



**ICRC**  
independent competition and regulatory commission

**ISSUES PAPER**

# **Review of Methodologies for the Weighted Average Cost of Capital**

**Report 12 of 2020, September 2020**



The Independent Competition and Regulatory Commission is a Territory Authority established under the *Independent Competition and Regulatory Commission Act 1997* (the ICRC Act). The Commission is constituted under the ICRC Act by one or more standing commissioners and any associated commissioners appointed for particular purposes. Commissioners are statutory appointments. Joe Dimasi is the current Senior Commissioner who constitutes the Commission and takes direct responsibility for delivery of the outcomes of the Commission.

The Commission has responsibilities for a broad range of regulatory and utility administrative matters. The Commission has responsibility under the ICRC Act for regulating and advising government about pricing and other matters for monopoly, near-monopoly and ministerially declared regulated industries, and providing advice on competitive neutrality complaints and government-regulated activities. The Commission also has responsibility for arbitrating infrastructure access disputes under the ICRC Act

The Commission is responsible for managing the utility licence framework in the ACT, established under the *Utilities Act 2000* (Utilities Act). The Commission is responsible for the licensing determination process, monitoring licensees' compliance with their legislative and licence obligations and determination of utility industry codes.

The Commission's objectives are set out in section 7 and 19L of the ICRC Act and section 3 of the *Utilities Act 2000*. In discharging its objectives and functions, the Commission provides independent robust analysis and advice.

© Australian Capital Territory, Canberra

Correspondence or other inquiries may be directed to the Commission at the following address:

Independent Competition and Regulatory Commission  
PO Box 161  
Civic Square ACT 2608

The Commission may be contacted at the above address or by telephone on (02) 6205 0799. The Commission's website is at [www.icrc.act.gov.au](http://www.icrc.act.gov.au) and its email address is [icrc@act.gov.au](mailto:icrc@act.gov.au).

## How to make a submission

This issues paper provides an opportunity for stakeholders to provide feedback and evidence to inform the development of the draft report. It will also ensure that relevant information and views are made public and brought to the Commission's attention.

Submissions on the issues paper close at **5pm Friday 30 October 2020**.

Submissions may be mailed to the Commission at:

Independent Competition and Regulatory Commission  
PO Box 161  
Civic Square ACT 2608

Alternatively, submissions may be emailed to the Commission at [icrc@act.gov.au](mailto:icrc@act.gov.au). The Commission encourages stakeholders 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).

For submissions received from individuals, all personal details (for example, home and email addresses, and telephone and fax numbers) will be removed for privacy reasons before the submissions are published on the website.

The Commission is guided by the principles of openness, transparency, consistency and accountability. Public consultation is a crucial element of the Commission's processes. The Commission's preference is that all submissions it receives be treated as public and be published on the Commission'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 Commission prefers that this be under a separate cover and clearly marked 'In Confidence'. The Commission 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.

The Commission may be contacted at the above address, by telephone on (02) 6205 0799 or via the Commission's website at [www.icrc.act.gov.au](http://www.icrc.act.gov.au).

# Table of Contents

<b>1.</b>	<b><u>Introduction</u></b>	<b><u>1</u></b>
1.1	Background to the Review	1
1.2	Purpose of the issues paper	4
1.3	Commission’s role and objectives	4
1.4	Commission’s proposed approach to this Review	6
1.5	Indicative review timeline	8
1.6	Structure of the issues paper	8
<b>2.</b>	<b><u>Commission’s approach to estimating the rate of return</u></b>	<b><u>9</u></b>
2.1	Benchmark efficient firm approach	9
2.2	Nominal vanilla post-tax WACC	9
	2.2.1 Gearing ratio	10
	2.2.2 Imputation credits	10
<b>3.</b>	<b><u>Return on equity</u></b>	<b><u>12</u></b>
3.1	Current return on equity approach	12
3.2	Proposed issues for review	13
	3.2.2 Averaging period for the risk-free rate	13
	3.2.3 Market risk premium	15
	3.2.4 Equity beta	20
<b>4.</b>	<b><u>Return on debt</u></b>	<b><u>23</u></b>
4.1	Current return on debt approach	23
4.2	Proposed issues for review	24
	4.2.2 Third party data series	25
	4.2.3 Benchmark credit rating	25
	4.2.4 Debt raising costs	26
<b>5.</b>	<b><u>Consolidated list of questions</u></b>	<b><u>28</u></b>
	<b><u>Abbreviations and acronyms</u></b>	<b><u>29</u></b>
	<b><u>References</u></b>	<b><u>30</u></b>

## List of Figures

Figure 1.1 Simplified building blocks methodology	2
---	---

## List of Tables

Table 1. Regulatory objectives and pricing principles for water and sewerage tariffs	5
Table 2. Indicative timeline of events	8
Table 3. Past regulatory decisions on MRP	18
Table 4. Past regulatory decisions on equity beta	22
Table 5. Past regulatory decisions on credit rating	26
Table 6. Past regulatory decisions on debt raising costs	27

## List of Boxes

Box 1.1. Sections 7 and 19L: Commission objectives	4
Box 1.2. Section 20(2): Commission's considerations	4
Box 2.1. Nominal Vanilla WACC	10
Box 2.2. Value of imputation credits (gamma)	11
Box 3.1. Sharpe – Lintner Capital Asset Pricing Model	12
Box 3.2. MRP estimation methods	16
Box 3.3. Equity beta– what does it mean?	20

# 1. Introduction

This review of the rate of return methodology for water and sewerage services (the Review) seeks to ensure that the Independent Competition and Regulatory Commission's (the Commission) approach to determining water and sewerage services prices provides an appropriate return on Icon Water's investments and encourages prudent and efficient investments for delivering services. It also ensures the Commission's regulatory framework continues to be consistent with the Commission's objectives in the *Independent Competition and Regulatory Commission Act 1997* (the ICRC Act).

## 1.1 Background to the Review

The Commission is the Australian Capital Territory's (ACT) independent economic regulator, which regulates prices, access to infrastructure services and other matters in relation to regulated industries in the ACT. The Commission also has functions under the *Utilities Act 2000* (Utilities Act) for licensing electricity, natural gas, water and sewerage utility services and making industry codes.

The Commission is responsible for setting regulated prices for the supply of water and sewerage services, as well as setting minimum service standards and targets (guaranteed service levels or GSLs) for water and sewerage services in the Consumer Protection Code, made under the Utilities Act.

The Commission undertakes price investigations in accordance with sections 15, 16 and 17 under Part 3 of the ICRC Act, and issues Price Directions under Part 4 of the ICRC Act. The 2018 Price Direction sets the Commission's methodology for setting the maximum prices that Icon Water can charge for water and sewerage services from 1 July 2018 to 30 June 2023.

The Commission established a review of calculation methodologies for the WACC that may be used in the 2023 water price investigation as a reset principle in the 2018 Price Direction. Reset principles are principles governing the redetermination of prices in a regulated industry, and can provide the opportunity to assess and update, if necessary, aspects of the methodology that will be used by the Commission in the next price investigation.

The Commission considers it important to periodically consider and invite stakeholders to comment on new evidence or analytical techniques that may allow better estimates of the rate of return to be made. This process ensures the estimation techniques used by the Commission remain up-to-date and take into account new evidence and analysis.

### **The regulatory model**

The Commission currently uses a 'building block' methodology to determine the efficient costs that Icon Water can recover from its customers in a regulatory period. It is the most widely used approach in Australia for determining the allowable revenue a utility business may recover through prices.

Under the building block model, the allowed revenue for the regulatory period is the sum of the operating expenditure and a contribution to the cost of capital investments made over time (referred to as the regulatory asset base), plus allowances for forecast tax paid by the business. The contribution to the cost of

capital investments is the sum of what is known as the 'return on capital' and the 'return of capital' (depreciation). This method of allowing for the recovery of the regulated business' capital investments gives the regulated firm a reasonable assurance that it will be able to pay back its lenders, includes a commercial rate of interest, and provide its investors with a reasonable return on their investment—given the relative risk of the business compared to other investments.

