration of the estimated impact of water and sewerage prices on general inflation.
(q) any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person	11	Consideration of the cessation of the Utilities Management Agreement and the subsequent impact on efficient operating costs. Informed by independent expert advice.

Terms of reference	Draft report chapter(s)	How the Panel has taken the matter into account
(a) policies of the ACT Government as they relate to water security and the use of water	4	Consideration of the ACT Water Strategy (Released August 2014).
	8	Consideration of the costs of achieving the mandated level of water security in this regulatory period when assessing how the costs of the water security projects should be recovered.
(b) national water initiatives, policies and agreements	4	Consideration of the 2010 NWI pricing principles, which aim to ensure that pricing is used primarily to achieve economically efficient water use and water service provision, and to ensure the financial viability of water service providers.
(c) the impact of a price on carbon on the provision of water and sewerage services in the ACT	11	Consideration of how carbon costs are currently accounted for in ACTEW's expenditure forecasts and whether any downward adjustment is required following the abolition of the carbon price.
(d) the ability of the pricing path to match revenue recovery requirements to the consumer benefits accrued from the water security program	8	Consideration of the manner in which the costs of the water security projects should be recovered.

Terms of reference	Draft report chapter(s)	How the Panel has taken the matter into account
(e) all potential regulatory models, including consideration of the provision of sufficient flexibility in price setting across the regulatory period to minimise the impact of significant price fluctuations	6 and 7	Consideration of form of regulation issues, including measures to deal with risk and uncertainty over the regulatory period, and the appropriate method to be used to determine prices.
	14	Consideration of the need to minimise price fluctuations within and between regulatory periods when setting water and sewerage charges.
(f) the legislative requirements outlined in section 20 of the Act	See table above	
(g) any other matters considered relevant	None identified	

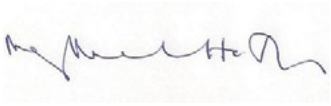
Appendix 2 Panel's charter

As part of its process, the Panel has developed and signed a charter that articulates how it intends to conduct itself during the course of the review. This charter covers areas such independence, openness, accessibility, pragmatism, efficiency, timeliness and respectfulness.

Box A2.1: Industry Panel Charter

Having been appointed to form an Industry Panel to review the ACT Independent Competition and Regulation Commission's water and sewerage price determination for the 2013-2019 regulatory period, we the undersigned:

1. Declare that none of us has any personal interest in, or predetermined views of, the outcomes of the review.
2. Commit that, in the conduct of this review, we will be:
   - a) Independent, balanced and fair
     - i. Ensure our decisions and processes do not reflect undue influences and are consistent with our statutory responsibilities
     - ii. Engage competent and independent advice where appropriate
     - iii. Give parties a right to be heard on all issues that are relevant to the review, including the opportunity to check for any errors of fact in Panel documents
   - b) Open and transparent
     - i. Ensure publication of all relevant material and advice
     - ii. Provide reader-friendly reports
     - iii. Give an accurate and fair account of facts and opinions, subject to maintaining the confidentiality of documents provided to the Panel in confidence
   - c) Accessible to all relevant stakeholders
     - i. Ensure our consultation processes provide stakeholders with reasonable opportunities for participation and are based on a reasonable timeframe
   - d) Pragmatic and practical
     - i. Adopt a pragmatic approach to the review
     - ii. Aim for pragmatic outcomes
   - e) Efficient
     - i. Ensure the costs of the review are reasonable and proportionate
     - ii. Use resources effectively and efficiently
     - iii. Where appropriate and feasible, draw on existing information
   - f) Timely
     - i. Balance the need for timely outcomes with the commitment to reasonable consultation timeframes and to ensuring thorough analysis of the issues
     - ii. Keep time commitments and meet deadlines
   - g) Respectful and considerate of all stakeholders and of each other



Mary Anne Hartley

Sally Farrier

Claire Thomas

Appendix 3 List of submissions

This appendix lists the submissions that have been received by the Panel to date. Copies of all submissions are available from the Panel's website:

http://apps.treasury.act.gov.au/industrypanel

Submissions made in response to the Panel's Approach Paper (released on 30 June 2014)

- ACT Civil and Administrative Tribunal
- ACTEW Corporation
- Executive Committee UP999
- Mr S Crawford
- Ratepayers' Association of the ACT Inc.

Submissions made following the Panel's Directions Hearing (held on 25 July 2014)

- ACTEW Corporation – Statement of Facts and Contentions
- Mr K Cox
- Mr S Crawford
- Executive Committee UP999
- Dr T Dwyer
- Ms J Forestier

Appendix 4 Incentive schemes

The Panel is aware that regulators sometimes use the building block methodology in conjunction with other incentive schemes to overcome some of its perceived deficiencies, such as information asymmetry, regulatory costs and different incentives over the period.

An overview of some of the schemes that regulators in Australia and the UK have used to overcome some of the perceived deficiencies of the building block methodology is provided below.

A4. 1 Expenditure incentive schemes (operating and capital expenditure)

Under the standard building block model, the regulated service provider has an incentive to provide the regulated services for less than the forecasts adopted by the regulator because it will retain the benefits of any underspend and incur the costs of any overspend within the regulatory period. Because any efficiency benefits must be passed onto customers at the commencement of the next regulatory period, a regulated service provider will have a greater incentive to pursue efficiencies in the early years of the regulatory period and a lower incentive in the later years of the regulatory period.

To address this issue, regulators in some industries, have implemented:

- an operating expenditure incentive scheme, and/or
- a capital expenditure incentive scheme.

For example, the AER has implemented an operating expenditure efficiency sharing scheme that allows a network business to retain any underspend for six years, regardless of the year it occurred. After six years the benefit is returned to consumers through lower operating expenditure and prices. Under this scheme, the sharing ratio for efficiency savings or losses is approximately 30:70 between the network businesses and consumers. So if a network business is able to achieve a $100 saving it can keep $30 of the benefit while consumers get the remaining $70.

The AER's capital expenditure incentive scheme operates in a similar way. When coupled with an *ex post* capex review, the operation of this scheme means consumers only pay a portion of efficient overspends, pay nothing for inefficient overspends, and share in the benefits of any underspend.

Another measure that Ofwat has implemented to address the bias that regulated service providers may otherwise have towards capital expenditure is to assess the efficiency of total expenditure ('totex'), rather than capital and operating expenditure separately. As part of the totex approach, Ofwat includes a significant proportion of totex in the RAB and allows the remainder to be recovered annually.

A4. 2 Menu regulation

The UK's energy regulator, Ofwat, has sought to address information asymmetry and gaming issues by providing regulated water businesses with incentives to both forecast costs accurately and reveal their efficient costs. Under Ofwat's scheme, regulated service providers are offered a menu of rewards/penalties, which differ depending on:

- the extent to which the regulated service provider expects to lower its costs relative to Ofwat's baseline forecast, and
- how the regulated service provider performs relative to its forecast.

The structure of the rewards and penalties under this scheme is designed to give regulated businesses a strong incentive to forecast and achieve efficiencies. The framework also provides incentives to forecast costs accurately, reducing the need for Ofwat to carry out detailed expenditure reviews.

A4. 3 Service incentive schemes

To try and counter the incentive that regulated businesses may have to pursue cost efficiencies at the expense of service quality, regulators in some industries have implemented service-based incentive schemes. While the form of these schemes can differ, they are typically designed to encourage regulated service providers to either improve service performance where customers are willing to pay for those improvements, or ensure that service standards don't fall below a defined service level.

Appendix 5 Risk allocation tools used in recent regulatory decisions

The table below provides an overview of the length of the regulatory period, form of control and other risk allocation tools that Australian regulators have used in recent water and sewerage decisions.

Table A5.1: Summary of tools used in recent regulatory decisions

			Treatment of demand related risks		Treatment of expenditure related risk		
	Length of regulatory period	Treatment of unforeseen events	Form of Control	Other Tools	CPI escalation	Cost pass-through mechanism	Capex re-opener provision
ESC 2013 Water Review (Regional Urban and Metropolitan Water Businesses)	Metropolitan: 3 years Melbourne Water and 5 years for others Regional: 5 years	Uncertain and unforeseen events mechanism. This mechanism allows the ESC to re-open the price determinations to account for events that were uncertain or unforeseen at the time of the price review.	Water Industry Regulatory Order allows businesses to propose the form of control. Metropolitan businesses: mix of price (weighted average price cap and individual price caps) and revenue caps adopted. In some cases constraints have been imposed on the level of price change that can occur. Regional businesses: mix of price and revenue caps adopted. In some cases constraints have been imposed on the level of price change that can occur.	The uncertain and unforeseen events mechanism provides for re-opening if there is a material difference between actual and forecast demand in one or more years.	Yes	Yes dealt with through the uncertain and unforeseen events mechanism.	The uncertain and unforeseen events mechanism provides for re-opening if there are changes in the timing or scope of expenditure on major projects.
ESCOSA 2013 SA Water and Sewerage	3 years	Re-opening allowed in exceptional circumstances (ie, to prevent SA Water experiencing financial distress or to ensure customers are not paying prices that are excessively above cost)	Average revenue cap with intra period revenue adjustment to correct for material demand variations during the period required by SA Gvt pricing order. The revenue adjustment mechanism only allowed 30% of the difference between actual and forecast revenue to be recovered in the subsequent period. Average revenue cap used because ESCOSA concluded SA Water should bear volume risk.	na	Yes	Yes for changes in legal obligation and extraordinary events. Must be material and beyond the control of SA water. Costs to be recovered in subsequent period.	No
IPART 2012 Sydney Water Water, sewerage, drainage and other services	4 years	Not specifically referred to but IPART reportedly has the power to make a new determination when circumstances have changed so as to render a determination no longer appropriate.	Hybrid price and revenue cap Individual price caps set for each year but if there is a material deviation in demand (+/-10%) the demand volatility adjustment mechanism will be triggered and under or over recoveries of revenue in excess of a 10% deadband will be accounted for in the next period.	Demand volatility adjustment used to address risk of significant variation in water sales	Yes	Only for costs associated with the operation of the desalination plant if it is required in the regulatory period.	No

	Length of regulatory period	Treatment of unforeseen events	Treatment of demand related risks		Treatment of expenditure related risk		
			Form of Control	Other Tools	CPI escalation	Cost pass-through mechanism	Capex re-opener provision
QCA 2013 Sun Water and Seqwater Irrigation Price Review	5 years	Price review trigger – allows prices to be reviewed in regulatory period if there are material differences between forecast and actual costs that can't be managed and could not have been reasonably forecast.	Hybrid price and revenue cap Price cap with end of period adjustment that allows for recoupment of unrecovered efficient costs in limited circumstances. QCA noted that Sun Water and Seqwater cannot manage short term volume risk so the risk should be allocated to customers 'through cost reflective tariffs'.	Cost reflective tariffs – two part tariff with fixed costs recovered through fixed tariff and variable costs through volumetric tariff.	Yes	Yes - variations in government imposts can be immediately passed through (depending on materiality). Price review trigger may also allow other costs to be passed through but it must be material and beyond the control of service provider.	Only through price review trigger.
QCA 2010 Gladstone Area Water Board (GAWB) (bulk raw and potable water)	5 years	Price review trigger - if there is, or expected to be, a sustained variation in aggregate revenues of at least 15%. Ability to re-price and recover efficient drought mitigation costs when restrictions are imposed.	Price cap	Two-part tariffs with large component effectively fixed (being based on contract quantities). Long-term contracts with customers reduce downside risk for GAWB.	Yes	Yes - change in taxation and government charges passed through without reference to materiality. Costs associated with changes in compliance requirements or changes in law passed through subject to materiality (1% of annual revenue requirement).	No
ACCC 2014 State Water (bulk water in MDB)	3 years Term imposed by Water charge (Infrastructure) Rules for first review (4 years in subsequent reviews)	The WCI Rules allow State Water to apply for a variation of a determination if an unforeseen event occurs that materially and adversely affects its infrastructure or business	Hybrid price and revenue cap Price cap that can be partially adjusted for under or over collections of revenue. The partial adjustment is equal to the difference between actual and forecast revenue multiplied by the WACC (ie, a return on the unders and overs balance). To minimise price variations, constraints imposed on some price increases.	The WCI Rules require the ACCC to take into account changes in forecast demand at the annual price review as well as price stability.	Yes	Yes for MDB Authority and Border Rivers Commission costs only.	No

Appendix 6 Building blocks

Table A6.1 sets out the approach regulators typically use to determine the value of each building block.

Table A6.1: How regulators typically determine the value of each building block

Parameter	Approach
Value of the RAB	The value of the RAB is used to calculate both the return on capital and the depreciation building blocks, and should reflect the set of assets that are required for the prudent and efficient delivery of services. The value of the RAB will change from year to year to reflect: • the value of any prudent and efficient capital expenditure incurred in the year (net of the value of customer contributions), which must be added to the RAB • the sale or disposal of any assets in the year, which must be deducted from the RAB, and • the value of any capital recovered through depreciation, which must be deducted from the RAB. To counter the limited incentive a service provider may have to minimise costs, regulators usually only allow capital expenditure to be incorporated into the RAB if it satisfies a prudent and efficient service provider test. An example of the form this test can take can be found in the National Gas Rules (NGR): *'…capital expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing the services'* In some regimes, service providers must also demonstrate: the overall economic value of the capex is positive; the present value of the incremental revenue generated by the capex exceeds the present value of the capex; or the capex is necessary to maintain/improve the safety, quality or integrity of services or comply with regulatory obligations.
Depreciation (return of capital)	The depreciation building block enables the service provider to recover its investment in the asset over the economic life of the asset and is calculated having regard to: • the value of the various asset classes that comprise the RAB • the economic life of each of the assets used in the provision of the services, and • the depreciation profile assumed for the recovery of capital.
Rate of return	The rate of return used in the return on capital building block is typically based on the post-tax weighted average cost of capital (WACC) formulation, with the parameters estimated having regard to: • the benchmark efficient entity standard, • the conditions prevailing in financial markets at the time the determination is made, and • the risks involved in delivering the service. An example of the form this test can take can be found in the recently amended provisions in the NGR: *'the rate of return for a service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services'.*
Operating expenditure	This building block enables the service provider to recover the costs of operating and maintaining the assets, usually in the year the costs are incurred. Like capex, regulators usually try to counter the limited incentive a service provider may otherwise have to minimise the costs incurred in operating the assets by only allowing opex to be recovered from users if it satisfies the prudent and efficient service provider test. An example of the form this test can take can be found in the NGR: *'Operating expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services'.*
Net tax liabilities	The net tax liabilities building block allows the service provider to recover the tax payable on its regulated taxable income net of the value of imputation credits. The allowance will depend on: the service provider's initial tax position; the taxable income expected to be generated by the service provider; the company tax rate; and the value attributed to imputation credits. Like the rate of return, net tax liabilities are usually determined using the benchmark efficient entity standard.