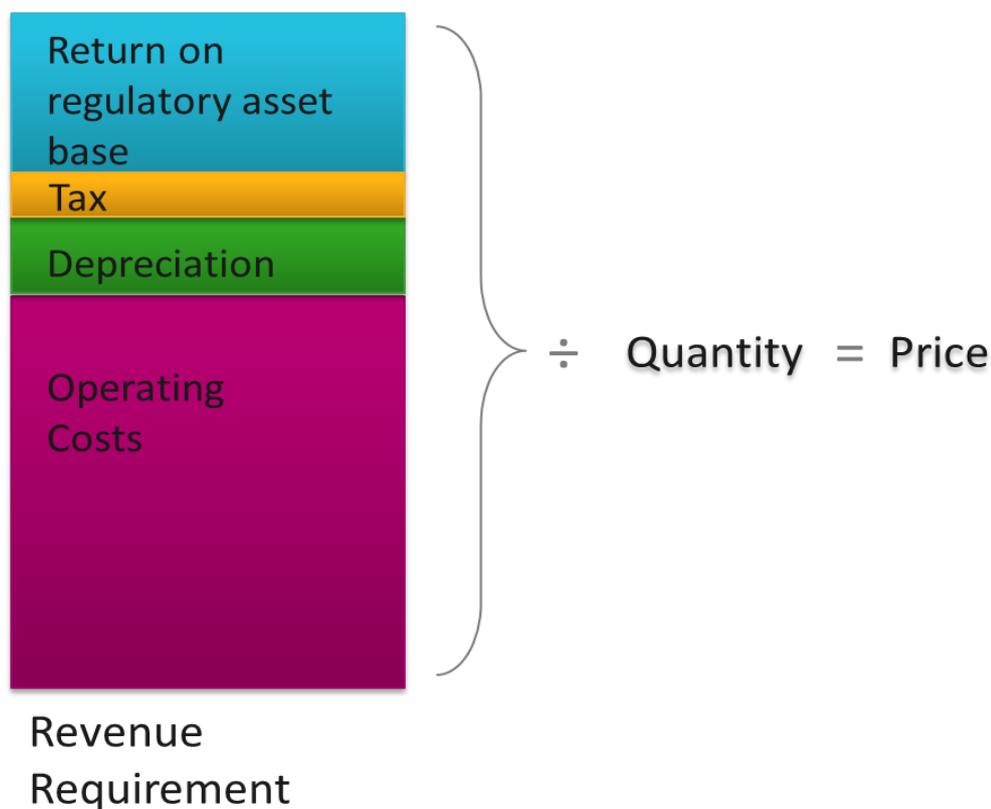
In other words, the total allowed revenue is the sum of the following cost components or 'blocks':

- Operating expenditure;
- Return on capital, equal to the rate of return multiplied by the regulatory asset base;
- Return of capital, also known as depreciation;
- An allowance for the forecast tax paid by the firm; and
- The pass-through of specified unexpected or government-mandated costs.

Service standards, licence obligations and legislative requirements imposed on business operations underpin these operating expenditure and capital investment decisions.

This total allowed revenue is then divided by the forecast (or expected) water demand, which includes estimates of future water usage plus new water and sewerage service connections, to derive a price for each service (illustrated in Figure 1.1).

**Figure 1.1 Simplified building blocks methodology**



Under the building block methodology, expenditure is only included in allowed revenue calculations when it is deemed both 'prudent' and 'efficient'. For Icon Water's 2018 Price Direction, the Commission defined prudent and efficient as:

- Prudent expenditure. This encompasses whether the project, program or activity would reasonably be expected of a utility operating in the circumstances that apply. Evidence considered for prudence would include substantiation of the benefits of and the need for the project, program or activity.
- Efficient expenditure. This relates to whether the project, program or activity is delivered or proposed to be delivered with the best value for money. Evidence considered for efficiency would include exploration of alternative service delivery options, assessment of lowest cost over the life cycle, and the 'deliverability' of the proposed project, program or activity.

### **The rate of return**

The Commission sets an allowed rate of return for Icon Water every five years as part of its water price investigation.

The Commission calculates the allowed return on capital each year by multiplying the regulatory asset base (RAB) by the rate of return set by the Commission. As Icon Water holds large high-value capital assets in its RAB (such as dams and pipelines), the return on capital accounts for around 25 per cent of Icon Water's total revenue.

The shareholders and lenders that finance Icon Water's business expect a commercial return on their funds (equity and debt, respectively). The rate of return is an estimate of the cost of funds required by Icon Water to attract investment in the business. To estimate this cost, the Commission considers the cost of the two sources of funding for investments – equity and debt. The return that Icon Water's shareholders require on their investments is known as the return on equity. The interest rate that a business pays on its borrowings from banks and other lenders is known as the return on debt. The combination of the estimated return on equity and the return on debt, weighted by the estimated shares of equity and debt for the business, comprises the 'weighted average cost of capital' (WACC). For regulatory decision making, the WACC is a very common method to determine the rate of return.

If the Commission were to set the rate of return too low, Icon Water may not be able to attract sufficient funds to invest in maintaining, upgrading, renewing and replacing water and sewerage assets. If the rate of return were to be set too high, there would be a risk of encouraging too much investment in the business, and consumers would pay higher than necessary water bills. Neither of these outcomes are in the long-term interests of customers.

The rate of return is a significant driver of Icon Water's revenue and water bills paid by customers. A one percentage point increase in the rate of return for Icon Water would increase its revenues by around eight per cent.

### **The Industry Panel approach**

The Commission's decision on Icon Water's prices for regulated water and sewerage services in 2013 was appealed by Icon Water under the appeal process provided for in the ICRC Act. The Industry Panel was appointed by the ACT Treasurer to review the Commission's decision. In April 2015, the Industry Panel made its final decision to substitute a new price direction for the original price direction that set prices until 30 June 2018.

The Commission's 2018 decision on the WACC was broadly consistent with the Industry Panel's methodology. The Commission revised the method for determining the market risk premium and the allowed return on debt and updated the values of several parameters for more up-to-date information.

## 1.2 Purpose of the issues paper

There are two reasons for this issues paper. The first is to alert stakeholders that the Commission is undertaking a review of the WACC methodology and to seek stakeholder input on any issues they consider relevant. The second purpose is to describe the Commission's current methodology and describe other approaches that may be relevant to consider as part of this Review.

## 1.3 Commission's role and objectives

In carrying out its functions under the ICRC Act, the Commission has the following objectives as set out in sections 7 and 19L of the ICRC Act (Box 1.1).

### Box 1.1. Sections 7 and 19L: Commission objectives

Section 7:

- (a) to promote effective competition in the interests of consumers;
- (b) to facilitate an appropriate balance between efficiency and environmental and social considerations;
- (c) to ensure non-discriminatory access to monopoly and near-monopoly infrastructure.

Section 19L:

To promote the efficient investment in, and efficient operation and use of regulated services for the long-term interests of consumers in relation to the price, quality, safety, reliability and security of the service.

When making a price direction, in addition to the terms of reference and legislative objectives, the Commission is also required to have regard to the provisions in section 20(2) of the ICRC Act (Box 1.2). Of particular relevance to this Review are considerations related to the need to provide an appropriate rate of return on investment for Icon Water.

### Box 1.2. Section 20(2): Commission's considerations

- (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; and
- (b) standards of quality, reliability and safety of the regulated services; and
- (c) the need for greater efficiency in the provision of regulated services to reduce costs to consumers and taxpayers; and
- (d) an appropriate rate of return on any investment in the regulated industry; and

- (e) the cost of providing the regulated services; and
- (f) the principles of ecologically sustainable development mentioned in subsection (5);
- (g) the social impacts of the decision; and
- (h) considerations of demand management and least cost planning; and
- (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; and
- (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; and
- (l) any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person.

As part of this Review, the Commission will also consider the pricing principles outlined in the Commission's Final Report on regulated water and sewerage services prices for 2018-23 (Table 1).<sup>1</sup> The ICRC Act and the pricing principles require the Commission to balance economic efficiency, environmental and social objectives. The Commission acknowledges that there are likely to be trade-offs in balancing the various objectives and other objectives set by government policies. Most relevant to this Review are the pricing principles relating to economic efficiency and regulatory transparency and simplicity.

**Table 1. Regulatory objectives and pricing principles for water and sewerage tariffs**

Objective	
<b>Overarching interpretation</b>	<p>To promote efficient investment in, and efficient operation and use of, regulated services for the long-term interests of consumers in relation to the price, quality, safety, reliability and security of the service.</p> <p>The various aspects of economic efficiency are given emphasis but with the ultimate objective being the long-term interests of consumers. 'Economic efficiency' when properly defined encompasses environmental objectives. Consumer interests must take account of equity and other social impacts, as required by the ICRC Act.</p> <p>Economic efficiency considerations related to pricing are a starting point but need to be balanced with environmental and social considerations.</p>
Pricing principle	
<b>1. Economic efficiency in use</b>	Regulated prices should promote the economically efficient use of Icon Water's water and sewerage services infrastructure and should also encourage economically efficient use of the water resource itself.

<sup>1</sup> ICRC 2018, p 5.

	This includes having regard to uneconomic bypass where water supply is sourced from a higher cost alternative.
<b>2. Economic efficiency for investment and operation</b>	Regulated prices and supporting regulatory arrangements should facilitate the efficient recovery of the prudent and efficient costs of investment and operation.  The finance recovery aspect of this principle is often described as ensuring revenue adequacy or financial viability. Costs also need to be efficient, which is primarily dealt with by auditing and incentive-sharing mechanisms.
<b>3. Environmental considerations</b>	Regulated prices and complementary mechanisms should ensure that environmental objectives are effectively accounted for.
<b>4. Community impact – gradual adjustment</b>	Any change to prices or other regulatory arrangements that will have substantial consumer impacts should be phased in over a transition period to allow reasonable time for consumers to adjust to the change.
<b>5. Community impact – fair outcomes for low-income households</b>	Adverse impacts on households with low incomes need to be limited or moderated by phasing and other compensating mechanisms or limits on changes to regulated prices or other regulatory arrangements.
<b>6. Regulatory governance – simplicity</b>	Regulated prices and their form should be simple for consumers to understand and straightforward for the utility to implement.
<b>7. Regulatory governance – transparency</b>	Regulated prices should be set using a transparent methodology and be subject to public consultation and scrutiny.