Appendix 7 Techniques to deal with intergenerational equity issues

Regulators have developed a range of techniques to deal with the intergenerational equity issues that may be associated with large one-off infrastructure investments where the benefits accrue across multiple generations of customers. These techniques include:

- Adopting a long-term price path to smooth the recovery of capital costs (depreciation plus a return on capital) and other costs across multiple generations.
- Deferring the recovery of a defined portion of the capital costs (depreciation plus a return on capital) if existing users are not expected to fully utilise or benefit from the investment.
- Aligning the profile of capital cost (depreciation plus a return on capital) recovery with the profile of the benefits customers are expected to derive over the economic life of the asset (eg, through a flat (annuity), inclining or declining capital cost recovery profile).
- Aligning the depreciation profile with the profile of the benefits customers are expected to derive over the economic life of the asset (eg, through a straight line, back-end loaded or front-end loaded depreciation profile).

The remainder of this appendix provides some examples of regulatory and policy decisions that have used these techniques.

A7. 1 Long-term smooth price path

This technique has been used in a number of regulated and unregulated industries to ensure that existing customers (or initial customers of a new asset) do not bear a disproportionate share of the costs associated with the investment by smoothing the recovery of capital and other costs over a long period. Some recent examples are set out below.

20 year price path for SE Queensland bulk water supply system

Between 2007 and 2012 the Queensland Government invested approximately $6 billion in the development of the South East Queensland bulk water supply system, which included the development of a desalination plant, the Recycled Water Scheme and a number of pipelines.

To ensure the costs of this once in a generation investment were not unduly borne by current customers, the Queensland Government decided in 2008 to implement a 20 year bulk water price path commencing in 2008-09. This price path provides for bulk water prices to rise in real terms over the first ten years and to remain constant in real terms thereafter. The prices to apply over the first 10 years of this price path were not expected to recover the cost of supply, so provision was made for the difference between bulk water revenue and the cost of supply to be funded by debt and repaid in years 11-20 when demand is expected to increase.

NBN Co's 30 year Special Access Undertaking (SAU)

The NBN SAU sets out the regulatory regime that will apply to NBN Co. for the first 30 years of its operation. In the initial years of the operation of the national broadband network, demand is expected to be low but it is expected to increase over time as the rollout continues.

Faced with the option of either adopting relatively high cost-reflective prices in the initial years of the roll out, or lower prices to encourage greater take up of NBN services, NBN Co. decided to implement the latter option and include a mechanism in the SAU that would enable it to recoup unrecovered costs at a later point in time. This mechanism provides for unrecovered revenue in the initial recovery period to be included in an 'Initial Cost Recovery Account' (which increases at regulated rate of return) and recovered when demand increases.

A7. 2 Deferring the recovery of a defined portion of the capital costs

This technique involves the full or partial deferral of the recovery of a defined portion of the capital costs (depreciation plus return on capital) when existing customers are not expected to fully utilise, or otherwise benefit from, the investment for a period of time. Some examples of this technique are set out below.

IPART's 2009 assessment of the proposed Tillegra Dam

As part of its 2009 review of Hunter Water's water, sewerage, stormwater and other services, IPART considered how the costs of the proposed Tillegra Dam should be recovered from current and future users given that:

- the dam was not expected to be fully utilised until 2058
- the key benefit for current customers was the significant improvement in drought security, which was valued by Hunter Water as 40% of the cost of the dam. This valuation was based on the efficient cost of providing the same level of water security to existing customers through alternative works (eg, constructing a desalination plant), and
- the drought security benefits were expected to grow as water became scarcer (eg, as a result of population growth or changes in climatic conditions).

While the NSW Government decided in late 2010 not to proceed with the construction of this dam, the approach IPART decided to implement in 2009 provides some useful insights into how the costs of large-scale infrastructure can be recovered when the benefits associated with the infrastructure differ across generations.

IPART decided not to use the traditional straight line approach in this case because it was expected to result in price increases for current customers that were disproportionate to the benefit they were expected to derive from improvements in water security. Instead, IPART decided to only allow 40% of the forecast capital expenditure of the dam to be included in the calculation of Hunter Water's revenue requirement in the 2009 regulatory determination and to defer the recovery of the remaining 60% to future regulatory periods. In effect, this approach meant that current users only paid for that portion of the investment that was required to improve the level of water security required by current users.

To give effect to the deferral, IPART established a new account in Hunter Water's RAB (referred to as the 'Deferred Tillegra Dam Revenue Asset') and included the outstanding expenditure in this account. IPART also allowed this account to attract a return on assets to ensure that in net present value (NPV) terms, Hunter Water was no worse off as a result of the deferral and that its long-term financial viability was not affected.

IPART's rationale for adopting this approach is captured in the following statement:[250]

> "This approach aligns the profile for recovery of Hunter Water's costs for Tillegra Dam with the respective benefits that the dam provides to the current and future population. The approach also alleviates the cost burden on the relatively small base of current customers and thereby addresses intergenerational equity concerns. Furthermore, because Hunter Water will fully recover the costs of Tillegra Dam over time, the long-term financial viability of Hunter Water is not affected. Following the release of its draft determination and report, IPART received advice that this treatment of Tillegra Dam costs will not result in any adverse accounting or taxation outcomes for Hunter Water."

Speculative capex account provisions in the National Gas Rules (NGR)

Rule 8.19 of the NGR allows an investment (part or all) that does not initially comply with the capex criteria but which may later comply with the criteria (eg, because the asset was built with excess

250 IPART, Review of prices for water, sewerage, stormwater and other services for Hunter Water Corporation, 2009, p. 37.

capacity) to be added to a notional fund, which is referred to as the speculative capex account. The balance of this account increases annually at a rate of return determined by the AER (which may but need not be the regulated WACC). If at any time the type or volume of services changes so that the investment complies with the capex criteria the expenditure and the return on capital earned while in the fund, can be rolled into the RAB at the commencement of the next period and start to be recovered from users.[251]

The key differences between this provision and the approach employed by IPART are that the speculative capex account does not form part of the RAB and there is no pre-commitment by the regulator that the investment will be recovered in regulated charges.

A7. 3 Alignment of capital cost recovery profile with expected benefits

This technique, which is a variant on the deferred recovery of capital cost technique, aligns the recovery profile for capital costs with the benefits customers are expected to derive over the economic life of the asset. This technique was contemplated by the ESC along with a number of other techniques in its most recent water price review when assessing Melbourne Water's proposed recovery of the desalination plant security payments.

ESC's assessment of the recovery of the desalination plant security payments

In its most recent water price review, the ESC had to assess Melbourne Water's proposal to recover the costs of the Wonthaggi desalination plant from water users. The desalination plant has been developed through a public private partnership between the Victorian Government and AquaSure. Under the terms of this arrangement and other back-to-back deeds entered into with Melbourne Water, the costs of constructing the desalination plant are to be recovered from Melbourne Water over a 27 year period through a desalination security payment, after which ownership of the plant will transfer to Melbourne Water. The expected life of the desalination plant is 50 years.

Melbourne Water's original pricing proposal suggested the annual desalination security payments be recovered over the 27 year term of the contract. The primary concern the ESC had with this proposal was that while the benefits of water security provided by the desalination plant were expected to be experienced evenly over the 50 year life of the plant, current consumers would pay a greater proportion of the costs of the plant because the proposed recovery period was shorter than the economic life of the plant:[252]

"The consequence of Melbourne Water's current proposal would result, all other things being equal, in future consumers (in years 27 to 50) facing substantially lower prices for water than customers over the next 27 years. This is despite those future consumers benefitting from the same security provided by the desalination plant. To the extent that this distorts relative price signals to present and future customers about the true costs of water (and its security), it may lead to inefficient water use and inefficient investment decisions by end-users."

Given these concerns, the ESC considered whether there were any other options that would result in a better alignment between the recovery of the desalination plant capital costs and water security benefits derived by customers. The options considered by the ESC included:

(a) Recovering the capital costs over the 50 year life of the plant through:

  (i) The traditional straight line depreciation approach.

  (ii) An annuity style payment (akin to the flat capital cost recovery profile).

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251 While provision has been made in the NGR for this type of mechanism to be used, we are unaware of any circumstances in which it has actually been used.

252 ESC, Draft Decision, Price Review 2013: Greater Metropolitan Water Businesses, p. 275.

(iii) An allowance that increases over the life of the plant in line with either population growth or water demand (akin to the inclining capital cost recovery profile).

(iv) Aligning the capital cost recovery profile with the value customers are expected to derive (security plus actual water delivery) over the economic life of the plant.

(b) Capitalising 15% of the payments in each year and recouping these costs at a later point (akin to the deferred recovery of capital cost technique).

While in net present value terms Melbourne Water would receive the same amount under each of these options, the ESC expressed some concerns about the $2 billion-$4 billion revenue shortfall that could be experienced under options (a)(i)-(iii) in the initial years of the plant's life and the implications this may have for Melbourne Water's financial viability. It therefore favoured the use of the 15% capitalisation option in the draft decision.

In its final decision, the ESC maintained its view that a portion of the desalination costs should be capitalised but noted that Melbourne Water had provided it with insufficient information to determine what proportion of the costs should be capitalised. The ESC decided therefore to reduce Melbourne Water's regulatory period to three years, so that the matter could be 'properly examined' prior to 2016-17, which is when Melbourne Water is expected to be in a better financial position to start capitalising the costs.[253]

A7. 4 Alignment of depreciation profile with expected benefits

This technique is designed to align the depreciation profile with the benefits that customers are expected to derive over the economic life of the asset. The depreciation profile may therefore be:

- Front-end loaded if current customers are expected to derive a **greater** benefit from the asset than future customers
- Back-end loaded if current customers are expected to derive a **lower** benefit from the asset than future customers, and
- Straight line if current customers are expected to derive the same benefit from the asset as future customers.

The only difference between this technique and the capital cost recovery technique is that it focuses on just one component of the capital costs, ie, depreciation.

Modifying the depreciation profile to reflect the expected use of an asset over its economic life is a standard regulatory technique that is used by a number of regulators. It has also been embodied in both the NGR and the National Electricity Rules (NER).

253 ESC, Final Decision, Price Review 2013: Greater Metropolitan Water Businesses, June 2013, p. xviii.

Appendix 8 Estimation of WACC

As set out in Chapter 10, the WACC is typically measured by regulators using the following post-tax formulation:

$$\text{WACC} = E(R_d) \times \frac{D}{V} + E(R_e) \times \frac{E}{V}$$

Where:

$E(R_d)$ is the expected cost of debt,

$E(R_e)$ is the expected cost of equity, and

$\frac{D}{V}$ and $\frac{E}{V}$ are the proportions of debt and equity in the entity's capital structure, respectively.

Table A8.1 sets out the nominal post-tax WACC adopted by the ICRC in its final decision.

Table A8.1: ICRC final decision (2013-14 to 2014-15)

Parameter	Value
Gearing (proportion of debt in firm's capital structure)	60%
Cost of debt	5.50%
Cost of equity	2.80%
Nominal post-tax WACC	**4.42%**

Source: ICRC, Final Report, Regulated Water and Sewerage Services, June 2013, p 67.

Two aspects of this decision that ACTEW has contended should be reviewed by the Industry Panel are the methods used to calculate: [254]

- the cost of debt; and
- the cost of equity.

Table A8.2 sets out the nominal post-tax WACC that ACTEW has contended should be used in place of the ICRC's final decision, along with a summary of how ACTEW has estimated the value of each of the underlying parameters.

254 ACTEW, Statement of Facts and Contentions, 31 July 2014, sections 2.1.2 and 4.1.

Table A8.2: ACTEW SOFC – WACC

Parameter	ACTEW Proposal (Data as at 31 May 2013)	Approach to parameter estimation
Risk-free rate	5.24%	10-year average of the nominal Commonwealth Government Security yields interpolated to 10 years
Debt margin	2.46%	10-year average of the yields on Bloomberg's 7-year BBB index extrapolated to 10 years
Debt raising cost	0.125%	Consistent with the ICRC's 2008 final decision.
Equity beta	0.90	Outlined in SFG's expert report in Attachment 15 to the Response to the Draft Report
Market risk premium	6.00%	Historical market risk premium
Gearing	60%	Benchmark firm gearing ratio
Cost of debt	7.83%	
Cost of equity	10.64%	
Nominal post-tax WACC	**8.95%**	

Source: ACTEW, Statement of Facts and Contentions, 31 July 2014, p 27.

Note: The WACC set out in ACTEW's SOFC is 0.04% lower than the WACC it proposed WACC in its April 2013 submission, because it has updated market data to 31 May 2013 to reflect the information that would have been available to the ICRC at the time of the Original Direction.

The sections below set out the Panel's draft decision on how the cost of debt, the cost of equity, the gearing ratio and the overall WACC should be calculated.

A8. 1 Cost of debt

The cost of debt is the rate that a firm is expected to pay to debt holders to fund its assets through debt financing, and is generally calculated as follows:

$$R_d = R_f + DM$$

Where:

R_f is the risk-free rate. The risk-free rate measures the return an investor would derive from an asset with certainty of return being achieved. This rate cannot be observed directly, but can be approximated by the yield to maturity on government bonds.

DM is the debt margin. The debt margin represents the compensation above the risk-free rate required by debt holders for credit, liquidity and maturity risks.

In some jurisdictions, the cost of debt may also include an allowance for debt raising costs, while in other jurisdictions this allowance may be included in the forecast operating expenditure allowance.

To estimate the cost of debt a number of decisions need to be made about:

- the term-to-maturity that will be used to estimate the risk-free rate and debt margin;
- the averaging period that will be used to measure the risk-free rate and debt margin; and
- the credit rating to be used to estimate the debt margin.

The Panel's considerations on each of these matters are set out below, as well as the value of the risk-free rate, the debt margin, debt raising costs and the overall cost of debt that the Panel has adopted.

A8.1.1 Term-to-maturity

To estimate the debt margin and risk-free rate, a decision must first be made about an appropriate term-to-maturity, having regard to the nature of the assets being regulated.

The Panel understands that regulators usually employ one of the following approaches when deciding what term-to-maturity to adopt:

- Adopt a maturity assumption that matches the length of the regulatory period. The underlying rationale for this approach is that the regulatory rate of return should be set such that the present value of a regulated firm's revenues and costs are the same for the regulatory period.
- Adopt a long term-to-maturity such as 10 years. Those in favour of this approach, argue that since long-lived assets are usually financed using long-term debt, regulators should use a term-to-maturity that approximates the life of the assets being financed.

Having taken into account the arguments for and against both of these approaches, the Panel considers that the term-to-maturity should approximate the life of the assets being financed (ie, a 10 year term-to maturity should be adopted). The reasons for this are three-fold.

First, efficient debt management practice is to finance long-term assets using long-term debt. Since water utilities largely have long-lived assets, an efficient firm would seek to borrow funds with as long a term-to-maturity as possible to minimise refinancing risk. If shorter term debt was used to finance long-lived assets, there would be a mismatching of cash flows from assets and liabilities, and this may expose regulated water utilities to significant refinancing and interest rate risks. Under normal circumstances long-term debt would be more expensive than short-term debt due to an upward sloping yield curve, and therefore, an efficient firm would seek to balance the costs and benefits of using long-term debt.

Second, the expected returns on long-lived investments are more closely reflected in long-term bond yields. Long-term bonds are therefore more consistent with the long-term nature of investment made by asset-intensive firms. Evidence shows that asset-intensive firms with long-lived assets operating in a competitive market tend to raise debt with a maturity of 10 years or longer, with a 10-year term-to-maturity being most preferred. A recent survey by Brotherson *et al.* on firms' practice in estimating the cost of capital shows that firms and financial advisors unanimously responded that they use bond maturities of 10 years or longer.[255] From investors' perspectives, those seeking to invest in asset-intensive firms usually have investment and financing horizons much longer than the standard five year regulatory period.

Third, the term-to-maturity of the risk-free rate used in the calculation of the cost of debt should be consistent with the assumption used when calculating the cost of equity. When calculating the cost of equity, companies and financial analysts usually adopt a 10-year government bond yield as the risk-free rate and that the calculation of the MRP is also usually estimated by reference to a 10-year government bond yield. Adopting a 10-year term-to-maturity for the calculation of the cost of debt will therefore be internally consistent with the method used to calculate the cost of equity.

As Table A8.3 highlights, the Panel's adoption of a 10-year term-to-maturity is consistent with the approach taken by the ACCC, the ESC, ESCOSA and IPART[256] in the most recent round of water utility regulatory decisions and is also consistent with the assumption adopted by the ICRC in its 2008 final decision and ACTEW's SOFC proposal. The Panel is also aware that the AER uses a 10-year term-to-maturity in the energy sector.

255 Brotherson, W.T, Eades, K.M., Harris, R.S., and Higgins, R.C., 2013, 'Best Practices' in estimating the cost of capital: an update, *Journal of Applied Finance* 23, pp. 15-33.

256 IPART previously used a 5-year term-to-maturity based on the NPV neutrality principle. However, it increased the term-to-maturity in December 2013 as part of its new WACC methodology. IPART, Review of WACC methodology – Final report, December 2013, pp. 12-13.

Table A8.3: Past regulatory decisions on term-to-maturity

Regulator (State)	Regulated entity	Decision date	Term-to-maturity
ACTEW's SOFC		May 2013	10 years
IPART (NSW)	Essential Energy's Water and Sewerage Services in Broken Hill	June 2014	10 years
ACCC (Federal)	State Water Corporation	June 2014	10 years
ESC (VIC)	Greater Metropolitan Water Businesses	June 2013	10 years
ESC (VIC)	Regional Urban Water Businesses	June 2013	10 years
ESC (VIC)	Rural Water Businesses	June 2013	10 years
IPART (NSW)	Hunter Water Corporation	June 2013	5 years
IPART (NSW)	Gosford City Council and Wyong Shire Council	May 2013	5 years
ESCOSA (SA)	SA Water	May 2013	10 years
QCA (QLD)	Seqwater Irrigation Price Review	April 2013	4 years
ERA (WA)	Water Corporation	March 2013	5 years
ERA (WA)	Water Boards	March 2013	5 years
IPART (NSW)	Sydney Water Corporation	June 2012	5 years
QCA (QLD)	SunWater Irrigation Price Review	May 2012	5 years
QCA (QLD)	Gladstone Area Water Board	June 2010	5 years
ICRC (ACT)	ACTEW	April 2008	10 years

Sources: ACTEW, Statement of facts and contentions, 31 July 2014; IPART, Essential Energy's water and sewerage services in Broken Hill: Review of prices from 1 July 2014 to 30 June 2018, June 2014; ACCC, ACCC Final decision on State Water pricing application: 2014-15 – 2016-17, June 2014; ESC, Price review 2013: Greater metropolitan water business final decision, June 2013; ESC; Price review: Regional urban water business final decision, June 2013; ESC, Price review 2013; Rural water businesses final decision, June 2013; IPART, Hunter Water Corporation's water, sewerage, stormwater drainage and other services: Review of prices from 1 July 2013 to 30 June 2017, June 2013. IPART, Gosford City Council and Wyong Shire Council: Prices for water, sewerage and stormwater drainage services from 1 July 2013 to 30 June 2017; ESCOSA, SA Water's water and sewerage revenues 2013-14 – 2015-16: Final Determination Statement of Reasons, May 2013; QCA, Final report Seqwater irrigation price review 2013-17 Volume 1, April 2013; ERA, Inquiry into the efficient costs and tariffs of the Water Corporation, Aqwest and the Busselton Water Board: Revised final report, March 2013; IPART, Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services: From 1 July 2012 to 30 June 2016, June 2012; QCA, SunWater irrigation price review: 2012-17 Volume 1, May 2012; QCA, Gladstone Area Water Board: Investigation of pricing practices, June 2010; ICRC, Water and wastewater price review: Final report and price determination, Report 1 of 2008, April 2008.

A8.1.2 Averaging period

To estimate the debt margin and risk-free rate, a decision must be made about the appropriate averaging period. There are broadly three approaches:

1. Adopt a short averaging period, such as 20 or 40 days. The underlying rationale for this approach is that the most efficient cost of debt will be represented by prevailing rates as they reflect most accurately market's expectation on the future cost of debt over the borrowing period.
2. Adopt a long averaging period, such as 10 years. Utilities generally support this approach and argue that their assets are financed using long-term debt with staggered maturities, which implies that only a portion of total debt is refinanced each time. This approach would also ensure internal consistency within the WACC calculation, if the historical MRP was used to estimate the cost of equity.

3. Use a mix of short-term and long-term averages. This is a new approach that has only recently been used by IPART. In adopting this approach, IPART has claimed that although new debt is raised at a prevailing rate, an efficient firm operating in a competitive market would consider both historical rates and prevailing rates when making financing decisions.

The Panel considers that current market rates are the best predictor of the future expected rates, which implies that a short averaging period should be adopted. This view is consistent with the efficient market theory, which suggests that current market prices incorporate all available information relevant to future prices. The most efficient cost of capital will be represented by prevailing rates as they reflect most accurately market's expectation on the cost of capital over the borrowing period.

Theoretically, the cost of debt should reflect the current costs of borrowing because it reflects prevailing financial market conditions and not historical, sunk costs. The cost of capital should mirror investors' expectation about the internal rate of return given future estimated cash flows associated with an investment. When existing firms raise additional capital to finance new investments or a new entrant firm enters into a market, they will be financed at the prevailing rates. A firm's decision regarding when to raise capital or when to enter into a market may be influenced by historical rates. However, ultimately debt and equity capital transactions will be carried out at the prevailing rates.

The Panel has also considered adopting a mix of both short-term and long-term averages. While the Panel understands that this approach may provide a good balance between ensuring that the WACC reflects current market condition and provides stable WACC outcomes over time, it is also aware of the following:

- With the exception of IPART, this approach has not been adopted by any other regulators.
- Implementing this approach would constitute a significant departure from the approach that has previously been employed by most regulators and should therefore be subject to consultation.
- Adopting this approach would necessitate using long-term averages, which in the Panel's view is not the most theoretically sound approach to estimating the WACC.
- As will be discussed in section A8.3, using this approach would result in a WACC which is well above the WACC decisions made by other regulators around the time when the ICRC would have made its final decision on the rate of return.

The Panel has therefore not adopted a mix of short and long-term averages and instead has used a short-term averaging period.

In terms of the period that should be used to measure prevailing rates, the Panel has adopted a 40 day averaging period, because it provides a reasonable estimate of the marked-to-market cost of capital, while not exposing regulated businesses to unnecessary day-to-day volatilities. Another reason to use a short-term averaging period is to allow regulated businesses sufficient time to access the market and complete transactions.[257]

As highlighted in Table A8.4, the Panel's use of prevailing rates and a short-term averaging period is broadly consistent with the approach employed by regulators in other jurisdictions and is also consistent with the approach employed by the ICRC in its 2008 final decision.

257 Every time a regulated entity's regulatory cost of debt is reset by a regulator, it may want to access the market to lock-in the risk-free component of the cost of debt over the regulatory period. The Panel is aware that it may be difficult for utilities to access the swap market without shifting the market within a short averaging period such as 20 days, and that increasing a short-term regulatory averaging period to 40 days may in part addresses these concerns.

See IPART, Review of method for determining the WACC, December 2012, p. 25.

Table A8.4: Past regulatory decisions on averaging period

Regulator (State)	Regulated entity	Decision date	Averaging period
ACTEW's SOFC		May 2013	10 years
IPART (NSW)	Essential Energy's Water and Sewerage Services in Broken Hill	June 2014	40 days, 10 years
ACCC (Federal)	State Water Corporation	June 2014	40 days
ESC (VIC)	Greater Metropolitan Water Businesses	June 2013	40 days
ESC (VIC)	Regional Urban Water Businesses	June 2013	40 days
ESC (VIC)	Rural Water Businesses	June 2013	40 days
IPART (NSW)	Hunter Water Corporation	June 2013	40 days, 10 years
IPART (NSW)	Gosford City Council and Wyong Shire Council	May 2013	40 days, 10 years
ESCOSA (SA)	SA Water	May 2013	20 days
QCA (QLD)	Seqwater Irrigation Price Review	April 2013	20 days
ERA (WA)	Water Corporation	March 2013	20 days
ERA (WA)	Water Boards	March 2013	20 days
IPART (NSW)	Sydney Water Corporation	June 2012	20 days
QCA (QLD)	SunWater Irrigation Price Review	May 2012	20 days
QCA (QLD)	Gladstone Area Water Board	June 2010	20 days
ICRC (ACT)	ACTEW	April 2008	20 days

Sources: See listing in Table A8.3.

The Panel's decision differs, however, from ACTEW's proposal to use a long-term averaging period (ie, 10 years).[258] In ACTEW's view, efficient debt management practice involves financing long-lived assets using long-term debt with a portion of total debt being refinanced periodically in order to mitigate refinancing risk or default risk. The Panel notes that an efficient debt management strategy implies that a firm would have a debt portfolio with staggering maturities, and consequently, at any point in time, its overall cost of debt would largely reflect historical costs of debt. However, the Panel considers that when setting a regulatory cost of capital, the regulator's task is *not* to replicate an efficient firm's existing cost of capital. Rather, the task is to set the cost of capital in a manner that best reflects the efficient financing costs of a *new* investment.

The other line of argument that ACTEW made in support of its use of a long-term average, is that there is an inverse relationship between the risk-free rate and the MRP (ie, a decrease in the risk-free rate tends to be associated with an increase in the MRP). Given that current risk-free rates are at historic lows, estimating the cost of equity using the prevailing risk-free rates and an MRP of 6% (which does not reflect current market conditions being fixed at 6%) is likely to underestimate the cost of equity. For this reason, ACTEW considers that the cost of capital should be best estimated using long-term average risk-free rates, but states that:

> "A short term average (eg,, 20 day) would only generate a reasonable estimate of the cost of equity if it was used in conjunction with a conditional MRP to reflect the increased price of risk investors demand." [259]

258 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 27.

259 ibid.

The Panel agrees with ACTEW's submission on this issue. As discussed later, the Panel considers that the best estimate of the expected cost of equity is likely to be derived from the current risk-free rate and an MRP estimated using current market data, rather than historical averages. It has therefore estimated the cost of equity using a 40-day average risk-free rate and an implied MRP estimate reflecting current market conditions and changes in investors' risk aversion.