## 1.4 Commission’s proposed approach to this Review

As part of this Review, the Commission will determine the WACC methodology to be used in the next water price investigation for Icon Water, which is likely to commence in late 2021. The Commission considers it appropriate to adopt its 2018 decision on the rate of return as the appropriate starting point for this Review. Therefore, the Review will focus on examining opportunities to make improvements to the WACC calculation methodology currently in place. The scope includes:

- how the Commission determines the parameters for the return on debt and return on equity, including the gearing ratio, credit rating, risk-free rate, equity beta and market risk premium;
- interrelationships between estimates of parameters that are relevant to the estimates of the return on equity and the return on debt; and
- review of which data series to use when estimating the return on debt.

As part of this Review, the Commission will gather stakeholder views on possible improvements to its existing WACC methodology. This Commission does not intend to determine inputs to the methodology as a part of this Review; actual parameter values will be determined as part of next price investigation.

The Commission does not propose to consider broader methodological issues related to how the WACC is applied; for example, whether the WACC is pre- or post-tax, or real or nominal.

## Assessment criteria for the Review

The development of assessment criteria can help promote consistency in decision-making and provide a clear framework for assessing possible changes to the existing WACC methodology. During this Review, the Commission proposes to use the following criteria to balance its regulatory objectives:

1. **Reliance on sound methods and robust analysis.** The WACC methodology should provide for the rate of return needed for Icon Water to attract and retain capital. This means that the methodologies used should have strong theoretical foundations and all parameter estimates be based on the best available evidence.
2. **Transparency and replicability.** The WACC methodology should be transparent in explaining how parameter estimates have been determined and enable stakeholders to reasonably estimate the allowed rate of return that will be expected to apply to Icon Water in the Commission's determination.
3. **Stability over time.** The WACC methodology needs to be relatively stable over time to give stakeholders certainty. The methodology should only be updated where there is sufficient evidence that the change would increase the accuracy of the rate of return estimate.
4. **Consistency with best regulatory practice.** In determining the WACC, the Commission will consider approaches used by other Australian regulators.

The Commission considers that these criteria will address the Commission's legislative objectives and the matters that it is required to consider under section 20(2) of the ICRC Act. The rate of return must be set to promote efficient investment in, and the efficient operation and use of, regulated services for the long-term interests of consumers.

Criterion 1 is important because if the Commission were to set the rate of return too low, Icon Water may not be able to attract sufficient funds to invest in maintaining, upgrading, renewing and replacing water and sewerage assets. If the rate of return were to be set too high, there would be a risk of encouraging too much investment in the business, and consumers would pay higher than necessary water bills.

Criterion 2 and 3 are endeavouring to provide confidence in the WACC methodology and rate of return outcomes among consumers, investors and other stakeholders. Criterion 2 suggests the need to ensure that all stakeholders can replicate the Commission's analysis, whereas Criterion 3 is reflective of the need to provide stakeholders with a degree of regulatory stability in the determination of the rate of return. Regulatory stability will promote efficient investment in, and use of, the relevant services because it gives investors the confidence to make investments in long-lived water assets. That is not to suggest that the rate of return itself must be stable. Rather, there should be predictability about the way the allowed rate of return is determined.

Finally, the Commission considers it important to confirm that its WACC methods conform to best regulatory practice, provided best practice is implemented consistent with the Commission's legislative requirements under the ICRC Act.

### The Commission is seeking feedback on:

1. Do stakeholders have any comments on the assessment criteria proposed by the Commission?

## 1.5 Indicative review timeline

The Commission proposes to adopt the indicative timeline set out in Table 2. In developing the indicative timeline, the Commission has considered the timing of other regulatory processes, both in the ACT and in other jurisdictions, and has aimed to allow sufficient time for Icon Water and other stakeholders to participate fully in the Review.

**Table 2. Indicative timeline of events**

Task	Date
Release of issues paper	<b>September 2020</b>
Workshop	October 2020
Submissions on issues paper close	30 October 2020
Draft report	January 2021
Workshop (if required)	February 2021
Submissions on draft report close	February 2021
Final report	April 2021

The closing date for submissions on the issues paper is 30 October 2020. Written submissions received by the closing date will be considered in the development of a draft report. The Commission will also consider holding a second workshop, following the release of the draft report. The need for the workshop will be assessed based on the nature of issues raised by stakeholders in their submissions to this issues paper.

## 1.6 Structure of the issues paper

The remainder of this issues paper is structured as follows:

- Chapter 2 discusses the Commission's approach to estimating the rate of return.
- Chapter 3 discusses factors concerning the return on equity.
- Chapter 4 discusses factors concerning the return on debt.

**The Commission is seeking feedback on:**

2. Do stakeholders have any comments on the overall approach the Commission has proposed to adopt for its review of the WACC?

## 2. Commission's approach to estimating the rate of return

This chapter describes the key elements of the rate of return framework adopted by the Commission. This involves the following elements:

- using a benchmark efficient firm as the basis for setting the rate of return;
- calculate the rate of return using a weighted average cost of capital (WACC) formulation, measured on a nominal vanilla basis; and
- adopt a post-tax methodology, which requires separate estimates of tax expenses.

### 2.1 Benchmark efficient firm approach

The Commission specifies the rate of return based on the efficient financing costs of a benchmark firm, rather than the actual costs of an individual business. The benchmark efficient entity approach is commonly used by the Australian regulators.

This approach ensures that Icon Water has incentives to source debt and equity efficiently because it rewards it for spending less than the efficient financing costs assumed by the Commission and penalises it for spending more. For example, if Icon Water can access lower cost financing, it can retain the difference between the actual rate of return and the allowed rate of return set by the Commission. This also means that consumers are protected if Icon Water is inefficient in its financing practices.

### 2.2 Nominal vanilla post-tax WACC

As explained in Chapter 1, the Commission estimates the allowed rate of return by applying a weighted average cost of capital (WACC) approach. The WACC is calculated by estimating the required return on debt and equity for a benchmark efficient firm and weighting these estimated returns by the relative shares of debt and equity held or expected to be held by a benchmark efficient firm with similar characteristics and risk profile.

The WACC can be constructed differently depending on how tax is recognised in the formula. The formulation adopted in the Industry Panel's model, and retained in the Commission's 2018 final decision, is known as the 'nominal vanilla WACC'. The term 'nominal' means that the return components are in nominal as opposed to real (inflation-adjusted terms), so that an inflation premium is already included in the components. The term 'vanilla' indicates that all tax-related matters are excluded from the WACC calculation. As explained in chapter 1, a separate tax allowance is included in the building block model used by the Commission.

### Box 2.1. Nominal Vanilla WACC

The nominal vanilla WACC is defined as follows:

*WACC nominal vanilla* =  $E(Rd) \times D/V + E(Re) \times E/V$ , where:

$E(Rd)$  is the expected nominal pre-tax rate of return on debt;

$E(Re)$  is the expected nominal post-(company) tax rate of return on equity;

$D/V$  is the proportion of debt in total financing; and

$E/V$  is the proportion of equity in total financing.

## 2.2.1 Gearing ratio

As discussed above, the WACC is a weighted average of the return on equity and the return on debt. The weights reflect the proportion of debt and equity used to finance assets. The debt to total assets ratio is also called the 'gearing ratio'. The Commission determines a gearing ratio having regard to the capital structure that a benchmark firm would have, which may differ from the actual gearing ratio of Icon Water.

In addition to being used to weight the returns on debt and equity in the WACC formula, the gearing ratio is also used:

- for the purposes of analysing the level of systematic risk across businesses in the estimate of equity beta; and
- as a factor in determining an appropriate credit rating for deriving the return on debt.

Regulators across Australia typically determine a gearing ratio by observing gearing data for a benchmark sample of regulated firms, observing the actual gearing ratio of the regulated firm in question and observing other regulators' decisions.

The Commission currently uses a benchmarking approach to determine the gearing ratio. For example, as part of its 2018 water price investigation, the Commission determined a gearing ratio of 60 per cent having regard to the Industry Panel's study of the actual gearing ratios of 16 international water utilities and the consideration of regulatory decisions made by other Australian regulators.

As part of this Review, the Commission will consider whether its current method for determining the gearing ratio remains appropriate.

#### The Commission is seeking feedback on:

3. Do stakeholders have any comments on the Commission's current approach to setting the gearing ratio for a benchmark firm?

## 2.2.2 Imputation credits

The Commission uses a post-tax framework for estimating the rate of return. The post-tax WACC framework requires separate estimates of taxation expenses. Under this framework, the value of imputation credits ( $\gamma$ ) is not an input parameter for calculating the WACC. Instead, it is a direct input

into the calculation of tax liability for Icon Water, via the corporate tax component of the building block model.

In calculating net tax liabilities, there is a need to estimate the extent to which Australia's dividend imputation system reduces shareholders' personal tax expenses. The key parameter that reflects the impact on dividend imputation is referred to as 'gamma'. The value of gamma depends on the extent to which imputation credits for tax paid are distributed to shareholders and the extent to which shareholders can use imputation credits to obtain a tax rebate.