A8.1.3 Credit rating

To estimate a debt margin, regulators must make a decision on the appropriate credit rating assumption. A credit rating is an evaluation of the credit worthiness of a debtor (ie, a firm or a government). Credit rating agencies determine credit ratings, taking into account the debtor's ability to pay back the debt and the likelihood of default. Since a poor credit rating indicates a credit rating agency's opinion that the company or government has a high risk of default, a lower credit rating is generally associated with higher bond yields.

Under the benchmark cost of capital approach, regulators usually determine the credit rating of a regulated service provider with reference to benchmark comparable firms given the risk profile of the regulated service provider. The debt margin can then be calculated using the credit spreads for bonds issued by firms with the assumed benchmark credit rating.

In its SOFC, ACTEW proposed a benchmark credit rating of BBB. As Table A8.5 indicates, a BBB credit rating is broadly consistent with the credit ratings adopted by other jurisdictional regulators in recent regulatory decisions for water utilities (the credit ratings have ranged from BBB- to BBB+). The Panel has therefore adopted a BBB credit rating to estimate the benchmark cost of debt.

Table A8.5: Past regulatory decisions on credit ratings

Regulator (State)	Regulated entity	Decision date	Credit rating
ACTEW's SOFC		May 2013	BBB
IPART (NSW)	Essential Energy's Water and Sewerage Services in Broken Hill	June 2014	BBB/BBB+
ACCC (Federal)	State Water Corporation	June 2014	BBB+
ESC (VIC)	Greater Metropolitan Water Businesses	June 2013	BBB- to BBB+
ESC (VIC)	Regional Urban Water Businesses	June 2013	BBB- to BBB+
ESC (VIC)	Rural Water Businesses	June 2013	BBB- to BBB+ for Southern rural water BBB+ for Goulburn-Murray Water and Lower Murray Water
IPART (NSW)	Hunter Water Corporation	June 2013	BBB/BBB+
IPART (NSW)	Gosford City Council and Wyong Shire Council	May 2013	BBB/BBB+
ESCOSA (SA)	SA Water	May 2013	BBB
QCA (QLD)	Seqwater Irrigation Price Review	April 2013	BBB+
ERA (WA)	Water Corporation	March 2013	A-
ERA (WA)	Water Boards	March 2013	BBB/BBB+
IPART (NSW)	Sydney Water Corporation	June 2012	BBB/BBB+
QCA (QLD)	SunWater Irrigation Price Review	May 2012	BBB+
QCA (QLD)	Gladstone Area Water Board	June 2010	BBB
ICRC (ACT)	ACTEW	April 2008	BBB

Sources: See listing in Table A8.3.

A8.1.4 Risk-free rate

The risk-free rate is used in both the calculation of the cost of debt and the cost of equity and acts as the base to which a debt margin and equity risk premium is added.

In keeping with the positions outlined above, the Panel has calculated the risk-free rate using the 40-day average yield on nominal Commonwealth Government bonds with a 10-year term-to-maturity. As at 31 May 2013, this was 3.22%.

A8.1.5 Debt margin

The debt margin represents the compensation above the risk-free rate required by debt holders for credit, liquidity and maturity risks.

In keeping with the positions outlined above, the Panel has calculated the debt margin using 10-year BBB corporate bonds as the benchmark. The Panel is aware that there are currently two data series that can be used to calculate the 10-year BBB corporate bond rate. The first is produced by the RBA,[260] and the second is produced by Bloomberg. One limitation with the Bloomberg data series is that the longest term of its BBB corporate bond series is seven years, which means that a ten-year rate must be estimated using some form of extrapolation.[261] The RBA series, on the other hand, has a ten year BBB corporate bond series.

In its SOFC, ACTEW proposed that the 10-year debt margin be calculated using the Bloomberg data series. Specifically, ACTEW proposed that Bloomberg's 7 year fair value curve be extrapolated out to 10 years by adding the difference between 7-year and 10- year Commonwealth Government yields to the 7-year fair value rate. In the Panel's view, there are several issues with ACTEW's proposal, one of the more significant of which is that debt margin estimates may be subject to estimation errors. Another drawback of this approach is that the debt margin estimate can differ depending on the extrapolation technique used.[262]

Given these limitations, the Panel has used the RBA series. The advantages that the RBA series has over the Bloomberg extrapolation approach proposed by ACTEW are that:

- The RBA's estimates are based on a transparent and robust methodology developed by an independent and reputable third party.
- The RBA's estimates are based on a broad sample, including bullet bonds and bonds with embedded options issued by Australian non-finance corporations (NFCs) domestically and internationally.
- The RBA assigns weights to every observation in the cross-section depending on the distance of the observation's residual maturity and the target tenor (eg, 10 years). In other words, the closer the remaining term-to-maturity of a bond, the more weight is assigned to the bond. This takes into account the fact that there are generally fewer long term bonds than short term bonds, and results in the effective tenor of the 10-year benchmark bond being very close to 10 years.

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260 In December 2013, the RBA started publishing monthly credit spreads of bonds issued by Australian non-financial corporations (NFC) with maturities ranging from 1 to 10 years and different credit ratings. See Arsov, I., Brooks, M., and M. Kosev, New measures of Australian corporate credit spreads, Reserve Bank of Australia, December 2013.

261 For example:

- The ESC extrapolated Bloomberg's 7-year BBB fair value curve (FVC) yield to 10 years based on the annual average increment in the debt risk premiums for three sets of bonds (issued by Stockland (rated A-), Sydney Airport (rated BBB) and GPT (rated A-)). See ESC, Final Decision: Price review 2013: Greater metropolitan water businesses, Final decision, June 2013, p. 108.
- ESCOSA extrapolated Bloomberg's 7-year BBB FVC yields to 10 years by adding a premium of 20 basis points. See ESCOSA, *SA Water's water and* sewerage revenues 2013-14 – 2015-16, Final determination, Statement of reasons, May 2013, p. 140.
- In its 2008 decision, the ICRC extrapolated Bloomberg's 8-year BBB FVC yields to 10 years using the difference between 8-year and 10-year A-rated bonds. ICRC, Water and wastewater price review, Final report and price determination, Report 1 of 2008, April 2008, pp. 102-103.

262 The Panel is aware that there is no standard methodology that regulators use to carry out this extrapolation.

The Panel is aware that the following features of the RBA series may be viewed as limitations with the series, but in its view the limitations can either be overcome, or are not significant enough to warrant the use of an alternative approach:

- The RBA's estimates are only available on a monthly basis, so it is not strictly possible to calculate 40-day averages. A 40-day average can, however, be approximated by taking an average over two months, which approximately correspond to 40 business days.
- The RBA aggregates bonds with BBB+, BBB and BBB- ratings to the BBB category. This is, however, unlikely to be a significant issue because the higher credit spreads on the BBB- rated bonds are most likely to be offset by lower credit spreads on the BBB+ rated bonds.

As at 31 May 2013, the 40-day average debt margin calculated using the RBA's 10-year BBB rated corporate bond yields was 3.13%.

A8.1.6 Debt raising cost

Debt raising costs include underwriting fees, legal fees, company credit rating fees and other costs incurred in raising debt finance. Regulators across Australia typically include an allowance of 12.5 basis points (bps) for debt issuance costs if the 10-year term-to-maturity is used to estimate the cost of debt. If a five-year term-to-maturity is used, an allowance of 20 bps is typically used. A reduction in the term-to-maturity increases debt raising costs, because the shorter the assumed term-to-maturity, the more frequently the debt should be raised (or refinanced), incurring greater refinancing costs.

In its SOFC, ACTEW proposed the use of a 12.5 bps allowance for debt raising costs. Given the consistency of this proposal with the allowance usually approved by regulators for a 10-year term-to-maturity, the Panel has included a 12.5 bps allowance in the cost of debt for debt raising costs.

A8.1.7 Overall cost of debt

For the reasons set out above, the Panel has made a draft decision to adopt a cost of debt of 6.48% (R_f=3.22%, DM=3.13% and debt raising costs=0.125%). This is approximately 1% higher than the ICRC's final decision and 1.35% lower than ACTEW's proposal.

A8. 2 Cost of equity

The cost of equity is the return that a firm is expected to pay to shareholders to fund its assets through equity financing. Regulators usually estimate the cost of equity using the Sharpe-Lintner Capital Asset Pricing Model (S-L CAPM), which is set out below:

$$E(R_e) = R_f + \beta_e \times (E(R_m) - R_f) \text{ or}$$

$$E(R_e) = R_f + \beta_e \times (MRP)$$

Where:

$E(R_e)$ is the expected return on a stock e

R_f is the risk-free rate

β_e is the beta of a stock e

$MRP\ (E(R_m) - R_f)$ is the market risk premium.

In keeping with the approach that has been widely used by Australian regulators, the Panel has calculated the cost of equity using the S-L CAPM. The remainder of this section sets out the Panel's considerations and positions on the values to be attributed to the MRP and equity beta.

A8.2.1 Market risk premium

The MRP is the return in excess of the risk-free rate that an investor requires for the risk of investing in the market portfolio of risky assets. Formulaically, this can be expressed as

$$E(R_m) - R_f$$

Where:

$E(R_m)$ is the expected return on the market portfolio

R_f is the risk-free rate (see section A8.1.4)

The expected MRP is not observable from market data and hence needs to be estimated, so the following alternative methodologies to estimate the MRP were considered:

- **Survey-based MRP –** In this approach, investors, analysts, and academics are asked for their opinions on the expected level of the MRP. For example, Fernandez *et al.* (2012) conducted a survey on the MRP used by academics, analysts, financial institutions, and company managers in 82 countries including Australia.[263]
- **Historical MRP** – The historical MRP is the most common way of estimating the expected MRP.[264] The premium is computed as the difference between the average return on the market portfolio and the average return on a risk-free asset based on historical data. This approach assumes that the MRP has not changed in any material fashion over a long-time period and that it will mean-revert. However, there are a number of critical assumptions that must be made when estimating the historical MRP, which can lead to different historical MRP values. These assumptions require decisions to be made about the length of the period to be used to measure the MRP, the proxy to be used to measure the risk-free rate (eg, 3-month bill, 5-year bond or 10-year bond) and the averaging method to be used (ie, arithmetic or geometric average).
- **Implied MRP –** The implied MRP approach assumes that the current equity market is correctly priced, and reflects all available relevant information. It is calculated by solving for a required rate of return given the present value of the expected dividends and the current price of the market portfolio. The advantage of this option is that it is market-driven, current, and does not require historical data. Also, the MRP values are readily available from Bloomberg, and can be estimated based on different valuation models.

Table A8.6 sets out the MRP estimates based on these three different approaches. The survey MRP is based on Fernandez *et al.* (2012), which surveyed finance and economics professors, analysts and managers of companies in Australia. The historical MRPs are based on Brailsford *et al.* (2012), which estimated the arithmetic average historical MRP to be 6.1% and the geometric average historical MRP to be 4.7%.[265] The implied MRP estimate has been calculated by taking the 40-day average of the daily implied MRP published by Bloomberg as at 31 May 2013.

263 Fernandez, P., Aguirreamalloa, J., and Corres, L., Market risk premium used in 82 countries in 2012: a survey with 7,192 answers, IESE Business School, 2012.

264 Welch, I., 2000, View of financial economists on the equity premium and on professional controversies, *Journal of Business* 73 (4), pp. 501-537.

265 Brailsford, T., Handley, J.C., and Maheswaran, K., 2012, The historical equity risk premium in Australia: post-GFC and 128 years of data, Accounting and Finance 52, pp. 237-247.

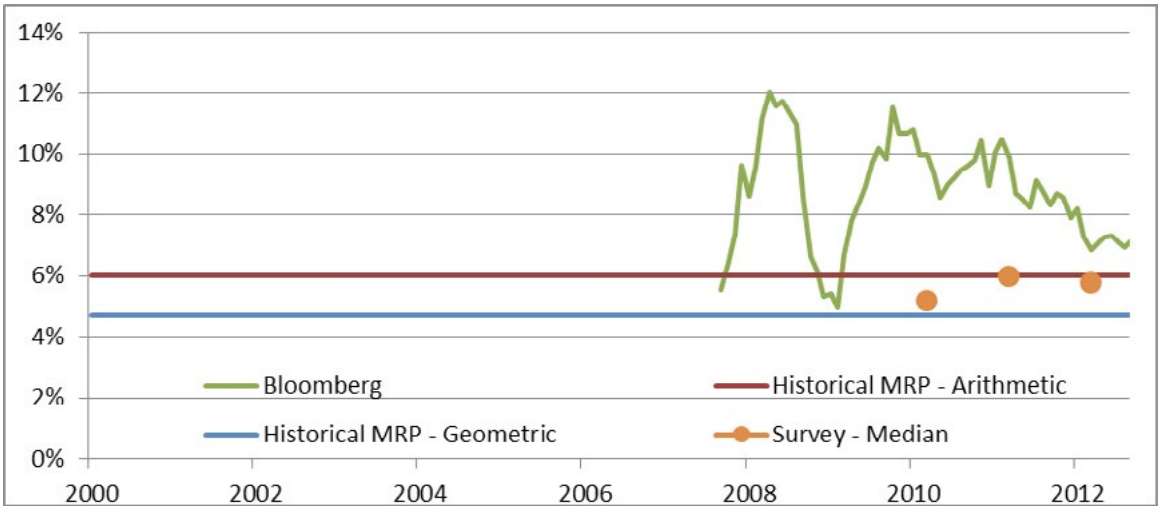
Table A8.6: Alternative measures of the MRP as at 31 May 2013

Approach	MRP estimate	Source
Survey MRP	6.0%	Fernandez *et al.* (2012)
Historical MRP – Arithmetic average	6.1%	Brailsford *et al.* (2012)
Historical MRP – Geometric average	4.7%	Brailsford *et al.* (2012)
Implied MRP	7.2%	Bloomberg

Data source: Bloomberg, Brailsford *et al.* (2012) and Fernandez *et al.* (2012).

Figure A8.1 shows the trends in the MRP estimates under the three different approaches. Bloomberg's estimates are available from July 2008. Survey MRPs (median values) are available annually from 2011. The historical MRPs based on geometric and arithmetic averages are constant over time. As this figure highlights, the implied MRP in the post-Global Financial Crisis (GFC) period (ie, after July 2008) are higher than those in the pre-crisis period (ie, before July 2008). The average difference between the two periods is around 2%. Another interesting point to note from the figure is that in the pre-GFC period, the implied MRP is below the widely accepted MRP of 6% based on historical arithmetic averages in Australia, while in the post-crisis period it is above the historical MRP estimate of 6%. This change over time seems to reflect changes in investors' risk aversion over these two periods.

Figure A8.1: MRP estimates under different options



Note: Market data as at 31 May 2013.

Data source: Bloomberg, Brailsford *et al.* (2012) and Fernandez *et al.* (2012).

As shown in Table A8.7 most regulators in Australia have applied an MRP of 6% based on the historical arithmetic averages in their water price reviews. The one exception to this is IPART, which currently uses both implied MRP and historical MRP. In its SOFC, ACTEW proposed the use of a 6% MRP.

Table A8.7: Past regulatory decisions on MRP

Regulator (State)	Regulated entity	Decision date	MRP Approach
ACTEW's SOFC		May 2013	Historical arithmetic MRP (6%)
IPART (NSW)	Essential Energy's Water and Sewerage Services in Broken Hill	June 2014	Implied MRP and historical MRP range (5.5% - 6.5%)
ACCC (Federal)	State Water Corporation	June 2014	Historical MRP (6%)
ESC (VIC)	Greater Metropolitan Water Businesses	June 2013	Historical MRP (6%)
ESC (VIC)	Regional Urban Water Businesses	June 2013	Historical MRP (6%)
ESC (VIC)	Rural Water Businesses	June 2013	Historical MRP (6%)
IPART (NSW)	Hunter Water Corporation	June 2013	Implied MRP and historical MRP range
IPART (NSW)	Gosford City Council and Wyong Shire Council	May 2013	Implied MRP and historical MRP range
ESCOSA (SA)	SA Water	May 2013	Historical MRP (6%)
QCA (QLD)	Seqwater Irrigation Price Review	April 2013	Historical MRP (6%)
ERA (WA)	Water Corporation	March 2013	Historical MRP (6%)
ERA (WA)	Water Boards	March 2013	Historical MRP (6%)
IPART (NSW)	Sydney Water Corporation	June 2012	Historical MRP range (5.5% - 6.5%)
QCA (QLD)	SunWater Irrigation Price Review	May 2012	Historical MRP (6%)
QCA (QLD)	Gladstone Area Water Board	June 2010	Historical MRP (6%)
ICRC (ACT)	ACTEW	April 2008	Historical MRP (6%)

Sources: See listing in Table A8.3.

In the Panel's view, the implied MRP methodology provides the most accurate estimate of the additional return in excess of the risk-free rate that an investor requires for the risk of investing in the market portfolio of risky assets.

Contrary to historical MRPs, implied MRPs recognise that the MRP can change over time as investors' risk-aversion changes in response to changing market conditions. In the presence of high volatility and uncertainty in the market, investors can be expected to demand a higher risk premium as compensation for bearing greater risks. Also, there is likely to be a flight to quality whereby investors are willing to pay high prices for securities with very low risks, reducing the yields on government bonds.[266]

While the Panel recognises that the implied MRP approach differs from the historical MRP approach that most other regulators have used to date, it is also aware that some regulators are starting to question whether continuing with a constant MRP of 6% is appropriate. For example, IPART conducted an extensive review of MRPs and developed several different methodologies to estimate implied MRPs. The AER has also recently considered this issue in the context of its Better Regulation Review and

266 For example, during the GFC period when there was a very high level of uncertainty in the market, government bond yields remained at a record low level. Liquidity condition worsened significantly with the Bills-OIS spread reaching over 76 basis points and Bloomberg's implied MRP estimates reaching as high as 12%. The Bills-OIS spread is the difference between the 3-month Bank bills and the 3-month overnight index swap (OIS). It reflects changing liquidity conditions or credit worthiness of the market. An increase in the Bills-OIS spread would signal worsening liquidity as banks are becoming less willing to lend.

noted that going forward it will have regard to historical MRPs, implied MRPs, survey MRPs and recent regulatory decisions.

Although market conditions have stabilised since the GFC, there is still a large discrepancy between historical average risk-free rates and the prevailing rates. Use of a constant MRP of 6% could underestimate the true cost of equity.

In addition, the Panel considers it important to ensure internal consistency within the WACC model as follows:

- The average risk-free rate and debt margin should be calculated over a short term and use implied MRPs if a regulator believes that current prices in the market reflect all available relevant information and hence today's prices are the best predictor of the future.
- The average risk-free rate and debt margin should be calculated over a long-term and use long-term historical MRPs if a regulator believes that the market will revert to a long-term average. This approach implies that in estimating the WACC, long-term averages are considered the best predictor of the future, and that any discrepancy between short-term and long-term averages is considered temporary.

Given the Panel's decision to estimate market based parameters using prevailing rates, its decision to use an implied MRP can be seen as being internally consistent.

To calculate the implied MRP as at 31 May 2013, the Panel has taken the 40-day average of Bloomberg's daily implied MRP estimates. Using this methodology, the Panel has estimated that the MRP as at 31 May 2013 was 7.23%.

A8.2.2 Equity beta

Another fundamental determinant of the cost of equity is the equity beta. The equity beta measures the extent to which the returns of a stock vary in line with the overall returns of the market. It therefore represents the systematic or market-related risk of a security that cannot be avoided by holding it as part of a diversified portfolio. In other words, it does *not* reflect any firm-specific or non-diversifiable risks.

An equity beta greater than one is indicative of an entity that has returns that are expected to be more sensitive to systematic influences than the market average (which by definition has an equity beta of one). Conversely, an equity beta less than one is indicative of an entity that has returns which are expected to be less sensitive than the market average.

To determine what equity beta to apply in this case, the Panel has had regard to a range of matters, including:

- An empirical estimate of the equity beta that a typical water business would exhibit, which the Panel has estimated using market data from 16 listed international water utility companies in the UK and the US. The manner in which the Panel has carried out this empirical analysis and the data that it has used is set out in Appendix 9. In short, this analysis indicates that a typical water utility with a benchmark efficient gearing ratio of 60% would have an equity beta ranging from 0.53 to 0.77.
- The equity beta values that other regulators have applied to regulated water businesses in recent price reviews. These values are set out in Table A8.8. As the information in this table indicates, regulators have adopted equity betas in the range of 0.55 to 0.80 in water price reviews conducted since 2010. Of the 15 decisions that have been conducted in this period, six adopted an equity beta of 0.65 and five adopted an equity beta of 0.70.

Table A8.8: Past regulatory decisions on equity beta

Regulator (State)	Regulated entity	Decision date	Equity beta
ACTEW's SOFC		May 2013	0.90
IPART (NSW)	Essential Energy's Water and Sewerage Services in Broken Hill	June 2014	0.60 – 0.80 (the midpoint was used)
ACCC (Federal)	State Water Corporation	June 2014	0.70
ESC (VIC)	Greater Metropolitan Water Businesses	June 2013	0.65
ESC (VIC)	Regional Urban Water Businesses	June 2013	0.65
ESC (VIC)	Rural Water Businesses	June 2013	0.65 for Southern rural water; and 0.70 for Goulburn-Murray Water and Lower Murray Water
IPART (NSW)	Hunter Water Corporation	June 2013	0.60 – 0.80 (the midpoint was used)
IPART (NSW)	Gosford City Council and Wyong Shire Council	May 2013	0.60 – 0.80 (the midpoint was used)
ESCOSA (SA)	SA Water	May 2013	0.80
QCA (QLD)	Seqwater Irrigation Price Review	April 2013	0.55
ERA (WA)	Water Corporation	March 2013	0.65
ERA (WA)	Water Boards	March 2013	0.65
IPART (NSW)	Sydney Water Corporation	June 2012	0.60 – 0.80 (the upper bound was used)
QCA (QLD)	SunWater Irrigation Price Review	May 2012	0.55
QCA (QLD)	Gladstone Area Water Board	June 2010	0.65
ICRC (ACT)	ACTEW	April 2008	0.90

Sources: See listing in Table A8.3.

The weight of this material suggests that the equity beta should fall in the range of 0.53 to 0.77.

The Panel is aware that studies in the finance literature have demonstrated that the expected return for a stock (ie, the cost of equity) with beta less than one is likely to be higher than that predicted by the S-L CAPM and the expected return for a stock with a beta greater than one is likely to be lower than predicted by the S-L CAPM. Since the beta range of 0.53 to 0.77 is below one, the Panel considers it appropriate to account for the potential underestimation of the true cost of equity under the S-L CAPM, by adopting an equity beta that is:

- higher than the midpoint of the range for the empirical beta estimates (ie, 0.53 to 0.77) and
- toward the upper bound of the equity beta range based on past regulatory decisions (ie, 0.55 to 0.80).
- The specific equity beta value that the Panel has decided to adopt is 0.70.

An equity beta of 0.7 is lower than ACTEW's proposal of 0.9, which the Panel understands was based on advice from SFG Consulting (SFG), which can be summarised as follows:

- SFG estimated that the beta of a typical water business ranges from 0.58 to 0.71 with 90% confidence.

- SFG considered that sensitivities of stock returns to market returns would vary depending on market conditions and so developed separate beta range estimates for 'up' and 'down' markets, with the 'up' market estimates ranging from 0.39 to 0.62 and the 'down' market estimates ranging from 0.67 to 0.88.
- SFG argued that investors would factor in greater sensitivities of stock returns to falling markets and lower sensitivities to rising market in forming expectations. It therefore recommended an equity beta of 0.90, which is at the upper bound of the 'down' market beta range.

The two observations that the Panel would make about this advice are as follows:

- The equity beta range estimated by the Panel (0.53 to 0.77) is broadly consistent with the equity beta range SFG estimated for the whole sample (ie, 0.58 to 0.71).
- SFG has accounted for asymmetric exposure to market conditions in recommending the beta of 0.90, especially the sensitivities of stock returns to falling markets. The Panel has taken into account the impact of overall market conditions on investors' expectations on the required cost of equity by adopting implied MRPs, which are influenced by changing investors' expectations (risk aversion) in all market conditions. The Panel does not therefore think it is appropriate to make another compensatory adjustment to the equity beta.

A8.2.3 Cost of equity

For the reasons set out above, the Panel has made a draft decision to adopt a cost of equity of 8.28% (R_f=3.22%, MRP=7.23% and β_e = 0.70). This is approximately 5.48% higher than the ICRC's final decision for 2013-14 and 2014-15 and 2.36% lower than ACTEW's proposal.

A8. 3 Gearing ratio

The value of debt and equity as a proportion of the overall asset value is the final parameter required to calculate the WACC.

Under the benchmark approach to calculating the WACC, regulators usually apply a benchmark gearing ratio rather than the actual financial structure of the regulated business. This approach provides regulated businesses with an incentive to adopt efficient capital structures, and ensures that customers do not bear the costs associated with sub-optimal capital structure.

In forming its view on the appropriate gearing ratio, the Panel has examined both:

- the gearing ratios of 16 listed water utilities in the US and UK, which are set out in Table A8.9. As the bottom of this table indicates, the median gearing ratio of listed water utilities in the US and UK is around 45%;[267] and
- the gearing ratios adopted by Australian regulators in recent water price determinations in other jurisdictions, which are set out in Table A8.10. As the information in this table indicates, the majority of regulatory decisions have used a 60% gearing ratio.

In the Panel's view, the difference between the gearing ratio based on the empirical evidence from the US and the UK and that based on the regulatory practice is not material. The Panel has therefore decided to adopt a gearing ratio of 60%, which is consistent with ACTEW's proposal and the ratio assumed by the ICRC in its final decision.

267 This estimate is based on the observed gearing ratios of 16 US and UK water utility businesses, which are classified as Water Utilities by ICB Subsector and listed on the New York Stock Exchange (NYSE), NASDAQ or the London exchange.

Table A8.9: Gearing ratios of listed water utilities in the US and UK

Company	Country of origin	Market value (US $m)	Gearing (%)
American States Water	US	233	46.0
American Water Works	US	4,868	54.8
Aqua America	US	938	43.7
Artesian Resources A	US	95	52.2
Cadiz	US	130	36.8
California Water Service	US	301	37.5
Connecticut Water	US	104	45.3
Consolidated Water	US	121	9.9
Middlesex Water	US	100	46.5
Northumbrian Water Group	UK	2,568	63.9
Pennichuck	US	65	45.3
Pennon Group	UK	2,011	46.3
Severn Trent	UK	4,271	41.1
SJW	US	189	37.9
United Utilities Group	US	5,784	44.1
York Water	US	133	32.2
Mean			**43%**
Median			**45%**
Min - Max			**10%-64**

Source: Thomson Reuters Datastream.

Note: The sample period used to calculate the gearing ratios is 1980 to 2013. The gearing ratio is calculated as Total Debt divided by the sum of Total Debt and Market Capitalisation from Thomson Reuters Datastream

Table A8.10: Past regulatory decisions on gearing ratio

Regulator (State)	Regulated entity	Decision date	Gearing
ACTEW's SOFC		May 2013	60%
IPART (NSW)	Essential Energy's Water and Sewerage Services in Broken Hill	June 2014	55%^
ACCC (Federal)	State Water Corporation	June 2014	60%
ESC (VIC)	Greater Metropolitan Water Businesses	June 2013	60%
ESC (VIC)	Regional Urban Water Businesses	June 2013	60%
ESC (VIC)	Rural Water Businesses	June 2013	60%
IPART (NSW)	Hunter Water Corporation	June 2013	60%
IPART (NSW)	Gosford City Council and Wyong Shire Council	May 2013	60%
ESCOSA (SA)	SA Water	May 2013	60%
QCA (QLD)	Seqwater Irrigation Price Review	April 2013	60%
ERA (WA)	Water Corporation	March 2013	60%
ERA (WA)	Water Boards	March 2013	60%
IPART (NSW)	Sydney Water Corporation	June 2012	60%
QCA (QLD)	SunWater Irrigation Price Review	May 2012	60%
QCA (QLD)	Gladstone Area Water Board	June 2010	50%
ICRC (ACT)	ACTEW	April 2008	60%

Sources: See listing in Table A8.3.