### **Box 2.2. Value of imputation credits (gamma)**

Investors receive imputation (or franking) credits for the corporate income tax that has been paid before the distribution of dividends. These credits avoid double taxation, as the dividends are also taxed at the individual level through personal income taxation.

The value of imputation credits in the building block model is represented by the parameter gamma which is one of the inputs to calculate the corporate tax allowance. The value of gamma lies in a range from zero to one. A higher value of gamma will reduce the corporate taxation allowance and ultimately results in lower allowable revenue.

While the Commission does not use gamma in calculating the WACC, the value of imputation credits is correlated with the market risk premium (MRP). Regulators use data on observed equity returns after corporate tax to estimate the MRP. However, they do not take account of the franking credit benefits that Australian investors receive. To take account of this benefit, the MRP estimates are adjusted for dividend imputation.<sup>2</sup>

The Commission does not propose to consider the value of imputation credits as part of this Review because it is not an input parameter for calculating the WACC. The Commission recognises that there is interrelationship between gamma and the MRP. The Commission will take this into account in its approach to determining the MRP and when determining the value of gamma in the next price investigation.

#### **The Commission is seeking feedback on:**

4. Do stakeholders have any comments on the approach the Commission's has proposed to the value of imputation credits?

<sup>2</sup> IPART 2018b, p 53.

## 3. Return on equity

The rate of return on equity is established by applying the widely used capital asset pricing model, which consists of three parameters – a risk-free rate, a market risk premium, and a beta parameter. The Commission’s current approach to estimating these parameters and issues for review are set out in this chapter.

### 3.1 Current return on equity approach

The Commission uses the Sharpe–Lintner Capital Asset Pricing Model (S-L CAPM) to estimate the return on equity. The S-L CAPM is widely used by Australian regulators. It is a simple and intuitive model that predicts the relationship between firms’ returns and their riskiness. In brief, the riskier the firm’s returns, the higher the rate of return required to compensate shareholders for the risk.

The S-L CAPM requires three input parameters:

- **The risk-free rate.** The risk-free rate is the rate of return on a ‘zero-risk’ investment. That is, the return that investors would expect to receive for investing in securities with no default risk.<sup>3</sup> Australian standard regulatory practice is to use the rate of return on Commonwealth Government Securities (CGS) with a maturity of 5 or 10 years as a proxy for the risk-free rate.
- **The equity beta.** The equity beta represents a measure of systematic risk in the S-L CAPM, that is, risk associated with factors beyond the firm’s control. This is measured by the correlation of the return on the specific asset to the return on the market as a whole.
- **The market risk premium.** The MRP is the difference between the expected rate of return on a market portfolio and the risk-free rate. The market risk premium is a general market parameter that does not vary with different investments or specific firms.

#### Box 3.1. Sharpe – Lintner Capital Asset Pricing Model

Under the S-L CAPM, the return on equity equals the sum of the risk-free rate of return, and the product of the market risk premium (MRP) and the equity beta. The S-L CAPM is defined as follows:

$E(Re) = E(Rf) + \beta e[E(Rm) - E(Rf)]$ , where:

$\beta e$  is the equity beta;

$E(Rf)$  is the expected risk-free rate;

$E(Rm)$  is the expected return on a broad stock market index (like the ASX All Ords); and

$E(Rm) - E(Rf)$  is the expected MRP.

<sup>3</sup> Default risk is the risk that a lender takes on in the chance that a borrower will be unable to make the required payments on their debt obligation. A higher level of default risk leads to a higher required return, and in turn, a higher interest rate.

## 3.2 Proposed issues for review

As part of this Review the Commission intends to seek stakeholder feedback on its current method to determining the return on equity parameters. In particular, the Commission is interested in stakeholder views on recent developments in regulatory practice and new information that has become available since the Commission's decision in 2018. The Commission proposes reviewing its current approach to:

- the averaging period for the risk-free rate;
- the market risk premium; and
- the equity beta.

The Commission seeks stakeholder views on whether there are other factors the Commission should consider in this Review in relation to the return on equity.

### 3.2.2 Averaging period for the risk-free rate

The risk-free rate is a component used to calculate the cost of equity. The term 'averaging period' for the risk-free rate refers to the period over which the risk-free rate is calculated. Regulatory practice in Australia for estimating the risk-free rate has primarily involved taking an average of the daily risk-free rates over a 20 to 60-day period close to the start of the regulatory period. Therefore, the estimate is an attempt to reflect the prevailing conditions in the market.

#### Commission's current approach

The Commission's current approach to determining the risk-free rate is based on the 10-year term to maturity for Commonwealth Government Securities (available from the Reserve Bank of Australia website), and a 40 day averaging period close to the beginning of the regulatory period.<sup>4</sup> This approach was set out in the Industry Panel's 2015 decision and is consistent with regulatory practice adopted by other Australian regulators to use short-term averaging periods.<sup>5</sup>

During the 2018 water price investigation, Icon Water proposed extending the averaging period for the risk-free rate used in estimating the cost of equity from 40 days to 12 months. This request was not included in Icon Water's original proposal but was proposed at the revised proposal stage. Icon Water's revised proposal argued that:<sup>6</sup>

*[there is a] lottery-style selection of parameter values inherent in the Industry Panel approach. ...there is significant volatility in these estimates over short periods. For example, in the 12 months to December 2017 the risk-free rate range was between 2.63 per cent and 2.98 per cent, a difference of 63 basis points. This translates to a difference of \$45 million in Icon Water's total revenue*

<sup>4</sup> ICRC 2018, p 93.

<sup>5</sup> Ibid.

<sup>6</sup> Icon Water 2018, pp 10, 16.

*requirement due to nothing other than a difference in the choice of averaging period for the risk-free rate.”*

## ICON WATER

In the final report for the 2018 water price investigation, the Commission decided that there was insufficient consultation on the proposed lengthening of the averaging period because this issue was raised very late in the process. For this reason, the Commission decided to retain its standard 40-day averaging period for setting the risk-free rate used in the calculation of the cost of equity. However, the Commission proposed to further examine the averaging periods for the risk-free rate during this Review.

### Recent regulatory developments

Australian regulators typically use averaging periods between 20 and 60 businesses days to estimate the risk-free rate, with a start date close to the beginning of the regulatory period. The Commission is not aware of any regulatory decisions in Australia that use an averaging period longer than 60 days for setting the risk-free rate for the calculation of the return of equity.

The underlying reason for using a short averaging period is that it is considered to be a pragmatic way of capturing the prevailing risk-free rate at the time of regulatory determination.<sup>7</sup> The prevailing risk free rate is used as a proxy for the risk free rate over the forward looking horizon, i.e. the length of the regulatory period.

The AER recently examined network businesses’ proposals to adopt substantially longer averaging periods, i.e. 8 to 12 months. In considering this issue, the AER had to balance the need to capture the prevailing risk-free rate with that of avoiding unnecessary volatility. As part of its analysis, the AER observed the impact of different averaging periods on volatility in the prevailing rate. The AER noted that longer averaging periods (250 days) showed lower volatility than shorter averaging periods (20 and 60 days). However, at any given point in time, the 250-day average can depart significantly from the prevailing rate.<sup>8</sup> Therefore, the 250-day average was less reflective of prevailing market conditions at the time of the regulatory determination.

The AER made an on-balance decision to increase the flexibility for network businesses to nominate an averaging period of up to 60 days, compared to the 20 days allowed under its previous approach. The AER’s reasons for lengthening the averaging period were:<sup>9</sup>

- it provides service providers the opportunity to reduce their exposure to short term volatility in CGS yields;
- allowing service providers to nominate their own averaging period has a pragmatic benefit as it provides them with further flexibility in how they mitigate their exposure to short term volatility, through the use of financial arrangements; and
- while the longer period is a departure from the theoretical ideal of an on-the-day rate, the pragmatic benefit of giving regulated businesses flexibility in choosing the length of the period is likely to reduce volatility and is in the interest of all stakeholders.

<sup>7</sup> AER 2018b, p 34.

<sup>8</sup> Ibid.

<sup>9</sup> AER 2018c, p 42.

**The Commission is seeking feedback on:**

5. Do stakeholders have any comments on the appropriate length of the averaging period for the risk-free rate used in estimating the cost of equity?

### 3.2.3 Market risk premium

The MRP is a general market parameter that does not vary with different investments or specific firms. It is a measure of the extent to which the expected return on the market portfolio as a whole exceeds the risk-free rate; and can be interpreted as the return in excess of the risk-free rate that investors require for holding risky assets such as equities, over relatively safe assets such as government bonds.