Note: IPART adopted a gearing ratio of 55% in this case having regard to the risks the Essential Energy's Water (EEW) faces compared to other water utilities. IPART considered that the EEW is exposed to a higher level of risk because it faces falling water demand due to a declining population in its operating region, and it operates in a geographically isolated market.

A8. 4 Net tax liabilities

As set out in Chapter 10, the ICRC's application of a firm-specific approach to WACC resulted in no explicit revenue allowance for ACTEW to cover net tax liabilities,[268] even though ACTEW is required to make tax-equivalent payments.[269] Even under a firm-specific approach to calculating the rate of return, the implication for ACTEW's cash position is that provision should be made for net tax liabilities. The Panel's draft decision is to adopt a benchmark approach to WACC and a post-tax regulatory model,[270] so that appropriate tax allowances will be calculated for ACTEW (taking account of imputation credits), as part of its revenue requirement. This is consistent with the building block model and provides ACTEW with the cash flow needed to make the requisite tax payments.

For the purpose of calculating ACTEW's tax allowance in the regulatory model, the Panel needs to make a draft decision on the value of imputation credits (gamma).

268 That is, tax liabilities taking into account (or net of) dividend imputation credits.

269 That is, tax payments that are the equivalent of company income tax.

270 Post-tax models are commonly used by regulators, for example the Essential Services Commission of Victoria, IPART and the AER.

A8.4.1 Value of imputation credits (gamma)

Under the Australian imputation tax system, dividends distributed by a company from post-tax earnings carry imputation credits that can be used by local residents to offset their personal tax liabilities. These credits reflect the tax that has already been paid by the company and represent a benefit of the investment in addition to dividends or capital gains.[271] Therefore, investors would accept a lower rate of return for an investment with imputation credits attached than if there were no imputation tax credits attached. In a post-tax regulatory model, the value of imputation credits is accounted for, separately from the WACC, in the calculation of tax liabilities and the notional revenue required.[272]

The actual value of imputation credits, represented by the parameter 'gamma', depends on the proportion of the credits that are created by the company and that are distributed, and the value that the investor attaches to the credit, which depends on the investor's tax circumstances (ie, their marginal tax rate). As these will differ across investors, the value of franking credits may be between nil and full value.

Theoretically, gamma can take on any value between 1 and 0 depending on whether:

- dividends are fully franked and all investors can use all imputation tax credits, in which case gamma would be equal to 1;[273] or
- dividends are not fully franked and/or investors cannot utilise all of the imputation tax credits, in which case gamma would be between 1 and 0.[274]

A low value of gamma implies that investors do not obtain much relief from corporate taxation through imputation and therefore require a higher pre-tax income in order to justify investment.

In practice, a lower gamma value corresponds to a higher revenue requirement and higher prices, while a higher gamma corresponds to a lower revenue requirement and lower prices.

In the post-tax building block model, there is an inverse relationship between gamma and the tax liability of a regulated service provider. That is, a lower gamma results in a higher net tax liability (ie, because a lower level of imputation credits are available to offset the investors tax liability)[275] and, by extension, a higher revenue requirement and prices. A higher gamma, on the other hand, results in a lower net tax liability, and, in turn, a lower revenue requirement and prices.

In the case where shareholders place no value on imputation credits (gamma is equal to zero), then the allowed tax component of notional revenue is equal to the expected tax liability of the business. Conversely, if imputation credits have full value (gamma is equal to 1) then there is no allowed tax component as shareholders fully utilise any tax paid by the company through imputation credits.

A8.4.2 Panel's draft decision

While franked dividends are not generally paid by government businesses, in order to maintain competitive neutrality, it is necessary to make an assumption of the value of imputation credits for a hypothetical private investor in the business.

Regulators have used various sources of information to estimate the most likely value of gamma, such as academic studies and evidence from financial markets. Table A8.11 sets out past regulatory decisions on the value of imputation credits (gamma).

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271 This system avoids double taxation on dividends for income tax already paid by the company.

272 Under a pre-tax WACC framework, the value of imputation credits is a WACC parameter.

273 A gamma of one means that investors receive income tax credits equivalent to the value of tax paid at the company level. Gamma would be equal to one where imputation credits are fully distributed and fully valued by investors.

274 A gamma of zero means that shareholders receive no value from the imputation credits. Where the investor is not a local resident and pays no Australian taxes, the value of imputation credits to such an investor would equate to zero.

275 In other words, if gamma is lower, shareholders place less value on imputation credits and will require more compensation for the return on investment – the regulated business will require higher post-tax revenue (and therefore higher prices).

In the past, Australian regulators have generally adopted a gamma value of 0.5 in regulatory decisions (including the ICRC in the 2008 price direction for ACTEW). However, several regulators lowered their previous estimates of gamma to 0.25 following an Australian Competition Tribunal decision in May 2011.[276] ACTEW has proposed a gamma of 0.25 in its Statement of Facts and Contentions.[277]

As part of its Better Regulation program, the AER released its draft rate of return guideline in August 2013. The AER considered that the current evidence leads to a value of 0.5 for gamma.[278] This position was maintained in the AER's final rate of return guideline.[279] Given the regulatory decisions made around the same time as the ICRC's final decision, the Panel has decided to adopt a gamma value of 0.5 for the purposes of calculating ACTEW's tax allowance in this draft decision.

Table A8.11: Past regulatory decisions on the value of imputation credits (gamma)

Regulator (State)	Regulated entity	Decision date	gamma
ACTEW's SOFC		May 2013	0.25
IPART (NSW)	Essential Energy's Water and Sewerage Services in Broken Hill	June 2014	0.25[a]
ACCC (Federal)	State Water Corporation	June 2014	na[b]
ESC (VIC)	Greater Metropolitan Water Businesses	June 2013	0.50
ESC (VIC)	Regional Urban Water Businesses	June 2013	0.50
ESC (VIC)	Rural Water Businesses	June 2013	0.50
IPART (NSW)	Hunter Water Corporation	June 2013	0.25[a]
IPART (NSW)	Gosford City Council and Wyong Shire Council	May 2013	0.25[a]
ESCOSA (SA)	SA Water	May 2013	0.50
QCA (QLD)	Seqwater Irrigation Price Review	April 2013	0.50
ERA (WA)	Water Corporation	March 2013	0.25
ERA (WA)	Water Boards	March 2013	0.25
IPART (NSW)	Sydney Water Corporation	June 2012	0.25[a]
QCA (QLD)	SunWater Irrigation Price Review	May 2012	0.50
QCA (QLD)	Gladstone Area Water Board	June 2010	0.50
ICRC (ACT)	ACTEW	April 2008	0.50

Sources: See listing in Table A8.3.

a IPART adopted a gamma of 0.25 in March 2012 and retained this value in subsequent decisions.

b This particular decision did not address gamma because State Water did not propose a tax building block. The ACCC's pricing principles do not specify a gamma value

276 Following an appeal of the AER's May 2010 final decision on the WACC for electricity distribution networks in Queensland, the Australian Competition Tribunal (Tribunal) reviewed the decision regarding the value of imputation credits. In October 2010, the Tribunal directed the AER to engage Strategic Finance Group (SFG) to undertake a study to assist them in determining the correct gamma value. In May 2011, the Tribunal determined that the value of gamma is 0.25. (*Australian Competition Tribunal, Application by ENERGEX Limited (Gamma) (No 5)* [2011] ACompT 9.) IPART adopted a gamma of 0.25 in March 2012 after stakeholder consultation and consideration of the ACT decision on gamma.

277 ACTEW, Statement of Facts and Contentions, 31 July 2014, p. 27.

278 AER, Draft rate of return guideline, August 2013, p. 24.

279 AER, Explanatory Statement – Rate of return guideline, December 2013, p. 12.

Appendix 9 Equity beta empirical analysis

This appendix provides an overview of the way in which the empirical estimates of the equity betas of 16 listed water utilities in the US and UK were derived.

A9. 1 Empirical estimates

To estimate empirically the likely equity beta of a typical water utility, the same set of comparable firms that were used in the gearing analysis was used. Monthly stock returns of the 16 US and UK water utilities shown in Table A8.9 have been downloaded from Thomson Reuters Datastream. Equity betas have been estimated using monthly stock returns over the five years to 31 May 2013.

Formulaically, a beta is defined as the covariance between stock returns and market returns divided by the variance of the market returns and is usually estimated based on the following ordinary least squares (OLS) regression using "excess returns".

$$r_{i,t} - r_{f,t} = \alpha_i + \beta_i(r_{m,t} - r_{f,t}) + \varepsilon_{i,t}$$

Where:

$r_{i,t}$ is the return of a stock i

$r_{f,t}$ is the risk free rate

$r_{m,t}$ is the return on a market portfolio in month t

$r_{i,t} - r_{f,t}$ is the stock return in excess of the risk free rate

$r_{m,t} - r_{f,t}$ is the market return in excess of the risk-free rate.

Regressing the excess stock returns on the excess market returns produces equity beta, and the constant term, of the above regression.

Several studies in the finance literature have found that equity betas obtained from the OLS regression are likely to be subject to a high degree of estimation bias due to sampling error. To mitigate these potential estimation errors, the OLS betas of the individual stocks in the sample have been adjusted using the Blume (1975) and Vasicek (1973) techniques (see Box A9.1).[280]

280 Blume, M.E., 1975, Betas and their regression tendencies, *Journal of Finance 30 (3),* pp. 785-795; Vasicek, O.A., A note on using cross-sectional information in Bayesian estimation of security betas, *Journal of Finance 28 (5),* pp. 1233-1239.

Box A9.1: Blume and Vasicek adjustments

To implement the Blume adjustment, the OLS regression-based equity betas have been adjusted using the following equation:

$$\beta_{Blume} = (OLS\ beta \times \frac{2}{3}) + (1 \times \frac{1}{3})$$

The Vasicek adjustment have been implemented using the following formula:

$$\beta_{Y|X}^{Vasicek} = w_\gamma \times \beta_i + (1 - w_\gamma) \times \beta_{average}$$

where . $w_\gamma = \frac{\sigma^2_{Cross-Sectional}}{\sigma^2_{\rho(Y|X)} + \sigma^2_{Cross-Sectional}}$

This process adjusts OLS regression-based equity betas toward the best prior beta estimate $(\beta_{average})$, with the degree of adjustment determined by the precision of the OLS beta estimates $(\sigma^2_{\rho(Y|X)})$ and the prior distribution $(\sigma^2_{Cross-Sectional})$.

The standard errors of OLS regression-based equity betas have been used to calculate $\sigma^2_{\rho(Y|X)}$. $\beta_{average}$ has been calculated as the average of OLS regression-based equity betas estimated over a period from 30 April 2003 to 30 April 2008 as an out-of-sample period and $\sigma^2_{Cross-Sectional}$ as the variance of OLS regression-based equity betas estimated over the same out-of-sample period.

Table A9.1 sets out equity beta estimates derived from the OLS regression, and the Blume and Vasicek adjusted estimates. Before looking at this table, it is worth noting that the raw equity beta estimates obtained from the OLS regression reflect the risks associated with a company's business operations (ie, risk due to the type of business) and financial leverage (ie, risk due to the level of debt financing). The systematic risk attributable to the business operations is controlled for in the sample by only including stocks that are classified as 'Water utilities'. To eliminate the effect of financial leverage, for each stock the regression-based beta has been de-levered using the actual gearing ratio of the utility and then re-levered using the 60% efficient gearing ratio adopted by the Panel. This process of de-levering and re-levering produces an equity beta a water utility would have if it was geared efficiently.[281]

As the OLS estimates in this table reveal, a typical water business with a 60% gearing ratio has a median equity beta of 0.50, and an average equity beta of 0.68. Accounting for potential estimation errors based on the Blume adjustment (1975), the median equity beta for a typical water business with a gearing ratio of 60% is 0.77, and the average is 0.92. When the Vasicek adjustment is used to address potential estimation errors, the median equity beta is 0.53, and the average equity is 0.69.

Table A9.1: Regression-based equity betas and equity betas adjusted for potential estimation errors based on Blume (1975) and Vasicek (1973)

Parameter	OLS regression	Blume adjustment	Vasicek adjustment
Mean	0.68	0.92	0.69
Median	**0.50**	**0.77**	**0.53**
SD	0.64	0.48	0.51
Max	2.72	2.45	2.32
Min	0.19	0.42	0.28
N	16	16	16

Note: Equity betas shown in this table are re-levered equity betas at the 60% efficient gearing ratio determined by the Panel.

281 The Panel has de-levered OLS regression-based equity betas using the corporate tax rate of the country in which each firm is domiciled, and re-levered these de-levered equity betas (ie, asset betas) using the Australian corporate tax rate.

The Panel considers that it important to address potential estimation errors when equity betas are estimated using an OLS regression and that, given the sample size and wide range in estimated equity betas, median equity betas provide more useful information. It has therefore placed greater weight on the results based on the Blume and Vasicek adjustments, and concluded that based on the median equity betas adjusted for potential estimation errors, a typical water utility with the efficient gearing ratio of 60% would have an equity beta ranging from 0.53 to 0.77.

Appendix 10 Suggested actions for the ICRC

As noted in Chapter 7, the Panel intends to suggest to the ICRC that it consider:

- implementing an operating and capital expenditure incentive scheme in the next regulatory period, and also consider whether a service-level incentive scheme should be introduced, and
- requiring ACTEW to submit a report each year, which sets out:
  - the actual operating and capital expenditure it incurred in the previous financial year, and an explanation for any major deviation from the expenditure allowances approved in the price direction
  - the revenue it received from the provision of water and sewerage services in the previous financial year and revenue received from other sources, and
  - its actual water sales, water and sewerage customer numbers, fixture numbers, dam releases and sewerage volumes in the previous financial year.

On the latter of these suggestions, the Panel is seeking feedback from stakeholders on whether the reporting requirement needs to sit within the price direction, or if the ICRC can otherwise obtain this information from ACTEW through its information gathering powers.

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Appendix 12 Draft substituted price direction

The draft substituted price direction is set out on the following pages.

Industry Panel

Draft Substituted Price Direction

Regulated Water and Sewerage Services 1 July 2013 to 30 June 2018

December 2014

The Industry Panel is established under the Independent Competition and Regulatory Commission Act 1997 (Act), following an application by ACTEW for the review of the Independent Competition and Regulatory Commission's Price Direction for Regulated Water and Sewerage Services, 1 July 2013 to 30 June 2019.

The Industry Panel is constituted under the Act as one President and two members.

The Panel Members are President Ms Mary Anne Hartley QC, and Members Ms Sally Farrier and Ms Claire Thomas PSM.

Correspondence or other inquiries may be directed to the Industry Panel at the addresses below:

Industry Panel
GPO Box 158
Canberra ACT 2601

The Secretariat of the Industry Panel can be contacted by telephone on (02) 6207 6128, or by fax on (02) 6207 0267 or via email at industrypanel@act.gov.au

Further details of the Industry Panel process can be found at: http://apps.treasury.act.gov.au/industrypanel.

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1. Introduction

This proposed substituted price direction (the Price Direction) is made by the Industry Panel (Panel) in accordance with Part 4C of the *Independent Competition and Regulatory Commission Act 1997* (the Act). The Panel's *Draft Report – Review of the Independent Competition and Regulatory Commission's 2013 Price Direction* (Draft Report) forms the basis for the Panel's decisions as outlined in the Price Direction. If there is any inconsistency between the Draft Report and the Price Direction, the Price Direction prevails.

This Price Direction will take effect in accordance with section 24T of the Act. When the Price Direction takes effect it will take the place of the price direction which was made by the Independent Competition and Regulatory Commission (Commission) on 26 June 2013 and published by the Commission as Report 6 of 2013. The Price Direction establishes a maximum price for regulated water, sewerage and miscellaneous services provided by ACTEW in the ACT for the regulatory period specified in clause 2.

The Price Direction is set out as follows:

- Part A – Preliminary
- Part B – Regulated services and prices
- Part C – Regulatory method
- Part D – Legislative provisions

Part A sets out the preliminary information to the Price Direction.

Part B sets out the regulated services, associated price controls and the maximum prices to be charged for ACTEW's water and sewerage services and miscellaneous services.

Part C sets out how the maximum prices will change over the regulatory period and the process for approving those changes.

Part D sets out additional provisions that the Act requires or permits the Panel to provide for in the Price Direction.

Part A Preliminary

2. The regulatory period

The Price Direction determines, within the meaning of the Act, maximum prices for the period 1 July 2013 to 30 June 2018.

3. Section 20(2) of the Act

By section 20(4) of the Act the Panel is obliged to indicate the extent to which it has had regard to the matters referred to in Section 20(2) of the Act. Attachment 1 is provided in compliance with section 20(4) of the Act.

4. Notes

Annualised cost

Where the Price Direction refers to an annualised cost, the annualised cost in any one year is equal to the amount of additional operating expenditure incurred in that year plus 15% of the additional capital expenditure incurred in that year.

Business days

Business days are all days other than Saturday, Sunday and ACT public holidays.

Dates in the Price Direction that require a specified action (for example, ACTEW providing information to the Commission on 30 November) that fall on a non-business day will be deemed to fall on the first business day following the non-business day.

Commission

References to the Commission are to the Independent Competition and Regulatory Commission of the ACT.

Maximum price

The term maximum price refers to the highest price which ACTEW may charge. ACTEW may charge less than the specified maximum price.

Monetary values

All monetary values in the Price Direction are in Australian dollars.

Where a monetary value is followed by the term '($2012-13)', the value is to be escalated in accordance with the following formula:

$EV = V \times CPI_e$

Where:

EV is the monetary value as escalated;

V is the monetary value specified in the Price Direction;

CPI_e is determined in accordance with the following formula:

$$CPI_e = \frac{CPI_{June(e-2)} + CPI_{Sep(e-1)} + CPI_{Dec(e-1)} + CPI_{Mar(e-1)}}{CPI_{June(2011)} + CPI_{Sep(2011)} + CPI_{Dec(2011)} + CPI_{Mar(2012)}}$$

CPI is as it is defined in clause 6.1; and

e can take on the value of 2014-15, 2015-16, 2016-17 or 2017-18 depending on the year in which the value of EV is required for the purposes of the Price Direction.

Reference to years

Unless otherwise stated, a reference to a year in the form 2013-14 (as an example) means the financial year from 1 July to 30 June. A reference to a two-year period (or greater) such as 2015-17 means for the period 1 July 2015 to 30 June 2017, and so on.

Regulatory period

The period in respect of which the Price Direction regulates prices, as specified in clause 2.

Part B Regulated Services and Prices

5. Regulated services

The following services are regulated by the Commission. Methods for ascertaining the maximum prices for these services are set out in this Part and in Part C.

Regulated services include:

(a) the provision of water services by ACTEW (including the availability of supply) to residential, commercial and industrial premises;

(b) the provision of sewerage services by ACTEW (including the availability of supply) to residential, commercial and industrial premises; and

(c) miscellaneous services provided by ACTEW:

(i) special meter readings;

(ii) testing of water meters;

(iii) the provision of rate certificates;

(iv) tapping into water mains;

(v) installation of fire hydrants;

(vi) disconnection;

(vii) installation and removal of stop valve locking cover; and

(viii) meter relocation.

6. Pricing for regulated water and sewerage services

In accordance with sections 20A and 24N of the Act, the Panel determines the pricing for regulated water services and regulated sewerage services in the form of maximum prices for each year of the regulatory period. The maximum prices for each such year are specified in, or are to be determined in accordance with, clauses 6.1 and 6.2.

6. 1. Water services

Table 15.6 sets out a maximum price for regulated water services for 2013-14 and 2014-15 and a formula for determining the maximum price for regulated water services for 2015-16, 2016-17 and 2017-18. The maximum prices derived from Table 15.6 for 2015-16, 2016-17 and 2017-18 may also be subject to a pass-through event set out in clause 8.

Table 15.6: Panel's draft direction on water prices

	2013-14	2014-15	2015-16 to 2017-18
Fixed ($ pa)	100	102.56	$P_t=P_{t-1}\times(1+CPI_t)\times(1-X\%)$
Tier 1 (0-200 kL pa) ($/kL)	2.55	2.64	$P_t=P_{t-1}\times(1+CPI_t)\times(1-X\%)$
Tier 2 (0-200 kL pa) ($/kL)	5.10	5.29	$P_t=P_{t-1}\times(1+CPI_t)\times(1-X\%)$

Where:

P_t is the price to be charged for the relevant service in the regulatory year t;

P_{t-1} is the price charged for the relevant service in the preceding regulatory year;

X is 7.5% in 2015-16 and 2.4% in 2016-17 and 2017-18;

$$CPI_t = \frac{CPI_{June(t-2)} + CPI_{Sep(t-1)} + CPI_{Dec(t-1)} + CPI_{Mar(t-1)}}{CPI_{June(t-3)} + CPI_{Sep(t-2)} + CPI_{Dec(t-2)} + CPI_{Mar(t-2)}}$$

CPI means the All Groups consumer price index as published by the Australian Bureau of Statistics. Where the Australian Bureau of Statistics does not or ceases to publish the index, then CPI will mean the Commission's estimate of the level of consumer prices; and

t can take on the value of 2015-16, 2016-17 or 2017-18 for the relevant year of the adjustment in Table 15.6.

6. 2. Sewerage services

Table 15.7 sets out a maximum price for regulated sewerage services for 2013-14 and 2014-15 and a formula for determining the maximum price for regulated sewerage services for 2015-16, 2016-17 and 2017-18. The maximum prices derived from Table 15.7 for 2015-16, 2016-17 and 2017-18 may also be subject to a pass-through event set out in clause 8.

Table 15.7: Panel's draft direction on sewerage prices

	2013-14	2014-15	2015-16 to 2017-18
Supply charge ($ pa)	492.02	505.41	$P_t=P_{t-1}\times(1+CPI_t)\times(1-X\%)$
Fixtures charge[a] ($ pa)	481.18	494.28	$P_t=P_{t-1}\times(1+CPI_t)\times(1-X\%)$

a For every additional flushing fixture greater than two.

Where:

P_t is the price to be charged for the relevant service in the regulatory year t;

P_{t-1} is the price charged for the relevant service in the preceding regulatory year;

X is -2.4% in 2015-16 and 0 in 2016-17 and 2017-18;

CPI_t is as it is defined in clause 6.1; and

t can take on the value of 2015-17, 2016-17 or 2017-18 for the relevant year of the adjustment in Table 15.7.

7. Pricing for miscellaneous services

The price to be charged for each miscellaneous service in each year of the regulatory period, including 2013-14, is to be calculated according to the following formula, and rounded to the nearest dollar for the GST inclusive price:

$P_t = P_{t-1} \times CPI_t$

where:

P_t is the price to be charged for the relevant miscellaneous service in the regulatory year t;

P_{t-1} is the price charged for the relevant miscellaneous service in the preceding regulatory year;

t is the relevant year in the regulatory period; and

CPI_t is as it is defined in clause 6.1.

7. 1. New miscellaneous services

Should ACTEW wish to introduce a new miscellaneous service during the regulatory period, ACTEW must make an application to the Commission and provide the following information:

(a) a description of the new miscellaneous service;

(b) the reasons for the introduction of the new miscellaneous service;

(c) the terms and conditions which will apply to the provision of the new miscellaneous service;

(d) the direct efficient costs of providing the new miscellaneous service;

(e) a forecast of the annual volume of sales of the new miscellaneous service; and

(f) the proposed price for the new miscellaneous service for the first year it is in place.

7. 2. Submission by ACTEW

The Commission will consider any submission relating to the miscellaneous service from ACTEW and have regard to:

(a) whether the expenditure or revenue associated with the miscellaneous service has already been taken into account in specifying the price to apply under this determination;

(b) whether the proposed price recovers the efficient cost of providing the service; and

(c) any other relevant matter.

7. 3. Commission may request further information

The Commission may request that ACTEW provide any additional information specified by the Commission.

The Commission may request information from parties other than ACTEW.

7. 4. Notification of decision

The Commission will notify ACTEW of its decision whether or not to approve the proposed price submitted for the new miscellaneous service, together with details of the timing of the introduction of the price for the new miscellaneous service and any terms and conditions, which will apply to its introduction or provision.

Part C Regulatory Method

8. Pass-through events

8. 1. Events

A pass-through event is one of the following:

- A Water Abstraction Charge (WAC) event (see clause 8.2).
- A Utilities Network Facilities Tax (UNFT) event (see clause 8.3).
- A subvention payment event (see clause 8.4).
- A change in other taxes event (see clause 8.5).
- A service standard event (see clause 8.6).
- A regulatory obligations event (see clause 8.7).
- A Tantangara Transfer Payment event (see clause 8.8).

8. 2. WAC event

A WAC event occurs where for a particular year the total amount payable by ACTEW to the ACT Government for the WAC differs from the amount incorporated in the Price Direction. The amounts incorporated in the Price Direction are set out in Table 15.8.

Table 15.8: WAC ($million) ($2012-13)

Year	WAC
2014-15	$26.47
2015-16	$26.15
2016-17	$25.84
2017-18	$25.54

8. 3. UNFT event

A UNFT event occurs where for a particular year the total amount payable by ACTEW to the ACT Government for the UNFT differs from the amount incorporated in the Price Direction. The amounts incorporated in the Price Direction are set out in Table 15.9.

Table 15.9: UNFT ($million) ($2012-13)

Year	UNFT
2014-15	$7.84
2015-16	$8.01
2016-17	$8.19
2017-18	$8.26

8. 4. Subvention payment event

A subvention payment event occurs where for a particular year the subvention payment from the Commonwealth Government to ACTEW differs from the amount incorporated in the Price Direction. The amounts incorporated in the Price Direction are set out in Table 15.10.

Table 15.10: Subvention payment ($million) ($2012-13)

Year	Subvention payment
2014-15	$10.59
2015-16	$10.59
2016-17	$10.59
2017-18	$10.59

No change in the subvention payment will be deemed to have occurred if ACTEW receives a payment from the ACT Government that explicitly or implicitly replaces the subvention payment (or the change in the subvention payment).

8. 5. Change in other taxes event

A change in other taxes event is:

(a) a change in the way or rate at which a relevant tax is calculated (including a change in the application or official interpretation of a relevant tax) that occurs on or after 30 June 2013; or

(b) the removal of a relevant tax or imposition of a new relevant tax that occurs on or after 30 June 2013.

Relevant taxes are any tax, rate, duty, charge or levy or other like or analogous impost that is imposed on or payable directly or indirectly by ACTEW to any authority of the Commonwealth of Australia or the government of the ACT, including a goods and services tax but excluding:

- the WAC;
- the UNFT;
- income tax (or ACT-equivalent income tax) or capital gains tax;
- stamp duty, financial institutions duty, bank account debits tax or similar taxes or duties;
- any form of debt service charge;
- penalties and interest for late payment relating to any tax; and
- any tax which replaces the taxes referred to above, where 'tax' includes any rate, duty, charge or levy or other like or analogous impost.