#### Commission's current approach

The Commission currently determines the MRP using a benchmarking approach based upon consideration of recent regulatory decisions made by other Australian regulators. In its last determination, the Commission set the MRP at 6.5 per cent after considering that the approach used by the AER at the time would result in the best estimate of the MRP. Approaches considered by the Commission as part of its benchmarking resulted in MRP estimates ranging from 6 per cent (ESC, ESCOSA, ACCC) to 7.55 per cent (IPART).<sup>10</sup>

The Commission considered that the AER's approach to estimating the MRP was most appropriate because it used a range of theoretical and empirical evidence that gave weight to both past and present market conditions. The Commission refers to the following criteria as important for defining an appropriate regulatory approach to be considered in its benchmarking process:

- Consideration of a broad range of methods for estimates;
- Greater weight afforded to historical estimates (details of historical estimates are in Box 3.2);
- Due consideration afforded to forward-looking estimates based on dividend growth models (see Box 3.2); and
- Use of other evidence as a cross-check (the AER considered dividend yields, credit spreads, implied volatility and survey evidence).<sup>11</sup>

The AER made an estimate of the MRP based on its regulatory judgement, considering estimates from each of these sources of evidence and considering their strengths and limitations. The AER considered that this approach is best suited for achieving its objective of determining a rate of return that is reflective of the efficient financing costs faced by a benchmark efficient firm. This approach was also consistent with other regulators like the ACCC and QCA, which used similar approaches to the AER at the time.<sup>12</sup>

The Commission's approach to the MRP in its last decision represented a departure from that determined by the Industry Panel in 2015 to use a single 40-day average of forward looking MRPs published by Bloomberg, which resulted in an MRP of 7.23 per cent.<sup>13</sup> The Commission considered that it was

<sup>10</sup> ICRC 2018, p 108.

<sup>11</sup> Ibid, p 109.

<sup>12</sup> Ibid, p 115.

<sup>13</sup> Industry Panel 2015, p 65.

appropriate to depart from the Industry Panel's method given that it is unusual in the Australian regulatory landscape to determine the MRP using a single method.

### Box 3.2: MRP estimation methods

Different methods are used to estimate the MRP. Standard regulatory practice is to use historical stock market returns, sometimes supplemented by forward-looking estimates, to determine the MRP.

#### Historical averages (arithmetic and geometric)

The historical average approach is backward-looking and involves estimating the excess market return for each year of a long historical period by taking the return on a broad stock market index over the year and subtracting the return that could have been earned on government bonds over that same year. An average excess return over the historical period is then used as an estimate of the average MRP for that period.<sup>14</sup> The average can be determined by either the arithmetic or geometric method:

**Arithmetic.** This is a simple average determined by dividing the sum of observations by the number of observations.

**Geometric.** This method is more complex in calculation and factors in the effect of compounding that occurs over time.

Due to the way it is calculated, the geometric average provides a more conservative measure of the average historical MRP that will never be greater than the value provided by an arithmetic average. The arithmetic average is generally preferred among regulators in determining the MRP; however, there is also a view that the geometric average provides a more accurate measure when observing long-term data sets that include periods of significant volatility.

#### Dividend growth models

DGMs are a forward-looking estimate of the MRP that involve forecasting future dividends on the market portfolio and then solving for the discount rate that equates the present value of those dividends with the current price of that portfolio.<sup>15</sup>

DGMs are used by regulators because they can provide a better reflection of current market conditions than backward-looking methods like historical averages. Because DGMs rely on analyst forecasts for future growth rates of dividends, which are widely acknowledged to have an upwards bias,<sup>16</sup> approaches with a higher dependence on DGMs generally result in higher MRPs, while approaches that predominantly look at historical averages tend to result in lower MRPs.

### Recent regulatory developments

Since the Commission's decision in 2018, there have been several determinations by Australian regulators which have seen changes to the way some regulators estimate the MRP, the most notable of these being the AER's 2018 Rate of Return Instrument.

As outlined above, the AER's previous approach gave weight to DGMs when estimating the MRP. The AER has since decided to apply little to no weight to DGMs in estimating the MRP, leading to lower estimates of

<sup>14</sup> Frontier Economics 2017, p 34.

<sup>15</sup> Ibid.

<sup>16</sup> AER 2018a, p 92.

the MRP. In its 2018 review, the AER considered DGM evidence, but determined that it was not appropriate to allow DGMs to influence the estimate of the MRP, citing diminished confidence in evidence provided from this method. The AER's 2018 decision was to reduce the MRP to 6.1 per cent from 6.5 per cent, noting in the accompanying statement on DGMs:<sup>17</sup>

*We considered a range of results from DGMs (as submitted through the consultation process), but we are less confident about these estimates. Further, expert advice raised significant concerns with MRP estimates from DGMs as to their reliability and accuracy. Given these concerns we are not persuaded by the DGM evidence to increase the MRP estimate from the point estimate obtained from the historical excess returns.*

**AER**

The change in the AER's position on DGMs represents a shift in approach since the Commission identified the AER's estimate as the most appropriate, given the broad range and qualitative assessment of evidence used in its approach.

In its 2018 water price investigation, the Commission also considered that the approach adopted by the QCA was appropriate. The approach was similar to that used by the AER at the time, in that it used a range of information, including DGM estimates, to form a view about the MRP.<sup>18</sup>

IPART uses several methodologies to develop a preferred estimate of the MRP, including using both historical averages and DGMs. IPART applies regulatory judgement to the range of estimates produced by its approach in estimating the MRP, considering both forward-looking and historical market indicators, and measures of uncertainty relating to the range of estimates provided. IPART's recent decision for Sydney Water Corporation estimated the MRP as the average of the mid-points for a long-term average of 6 per cent and an implied short-term value of 9.7 per cent<sup>19</sup> to obtain a preferred average estimate, across the various approaches, of 7.85 per cent.<sup>20</sup>

The Commission provided less weight to the IPART approach in its previous decision due to its preference for forward-looking estimates of the MRP (such as those published by Bloomberg), which generally leads to higher estimates of the MRP.<sup>21</sup> The Industry Panel's approach in 2015 was based partly upon IPART's approach, and the Commission expressed concern about that approach, noting advice to IPART from SFG Consulting during its 2013 WACC review showing that the Bloomberg estimates were subject to greater volatility and typically resulted in cost of equity estimates that were consistently higher than those determined by SFG Consulting.<sup>22</sup>

Given the emerging divergence in views of regulators like the AER, QCA and IPART on the influence of forward-looking estimates based on dividend growth models in determining the MRP, the Commission will

<sup>17</sup> AER 2018a, p 221.

<sup>18</sup> ICRC 2018, p 103.

<sup>19</sup> IPART 2020, p 258.

<sup>20</sup> ICRC 2018, p 110.

<sup>21</sup> Ibid, p 111.

<sup>22</sup> Ibid.

determine how it should consider regulatory approaches that rely on forward-looking estimates in its benchmarking process as part of this Review. The AER will be further assessing these issues over May to December 2020 as part of its foundational phase towards the determination of the 2022 Rate of Return Instrument (2022 Instrument).

Table 2 shows that most regulators in Australia determine an MRP based on historical averages. The exceptions are the ICRC, IPART and QCA which currently consider both current and historical estimates of the MRP in their approaches.

**Table 3. Past regulatory decisions on MRP**

Regulator	Regulated business	Decision date	MRP estimate	MRP approach
ICRC (ACT)	Icon Water	May 2018	6.5%	Benchmarking approach based upon consideration of other regulators' recent estimates of the MRP.
IPART (NSW)	Sydney Water	June 2020	7.85%	Midpoint of current and historic arithmetic average of excess market returns. Two-thirds weight of median of five DGM parameter estimates and one-third weight of market indicator estimate.
ERA (WA)	Pilbara Railways	August 2019	6.0%	On-balance point estimate from a range derived from theoretical and empirical evidence including historical excess returns, DGMs, survey evidence and conditioning variables. More weight given to historical estimates.
AER (National)	N/A	December 2018	6.1%	On-balance point estimate from a range derived from theoretical and empirical evidence including historical excess returns, DGMs, survey evidence and conditioning variables. More weight given to historical estimates.
OTTER (Tas)	TasWater	May 2018	6.5%	On-balance point estimate chosen from historical arithmetic and geometric averages, and DGM estimates. More weight given to historical estimates.
ESCOSA (SA)	SA Water	June 2020	6.0%	MRP of 6 per cent consistent with majority of regulatory decisions

Regulator	Regulated business	Decision date	MRP estimate	MRP approach
				over the past 10 years, market surveys of academics and market practitioners and sits within the range provided by historic estimates.
QCA (QLD)	Seqwater	March 2018	7.0%	Equally weighted average of four estimates, (two historic and two current) historic averages, DGMs, survey evidence and conditional information.

**Sources:**

1. IPART 2018, p 88, and IPART 2020, p 258.
2. ERA 2019, p 52.
3. AER 2018a, p220.
4. OTTER 2018, p 169.
5. ESCOSA 2020, p 324.
6. QCA 2018b, p 62, and QCA 2014, pp 23, 54.

**Arithmetic and geometric averages**

As explained in Box 3.2, the historical excess market returns used in the MRP approaches of most regulators can be calculated using either an arithmetic or geometric approach. Since the Commission's decision in 2018, the AER has reviewed how it uses geometric and arithmetic averages in developing the historical estimates of excess returns. The AER engaged in significant consultation with stakeholders over the role that the geometric average should have in determining the MRP, with many industry stakeholders taking the view that geometric averages should not be used in the AER's process due to the downward bias they impose on MRP estimates.<sup>23</sup>

The AER's final decision was to have regard to both arithmetic and geometric averages when considering estimates of the MRP based on historic excess returns, stating that more weight will be afforded to arithmetic estimates but geometric averages will be observed to highlight periods of volatility in market returns and to provide a floor for MRP estimates.<sup>24</sup>

As part of this Review, the Commission invites views on the use of the geometric and arithmetic averages in determining historical estimates of excess returns. The Commission does not currently have explicit regard to the weightings afforded to arithmetic and geometric averages in the regulatory approaches it considers in its benchmarking process. As part of this Review, the Commission will consider whether this issue requires closer consideration.

6. Do stakeholders have any comments on the appropriate sources of evidence and estimation approaches that the Commission should consider in its benchmarking process to determining the MRP?

<sup>23</sup> AER 2018a, p 251.

<sup>24</sup> Ibid, p 250.

### 3.2.4 Equity beta

The equity beta represents a measure of systematic risk in the S-L CAPM, that is, risk associated with factors beyond the firm's control. It is derived from the asset beta and the gearing ratio used. The asset beta reflects how risky the business' returns are compared to the overall market. The asset beta alone does not consider the additional risk arising from debt financing. Accordingly, the equity beta increases as gearing increases in order to compensate investors for additional risks. The value of equity beta is used as a coefficient that adjusts the market risk premium to reflect how much premium above the risk-free rate equity investors would require to hold the company's assets in their investment portfolio.

#### Box 3.3: Equity beta– what does it mean?

The equity beta reflects how risky a firm's returns are compared to the overall market.

An equity beta **equal to 1** suggests that an investment's returns are at the same level of risk as the market as a whole.

An equity beta **less than 1** means that an investment's returns are less risky than that of the overall market, that is, the investment's returns are less sensitive to broader market conditions.

An equity beta **greater than 1** means that an investment's returns are riskier than that of the overall market, that is, the investment's returns are highly sensitive to broader market conditions.

An equity beta **equal to 0** means that the investment has the same expected return as the risk-free investment (in this case, a 10-year Commonwealth Government Security).

#### Commission's current approach

The Commission currently determines the equity beta using empirical estimates from international water utilities and the consideration of recent regulatory decisions made by other Australian regulators. In determining the equity beta, the Commission also considers the low-beta bias that arises because the S-L CAPM tends to underestimate the returns to low-beta assets.<sup>25</sup>

In the 2018 investigation, the Commission adopted an equity beta of 0.7 based on the Industry Panel study of equity betas from comparable water utilities in the US and UK and having regard to the decisions made by other regulators. This reflected the Commission's consideration that the Industry Panel decision was the most appropriate at the time, because the Industry Panel carried out empirical analysis specifically for the Icon Water's substitute price direction in 2015.

The Industry Panel approach also recognised the low beta bias observed in the S-L CAPM. The Industry Panel considered that there may be merit in setting a point estimate for the equity beta toward the top of a range of the equity beta empirical estimates when the equity beta range is substantially less than 1.

The Industry Panel relied on the following information:<sup>26</sup>

- An empirical estimate of the equity beta for a typical water business, which was estimated using market data from 16 listed international water utility companies in the UK and the US. This analysis found that a

<sup>25</sup> HoustonKemp 2017, p.20.

<sup>26</sup> Industry Panel 2014, p 175.

typical water utility with a benchmark efficient gearing ratio of 60 per cent would have an equity beta ranging from 0.53 to 0.77.

- The equity beta values that other regulators applied to regulated water businesses in their price reviews. The review of regulatory decisions indicated that regulators adopted equity betas in the range of 0.55 to 0.80 in water price reviews conducted between 2010 and 2015. Of the 15 decisions conducted in this period, six adopted an equity beta of 0.65 and five adopted an equity beta of 0.70.

The Industry Panel considered that this material suggested that the equity beta should fall in the range of 0.53 to 0.77. Reflecting its view that a point estimate for the equity beta should be set at the top of the range when equity beta estimates are substantially less than one, the Industry Panel selected a point estimate higher than the midpoint of the range for the empirical beta estimates (i.e. 0.53 to 0.77) and toward the upper bound of the equity beta range based on past regulatory decisions (i.e. 0.55 to 0.80).

In making its final decision, the Commission noted that an equity beta of 0.7 was consistent with Icon Water's proposal, which relied on empirical analysis and advice from its consultant, HoustonKemp. HoustonKemp's analysis indicated an equity beta range of between 0.6 and 1.0, which was higher than that estimated by the Industry Panel. On balance, HoustonKemp concluded that its findings provided support for the continued adoption of the Industry Panel's equity beta of 0.7.

### Recent regulatory developments

Since the Commission's decision in 2018, some regulators have revised their approach to estimating the equity beta. For example, the AER completed its consultation with stakeholders on the low-beta bias problem and how it should be accounted for when estimating the equity beta as part of its 2018 Rate of Return Instrument process. The outcomes of this Review may be relevant to the approach adopted by the Commission under its current benchmarking method.

Under the AER's previous approach, the low beta bias was used as the basis for selecting a point estimate at the top end of the preliminary range derived from comparator companies. However, under the AER's 2018 Rate of Return Instrument, the possibility of low beta bias has no impact on the AER's allowed equity beta. The AER has explained that:<sup>27</sup>

- Many of the tests and exercises which indicate low beta bias are the subject of ongoing academic debate and have limitations which put their results in doubt; and
- There are a number of alternative explanations (for example, economic conditions) that do not imply a bias in equity beta.

For similar reasons, the ERA's 2018 Rate of Return Guideline did not consider low beta bias when determining an estimate of the equity beta.<sup>28</sup> The Commission is not aware of any water regulator that adjusts the estimated equity betas to account for low beta bias.

The Commission's review of recent regulatory decisions indicates that equity beta decisions made by Australian regulators for water utilities range between 0.65 and 0.77 (Table 3). As there are no listed monopoly water and sewerage businesses on the Australian Stock Exchange, water regulators use comparable international water companies in their empirical analysis.

<sup>27</sup> AER 2018c, p 277.

<sup>28</sup> ERA 2018, p 233.

Table 4. Past regulatory decisions on equity beta

Regulator	Regulated business	Decision date	Beta estimate	Beta approach
ICRC (ACT)	Icon Water	May 2018	0.7	Based on recent empirical research and regulatory precedent.
IPART (NSW)	Sydney Water	June 2020	0.7	Empirical analysis of international comparator firms from several different types of industries.
AER (energy)	N/A	December 2018	0.60	Choose a point estimate from a range derived from empirical analysis of domestic comparable firms.
ERA (energy)	N/A	December 2018	0.7	Choose a point estimate from a range derived from empirical analysis of domestic comparable firms.
OTTER (Tas)	TasWater	May 2018	0.65	Based upon consideration of other regulators' recent estimates of the equity beta and regulatory precedent.
ESCOSA (SA)	SA Water	June 2020	0.65	Based upon consideration of other regulators' recent estimates of the equity beta and regulatory precedent.
QCA (QLD)	Seqwater	March 2018	0.77	Empirical analysis of international comparator firms.

## Sources:

1. ICRC 2018, p 87.
2. IPART 2018, p 87.
3. AER 2018, p 142.
4. ERA 2018, p 231.
5. OTTER 2018, p 170.
6. ESCOSA 2020b, p. 157.
7. Incenta 2017, p 1.

As part of this Review, the Commission will seek stakeholder views on its current approach to determining the equity beta.

**The Commission is seeking feedback on:**

7. Do stakeholders have any comments on the Commission's current approach to determining the equity beta, including what sources of empirical evidence to use in its analysis and how it accounts for low-beta bias?

## 4. Return on debt

The Commission provides Icon Water with an allowed return on debt to cover the efficient borrowing costs it is expected to incur funding capital investments in its assets. This section discusses how the Commission sets the allowed return on debt and invites stakeholder feedback on the issues for this part of this Review.

### 4.1 Current return on debt approach

During the 2018 water price investigation, the Commission determined the cost of debt using a trailing average approach. This approach was consistent with contemporary regulatory practice and represented a shift away from the previous ‘on-the-day’ approach, which was no longer used on its own by other Australian regulators.

The on-the-day approach assumes that regulated firms refinance 100 per cent of their debt at a single point in time at the beginning of the regulatory period. In practice, most infrastructure businesses hold a diversified portfolio of debt with staggered maturity dates. This means that a regulated firm will only have to refinance a portion of its debt at any point in time. Australian regulators moved to a trailing average approach because it more closely aligns with the efficient debt financing practices of regulated businesses.

The trailing average approach adopted by the Commission estimates the average interest rate that a regulated firm would face if it raised debt annually in ten equal portions. This approach assumes that one-tenth of the debt of a regulated firm is re-financed each year. As the return on debt is an average of the interest rates over a period of ten years, this approach also leads to a relatively stable estimate over time.<sup>29</sup>

To implement this approach, the Commission’s 2018 decision incorporated a transitional arrangement over 10 years. In the first year, the Commission set the allowed return on debt using the on-the-day approach, i.e. as a 12-month simple average of Bloomberg and Reserve Bank of Australia (RBA) 10-year BBB yields.<sup>30</sup> In each following year of the transition, the Commission assumes that one-tenth of the debt is re-financed at the prevailing market rate for that year. At the end of transition, Icon Water will have an allowed return on debt that reflects an average of interest rates over a period of 10 years.