If a change in other taxes event occurs, the change in costs (positive or negative) may be passed through to customers if the total annualised cost associated with the event exceeds $2 million ($2012-13) in the year for which the pass-through is sought.

8. 6. Service standards event

A service standards event means a legislative or administrative act or decision that:

(a) has the effect of:

(i) substantially varying, during the course of the regulatory period, the manner in which ACTEW is required to provide a regulated water or sewerage service;

(ii) imposing, removing or varying, during the course of the regulatory period, minimum service standards applicable to regulated water and sewerage services; or

(iii) altering, during the course of the regulatory period, the nature or scope of the regulated water or sewerage services provided by ACTEW; and

(b) materially increases or materially decreases the costs to ACTEW of providing regulated water or sewerage services.

If a service standard event occurs on or after 30 June 2013, the change in costs (positive or negative) may be passed through to customers if the total annualised cost associated with the event exceeds $2 million ($2012-13) in the year for which the pass-through is sought.

8. 7. Regulatory obligations event

A change in a regulatory obligations event is a change in a regulatory obligation or requirement that:

(a) falls within no other category of pass-through event; and

(b) occurs during the course of the regulatory period; and

(c) substantially affects the manner in which ACTEW provides regulated water or sewerage services.

If a regulatory obligations event occurs on or after 30 June 2013, the change in costs (positive or negative) may be passed through to customers if the total annualised cost associated with the event exceeds $2 million ($2012-13) in the year for which the pass-through is sought.

8. 8. Tantangara Transfer Payment event

A Tantangara Transfer Payment event occurs if ACTEW is required to exercise its option to transfer water from the regulated Murrumbidgee River to the ACT via the Snowy Mountains Scheme.

If the Tantangara Transfer Payment event occurs on or after 30 June 2013, the change in costs (positive or negative) may be passed through to customers if the total annualised cost associated with the event exceeds $2 million ($2012-13) in the year for which the pass-through is sought.

A12. 1 Eligible pass-through amount

The amount in respect of a pass-through event which ACTEW is allowed or required to pass-through to customers in a regulatory year must:

(a) be equal to the increase (or decrease) in costs in the provision of regulated services that, as a result of that pass-through event, ACTEW has incurred or is likely to incur until the end of the regulatory year for which the pass-through is sought;

(b) exclude any amount in respect of the pass-through event which has been passed-through to customers in a previous regulatory year within this regulatory period;

(c) exclude any amount in respect of the pass-through event which ACTEW incurred more than 12 months before the commencement of the year for which the pass-through is sought.

9. Price adjustment process

9. 1. CPI adjustment

The Commission will adjust the maximum prices for regulated water, sewerage and miscellaneous services for each regulatory year on the basis set out in clauses 6 and 7 and provide ACTEW with notice of the adjusted prices on or before 1 June each year.

The Commission will provide ACTEW with details of its calculations of the adjusted prices, including the values of CPI used in the calculations.

9. 2. Recovery of pass-through amounts

If a pass-through event occurs in a regulatory year ACTEW may seek to incorporate the effect of the pass-through event on ACTEW's costs in its adjusted prices for the following regulatory year by making a submission to the Commission on or before 1 May. A submission must include:

(a) details of the pass-through event;

(b) the date the pass-through event occurred;

(c) the estimated financial impact of the pass-through event on ACTEW and the basis on which the impact has been calculated; and

(d) the pass-through amount proposed by ACTEW in relation to the pass-through event and which it proposes be included in its adjusted prices for the relevant regulatory year.

The Commission must decide whether the pass-through event specified in the submission occurred and complies with clause 8 and whether it approves the pass-through amount proposed by ACTEW.

9. 3. Commission consideration

The Commission will advise ACTEW no later than 30 May:

(a) whether the pass-through amount proposed under clause 9.2 complies with the Price Direction and, if it does not comply, the reasons why it does not comply; or

(b) that the Commission requires additional information from ACTEW to assess whether the proposed pass-through amount complies with the Price Direction and the date such additional information is to be provided to the Commission.

If the Commission does not provide advice to ACTEW by 30 May in accordance with this clause 9.3 the proposed pass-through amount will be deemed to comply with the Price Direction.

9. 4. ACTEW resubmission

If the Commission advises ACTEW that the pass-through amount does not comply with the Price Direction or that it requires additional information from ACTEW, ACTEW must resubmit the pass-through amount or provide the additional information to the Commission by the date specified by the Commission.

Within 20 business days of receiving the revised pass-through amount or additional information from ACTEW the Commission will advise ACTEW whether the pass-through amount complies with the Price Direction or will indicate the additional information the Commission requires from ACTEW in order to form an opinion as to whether it complies or not. If the Commission does not provide advice to ACTEW within 20 business days in accordance with this clause the proposed pass-through amount will be deemed to comply with the Price Direction.

If the Commission has advised ACTEW that the pass-through amount does not comply or requires further additional information, the provisions of this clause 9.4 will continue to apply until the Commission approves the pass-through amount as complying with the Price Direction.

9. 5. Commission may initiate pass-through amount

If a pass-through event occurs in a regulatory year and ACTEW's costs are likely to be affected by the event but ACTEW does not make a submission to the Commission in accordance with clause 9.2, the

Commission may decide on a pass-through amount (which may be a negative amount) and the basis on which the pass-through amount is to apply. In doing so, the Commission:

(a) may seek information from ACTEW in relation to the pass-through event and pass-through amount, in which case ACTEW must provide that information within the period specified by the Commission; and

(b) must notify ACTEW in writing of the pass-through amount, the basis on which the pass-through amount is to apply, and the reason for the Commission's decision.

9. 6. Partial adjustment

If by 11 June the Commission has not approved a proposed pass-through amount in respect of a pass-through event, then the prices notified by the Commission under clause 9.1, together with any pass-through amount in respect of another pass-through event that has been approved by the Commission by that date, will take effect as from 1 July of the following regulatory year and ACTEW will amend its standard customer contract to take account of the prices as adjusted and approved by the Commission.

These prices will remain in place until the Commission approves a pass-through amount proposed by ACTEW consistent with the provisions of the Price Direction.

9. 7. Unavailability of information

If any information required by ACTEW in order to make a pass-through submission in accordance with clause 9.2 is not available by 1 May, ACTEW may make the pass-through submission as soon as practicable after the relevant information becomes available and each of the dates in clauses 9.2 and 9.3 will be extended accordingly.

Part D Legislative Provisions

Nothing in this Part D limits the provisions of the Act.

10. Price Direction variation trigger events

Pursuant to sections 20A(3)(c) and 24F(2) of the Act, the following events are price variation trigger events, the occurrence of which allows the Commission to initiate a reference for the variation of the Price Direction:

(a) an act of terrorism;

(b) a major natural disaster;

(c) major damage to ACTEW's infrastructure;

(d) a significant change to ACTEW's financial or corporate structure;

(e) an unforeseen or *force majeure* event that severely restricts ACTEW's ability to provide services; or

(f) a decision by the Commission under clause 11(b) that the tariff structure must be amended during the regulatory period.

The events specified in paragraphs (a) – (e) will be price variation triggers only if they severely restrict ACTEW's ability to provide water and/or sewerage services and impose a total annualised cost on ACTEW for the remainder of the regulatory period of more than $12 million ($2012-13).

11. Future reset principles

Pursuant to section 20B of the Act, the future reset principles are as follows:

(a) The Commission will seek a reference from the relevant minister regarding services covered by the Price Direction 18 months prior to the expiry of the regulatory period.

(b) During the regulatory period, the Commission must conduct a review of the tariff structures for the regulated water and sewerage services of ACTEW. At the conclusion of the review, the Commission must set out in a report its decision on whether amendments should be made to the tariff structures in place. The Commission may recommend that amendments either be made during the regulatory period set out in clause 2 or be considered as part of the investigation for the next regulatory period beginning 1 July 2018. The Commission may also recommend that no changes be made to the tariff structure in place. As part of the review, the Commission must call for submissions from interested parties and post its final report and decision on the Commission's website.

(c) The ACTEW Board must endorse the accuracy of ACTEW's main submission to the investigation into water and sewerage service prices for the next regulatory period.

(d) If, as of 30 June 2018, a new Price Direction for the regulated services of ACTEW is not set to take effect from 1 July 2018, then the prices as of 30 June 2018 will remain in place from 1 July 2018 onwards until a new Price Direction is made by the Commission. To avoid all doubt, apart from providing for interim prices from 1 July 2018 in the event no prices are set, this clause does not limit the functions and decisions of the Commission under the Act as to the applicable regulatory model and prices which take effect from 1 July 2018.

(e) The Commission will make provision for a demand volatility adjustment in the next price determination if the net present value of water sales revenue earned over the period 1 July 2013 to 30 June 2018 differs by more than 7% of the revenue set out in Table 8.3. The demand volatility adjustment will be determined as the difference between:

- the net present value of the revenue earned through tier 1 and tier 2 water charges over the period 1 July 2013 to 30 June 2018; and

- the net present value of the volumetric water sales revenue (i.e. the revenue to be recovered from tier 1 and tier 2 charges) allowed in the Draft Report plus or minus 7% depending on whether there has been an over collection or an under collection of revenue.

Forecast revenue will be used for those quarters of the financial year 2017-18 for which actual revenue data is unavailable. The rate of return to be used in the calculation of the net present value is 7.2%, being the post-tax nominal WACC set out in the Panel's Draft Report.

Table 8.3: Water sales revenue ($million, $2012-13)

Year	Water Sales Revenue
2013-14	$153.26
2014-15	$169.18
2015-16	$160.88
2016-17	$161.66
2017-18	$162.65

(f) The Commission will carry out an *ex post* review of the prudence and efficiency of the amount ACTEW spent on capital expenditure in this regulatory period as part of the next price determination.

(g) The Commission will roll forward the regulatory asset base to determine the opening value at the start of the next regulatory period using the same approach as that outlined in section 8.3 of the Draft Report.

(h) The Commission will allow any cost pass-through or costs associated with an unforeseen event that occur in the final year of this regulatory period (2017-18) to be recovered in the next regulatory period (commencing on 1 July 2018) if it is appropriate to do so.

Compliance with section 20(2)

The table below provides an overview of where in the Draft Report, and how, the Panel has taken into account the matters set out in Section 20(2) and the terms of reference.

Table A1.1: Compliance with Section 20(2) and the terms of reference

Section 20(2)	Draft report chapter(s)	How the Panel has taken the matter into account
(a) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies (including policies relating to the level or structure of prices for services) and standard of regulated services	7	Consideration of the appropriate method to be used to determine prices, use of the building block methodology and similar principles to other regulators, which in broad terms are designed to mimic the price and service outcomes expected in a workably competitive market.
	9 and 10	Consideration of the efficient costs of service provision, including assessment of: • the prudence and efficiency of capital expenditure in the previous regulatory period • the reasonableness and sufficiency of capital expenditure governance in this regulatory period • the prudence and efficiency of forecast capital and operating expenditure in this regulatory period. Informed by independent expert advice.
	11	Consideration of the appropriate approach for setting the rate of return on capital.
	13	Consideration of the extent to which there has been an over or under recovery of revenue in the first two years of the regulatory period (the 'true-up' adjustment) and the removal of income from other sources from the total revenue requirement, to calculate the net revenue to be recovered through water and sewerage charges.
	15	Consideration of customer bill impact analysis.
(b) standards of quality, reliability and safety of the regulated services	9 and 11	Assessment of the prudence and efficiency of forecast capital and operating expenditure in this regulatory period, given current service obligations. Informed by independent expert advice.
(c) the need for greater efficiency in the provision of regulated services to reduce costs to consumers and taxpayers	6 and 7	Consideration of the appropriate method to be used to determine prices, including the potential for incentive schemes to be used in conjunction with the building block methodology in the future. Consideration of the appropriate form of price control, length of regulatory period and other risk allocation measures from the perspective of according ACTEW an incentive to seek out efficiencies.
	9 and 11	Consideration of the efficient costs of service provision, including assessment of: • the prudence and efficiency of capital expenditure in the previous regulatory period • the reasonableness and sufficiency of capital expenditure governance • the prudence and efficiency of forecast capital and operating expenditure in this regulatory period. Informed by independent expert advice.
(d) an appropriate rate of return on any investment in the regulated industry	10	Consideration of the appropriate approach for setting the return on capital, taking into account the requirements of the Act, the approach most commonly used by Australian regulators in applying the building block method (ie the benchmark entity approach), the requirement to comply with competitive neutrality principles and the conditions prevailing in financial markets at the time of the original price determination.
(e) the cost of providing the regulated services	9, 10 and 11	Consideration of regulatory best practice with respect to determining the building block methodology inputs.

Section 20(2)	Draft report chapter(s)	How the Panel has taken the matter into account
(f) the principles of ecologically sustainable development mentioned in subsection (5) of the Act	9 and 11	Consideration of environmental costs in capital and operating expenditure building blocks. Informed by independent expert advice.
(g) the social impacts of the decision	8	Consideration of the intergenerational equity issues posed by the water security projects.
	9 and 11	Consideration of regulatory treatment of CSOs identified by the ICRC
	15	Consideration of customer bill impact analysis.
(h) considerations of demand management and least cost planning	9	Consideration of forecast water demand over the regulatory period and capital planning processes. Informed by independent expert advice.
(i) the borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry	6, 8 and 15	Consideration of the impact on ACTEW's short-term financial viability, ie assessment of whether ACTEW will be able to maintain an investment grade BBB rating, during the regulatory period in the context of determining the level of the deadband, the treatment of the water security projects and the impact of water and sewerage charges.
(j) the effect on general price inflation over the medium term	15	Consideration of the estimated impact of water and sewerage prices on general inflation.
(k) any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person	11	Consideration of the cessation of the Utilities Management Agreement and the subsequent impact on efficient operating costs. Informed by independent expert advice.