The Commission’s approach to implementing the trailing average was consistent with Icon Water’s revised proposal, which was based on the method adopted by the AER. The Commission’s final decision noted that during the next review, there may be scope to consider the merit of approaches that have been adopted by other regulators because there was insufficient time to consider the alternative approaches as part of 2018 water price investigation. The Commission invites stakeholder feedback on this matter. The Commission notes that Icon Water’s revised proposal argued that a ten-year trailing average cost of debt is expected to reflect efficient costs associated with standard business practice, minimise price volatility for customers and has low transaction costs.<sup>31</sup> The Commission considers that maintaining predictability and consistency is important given the long-term nature of Icon Water’s investments. Therefore, any proposals for reviewing the trailing average approach need to provide explanations as to why a review is proposed.

<sup>29</sup> AER 2013, p 2.

<sup>30</sup> ICRC 2018, p 98.

<sup>31</sup> Icon Water 2018, p 14.

**The Commission is seeking feedback on:**

8. Do stakeholders have any comments on the Commission's current trailing average approach?

**Current return on debt inputs**

During its 2018 water price investigation, the Commission implemented its return on debt approach using the following inputs:

- **Term to maturity.** This refers to the term of all types of borrowings such as bonds, bank facilities or other types of debt issued by a regulated firm. The Commission considered that a benchmark firm would raise debt with a 10-year term to maturity. This represents the Commission's view that long-lived assets are usually financed using long-term debt.
- **Benchmark credit rating.** This refers to a value assigned by credit ratings agencies (S&P, Fitch, Moody's) that represents the assessment of the credit risk associated with lending money to a particular entity. Commonly it takes the form of a letter rating (AAA, A, BBB etc.) with AAA denoting lower risk and CCC the highest risk of default.<sup>32</sup> The Commission considered that a benchmark water and sewerage services provider would have a BBB credit rating. This credit rating was consistent with that adopted by other jurisdictional regulators for regulated water utilities.
- **Third-party data series.** This refers to the existing datasets (RBA, Bloomberg, Thomson Reuters, S&P) that can be used to obtain corporate bond yield data. The Commission estimated the return on debt using two third-party data series – RBA and Bloomberg. The Commission took a simple average of Bloomberg and RBA 10-year BBB yields.
- **Averaging period.** This refers to the period over which the regulated return on debt is calculated. The Commission used a 12-month averaging period for each regulatory year. The Commission provided the dates of averaging periods to Icon Water on a confidential basis prior to the commencement of the regulatory period.

The Commission's current approach provides an allowance for debt-raising costs as part of its cost of debt allowance. Debt raising costs are the costs incurred by businesses for raising debt finance. These are one-off transactional costs incurred by a regulated firm when debt is first raised. The Commission added a margin of 0.125 per cent to the allowed cost of debt for debt raising costs.

## 4.2 Proposed issues for review

As part of this review the Commission is seeking stakeholder feedback on its current method to determining input parameters used in calculating the return on debt. The Commission proposes to focus its Review on:

- the third-party data sources;
- the credit rating; and
- the debt raising costs.

Stakeholders are welcome to raise any other issues they consider relevant for this Review.

<sup>32</sup> AER 2020, p 20.

## 4.2.2 Third party data series

The Commission currently uses third-party data series of corporate bond yields to determine the allowed return on debt. The Commission uses data from Bloomberg and the RBA. As noted above, the Commission takes a simple average of Bloomberg and RBA 10-year BBB yields. The RBA data is publicly available, while the Bloomberg data is purchased. At the time of the 2018 water price investigation, these were the only two data sources available. Since then, debt data series published by Thomson Reuters and Standard & Poor's have become available.

In other jurisdictions, regulators adopt a variety of approaches to gathering cost of debt data. IPART and ESCOSA use the BBB rated corporate bond spreads data published by the RBA. IPART considers that its sole reliance on the data published by the RBA is appropriate, because they are publicly available through the RBA's website.<sup>33</sup> This means that IPART's cost of debt calculations can be replicated by stakeholders.

On the other hand, the AER gives equal weight to the return on debt data sourced from the RBA, Bloomberg, and Thomson Reuters. In the AER's view, this approach gives equal weight to the strengths and weaknesses of the three curves and mitigates against price shocks in the event that any one curve temporarily or permanently ceases to be published.<sup>34</sup> For instance, in April 2020 the RBA ceased publishing aggregate measures of Australian corporate bond spreads and yields temporarily due to the COVID-19 pandemic.

The cost of debt data available from Standard & Poor's is not currently used by any regulator in Australia. The AER evaluated the Standard & Poor's data during the development of its 2018 Rate of Return Instrument. The AER decided not to use Standard & Poor's curve due to concerns about its outcomes being materially different to the other data providers, as well as insufficient time to consider methodology improvements proposed by Standard and Poor's Global.<sup>35</sup>

As part of this Review, the Commission will seek stakeholder feedback on the appropriate choice of third-party sources for determining the return on debt allowance.

### The Commission is seeking feedback on:

9. Do stakeholders have any comments on the appropriate choice of third-party sources for determining the return on debt allowance?

## 4.2.3 Benchmark credit rating

As discussed above, a credit rating is an evaluation of the risk associated with lending money to a particular entity (i.e. a firm or a government). Credit rating agencies determine credit ratings, taking into account the borrower'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 has a high risk of default, a lower credit rating is generally associated with higher bond yields.<sup>36</sup>

<sup>33</sup> IPART 2018b, p 15.

<sup>34</sup> AER 2018a, p 278.

<sup>35</sup> Ibid.

<sup>36</sup> Industry Panel 2014, p 169.

To estimate the regulated return on debt, the Commission decides on the appropriate credit rating to use. The return on debt can then be calculated using debt yield data for the assumed benchmark credit rating available from third party data providers.

The Commission currently uses a benchmarking approach based on consideration of credit ratings adopted by other regulators for regulated water businesses. At the time of the 2018 water price investigation, the Commission adopted BBB credit rating in deriving the allowed return on debt for Icon Water.

Table 5 summarises credit ratings adopted by other jurisdictional regulators in recent regulatory decisions for water utilities.

**Table 5. Past regulatory decisions on credit rating**

Regulator	Regulated business	Decision date	Credit rating
ICRC (ACT)	Icon Water	May 2018	BBB
IPART (NSW)	Sydney Water	July 2020	BBB
ESCV (VIC)	Goulburn-Murray Water	June 2020	BBB
ESCOSA (SA)	SA Water	June 2020	BBB

**Sources:**

1. ICRC 2018, p 95.
2. IPART 2018, p 45.
3. ESC 2020, p 20.
4. ESCOSA 2020, p 142.

As part of this Review, the Commission will consider whether its current method for determining benchmark credit rating remains appropriate.

**The Commission is seeking feedback on:**

10. Do stakeholders have any comments on the Commission's current approach to determining the benchmark credit rating?

## 4.2.4 Debt raising costs

As discussed above, debt raising costs are the costs incurred by businesses for raising debt finance. The Commission's current approach provides an allowance for debt-raising costs as part of its cost of debt allowance.

The Commission determines the allowance for debt raising costs by considering recent regulatory decisions in other jurisdictions. In its 2018 water price investigation, the Commission adopted a margin of 0.125 per cent.

Regulators across Australia typically include an allowance of 0.125 per cent for debt issuance costs when the 10-year term-to-maturity is used to estimate the cost of debt.<sup>37</sup> Since the Commission's decision in 2018, a

<sup>37</sup> ERA 2018, p 239.

few regulators have reviewed the allowance for debt raising costs to ensure it is up to date. Table 6 summarises debt raising cost allowances adopted by other regulators in recent regulatory decisions. While some regulators continue to apply a figure of 0.125 per cent, the AER, QCA and ERA have elected to use lower estimates based on the updated analysis of debt raising costs.

**Table 6. Past regulatory decisions on debt raising costs**

Regulator	Regulated business	Decision date	Debt raising costs (%)
ICRC (ACT)	Water	May 2018	0.125
IPART (NSW)	Water	2018	0.125
AER (National)	Electricity and gas	2019	0.091
ESC (VIC)	Water	2018	0.15
QCA (QLD)	Water, Railways	May 2020	0.108
ESCOSA (SA)	Water	July 2020	0.125
ERA (WA)	Railways	2019	0.100

**Sources:**

1. ICRC 2018, p 87.
2. IPART 2018b, p 24.
3. AER 2019, p 4.
4. ESC 2016, p 28.
5. QCA 2020, p 78.
6. ESCOSA 2020a, p 15.
7. ERA 2019, p 244.

As part of this Review, the Commission will consider whether its current method for determining debt raising costs remains appropriate.

**The Commission is seeking feedback on:**

11. Do stakeholders have any comments on the Commission's current approach to determining the debt raising costs?

## 5. Consolidated list of questions

The preceding chapters identified a number of questions on which the Commission is seeking feedback. The list is consolidated in this section.

This list is not exhaustive, and submissions may address other issues that relate to topics covered in this Review. Submissions do not have to address all the questions set out by the Commission.

1. Do stakeholders have any comments on the assessment criteria proposed by the Commission?
2. Do stakeholders have any comments on the overall approach the Commission has proposed to adopt for its review of the WACC?
3. Do stakeholders have any comments on the Commission's current approach to setting the level of gearing for a benchmark firm?
4. Do stakeholders have any comments on the approach the Commission's has proposed to the value of imputation credits?
5. Do stakeholders have any comments on the appropriate length of the averaging period for the risk-free rate used in estimating the cost of equity?
6. Do stakeholders have any comments on the appropriate sources of evidence and estimation approaches that the Commission should consider in its benchmarking process to determining the MRP?
7. Do stakeholders have any comments on the Commission's current approach to determining the equity beta, including what sources of empirical evidence to use in its analysis and how it accounts for low-beta bias?
8. Do stakeholders have any comments on the Commission's current trailing average approach?
9. Do stakeholders have any comments on the appropriate choice of third-party sources for determining the return on debt allowance?
10. Do stakeholders have any comments on the Commission's current approach to determining the benchmark credit rating?
11. Do stakeholders have any comments on the Commission's current approach to determining the debt raising costs?
12. Are there any other issues that the Commission should consider?

# Abbreviations and acronyms

ACT	Australian Capital Territory
AER	Australian Energy Regulator
Commission	Independent Competition and Regulatory Commission (ACT)
DGM	Dividend Growth Model
ERA	Economic Regulation Authority (WA)
ESC	Essential Services Commission (VIC)
ESCOSA	Essential Services Commission of South Australia
ICRC	Independent Competition and Regulatory Commission (ACT)
ICRC Act	<i>Independent Competition and Regulatory Commission Act 1997</i>
IPART	Independent Pricing and Regulatory Tribunal (NSW)
MRP	Market Risk Premium
OTTER	Office of the Tasmanian Economic Regulator
QCA	Queensland Competition Authority
RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia
S-L CAPM	Sharpe–Lintner Capital Asset Pricing Model
Utilities Act	<i>Utilities Act 2000</i>
WACC	Weighted Average Cost of Capital

# References

AER 2013, Better Regulation Rate of Return Guideline – Explanatory Statement, available at <https://www.aer.gov.au/system/files/AER%20Explanatory%20statement%20-%20rate%20of%20return%20guideline%20-%20December%202013.pdf>, accessed 3 July 2020.

AER 2018a, Rate of Return Instrument – Explanatory Statement, available at <https://www.aer.gov.au/system/files/Rate%20of%20Return%20Instrument%20-%20Explanatory%20Statement.pdf>, accessed 3 July 2020.

AER 2018b, Market Risk Premium, risk free rate averaging period and automatic application of the rate of return, available at <https://www.aer.gov.au/system/files/AER%20-%20MRP%20Risk%20Free%20Rate%20Averaging%20Period%20and%20Automatic%20Application%20Discussion%20Paper%20-%20March%202018.pdf>, accessed 19 July 2020.

AER 2018c, Rate of Return Instrument – Draft explanatory Statement, available at [https://www.aer.gov.au/system/files/AER%20-%20Draft%20rate%20of%20return%20guidelines-%20explanatory%20statement%20-%202010%20July%202018\\_0.pdf](https://www.aer.gov.au/system/files/AER%20-%20Draft%20rate%20of%20return%20guidelines-%20explanatory%20statement%20-%202010%20July%202018_0.pdf), accessed 5 July 2018.

AER 2019, Debt raising cost, available at <https://www.aer.gov.au/system/files/Chairmont%20-%20Expert%20report%20to%20AER%20-%20Debt%20Raising%20Cost%20-%2029%20June%202019.PDF>, accessed 10 July 2020.

AER 2020, Rate of return, Energy network debt data, Draft working paper, available at <https://www.aer.gov.au/system/files/Rate%20of%20return%20-%20Energy%20Network%20Debt%20data%20-%20Draft%20working%20paper%20-%2026%20June%202020%20PUBLIC.pdf>, accessed on 12 August 2020.

ERA 2018, Final Gas Rate of Return Guidelines Explanatory Statement, available at <https://www.erawa.com.au/cproot/19969/2/2018%20Final%20Gas%20Rate%20of%20Return%20Guidelines%20Explanatory%20Statement.PDF>, accessed on 5 July 2020.

ERA 2019, Final Determination – 2018 and 2019 WACC for the Freight and Urban Networks, and the Pilbara Railways, available at <https://www.erawa.com.au/cproot/20655/2/2018-and-2019-Rail-WACC-Final-Determination.PDF>, accessed 19 July 2020.

ESC 2016, Water pricing framework and approach: Implementing PREMO from 2018, available at <https://www.esc.vic.gov.au/sites/default/files/documents/Water-Pricing-Framework-and-Approach-Final-Paper-Oct-2016.pdf>, accessed 9 July 2020.

ESC 2020, Goulburn-Murray Water final decision, available at <https://www.esc.vic.gov.au/sites/default/files/documents/goulburn-murray-water-price-review-2020-final-decision-20200605.pdf>, accessed 9 July 2020.

ESCOSA 2020, SA Water Regulatory Determination 2020, Final Determination: Statement of reasons, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21489/20200611-Water-SAWRD20-FinalDetermination-StatementOfReasons.pdf.aspx?Embed=Y>, accessed on 12 August 2020.

ESCOSA 2020a, The cost of funding and using assets, available at <https://www.escosa.sa.gov.au/ArticleDocuments/1200/20181101-Water-SAWRD20-GuidancePaper5-CostOfFundingAndUsingAssets.pdf.aspx?Embed=Y>, accessed 16 July 2020.

ESCOSA 2020b, SA Water Regulatory Determination 2020, Draft Determination: Statement of reasons, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21462/20200304-Water-SAWRD20-DraftDecision-StatementOfReasons.pdf.aspx?Embed=Y>, accessed on 12 August 2020.

Frontier Economics 2017, The Market Risk Premium – A Report Prepared for ActewAGL Distribution, available at [https://www.aer.gov.au/system/files/Evoenergy%20-%20Rate%20of%20return%20-%20Appendix%208.4%20-%20Frontier%20-%20The%20market%20risk%20premium%20-%20December%202017\\_Public.pdf](https://www.aer.gov.au/system/files/Evoenergy%20-%20Rate%20of%20return%20-%20Appendix%208.4%20-%20Frontier%20-%20The%20market%20risk%20premium%20-%20December%202017_Public.pdf), accessed 9 July 2020.

HoustonKemp 2017, Equity beta for a benchmark Australian water network service provider, A report for Icon Water, available at [https://www.icrc.act.gov.au/\\_\\_data/assets/file/0018/1250262/Icon-Water-Price-Proposal-201823-Attachments.zip](https://www.icrc.act.gov.au/__data/assets/file/0018/1250262/Icon-Water-Price-Proposal-201823-Attachments.zip), accessed on 12 August 2020.

Icon Water 2018, Response to the ICRC's Draft Decision on Regulated Water and Sewerage Service Prices, available at [https://www.icrc.act.gov.au/\\_\\_data/assets/pdf\\_file/0003/1250256/Icon-Water-submission.pdf](https://www.icrc.act.gov.au/__data/assets/pdf_file/0003/1250256/Icon-Water-submission.pdf), accessed 11 July 2020.

Incenta 2017, Estimating Seqwater's firm-specific WACC parameters for the 2018-21 bulk water price investigation for Queensland Competition Authority, available at [https://www.qca.org.au/wp-content/uploads/2019/05/32395\\_Incenta-report-1.pdf](https://www.qca.org.au/wp-content/uploads/2019/05/32395_Incenta-report-1.pdf), accessed on 12 August 2020.

ICRC 2018, Final Report – Regulated water and sewerage services 2018 – 23, available at [https://www.icrc.act.gov.au/\\_\\_data/assets/pdf\\_file/0019/1250236/Report-1-of-2018-Final-Report-Water-Sewerage-Services-2018-23.pdf](https://www.icrc.act.gov.au/__data/assets/pdf_file/0019/1250236/Report-1-of-2018-Final-Report-Water-Sewerage-Services-2018-23.pdf), accessed 29 June 2020.

Industry Panel 2015, Review of the ICRC's 2013 Price Direction, available at [https://apps.treasury.act.gov.au/\\_\\_data/assets/pdf\\_file/0011/722585/Industry-Panel-Final-Report.pdf](https://apps.treasury.act.gov.au/__data/assets/pdf_file/0011/722585/Industry-Panel-Final-Report.pdf), accessed 3 July 2020.

Industry Panel 2014, Review of the ICRC's 2013 Price Direction, Draft Report, available at [https://apps.treasury.act.gov.au/\\_\\_data/assets/pdf\\_file/0009/670149/Industry-Panel-Draft-Report-December-2014.pdf](https://apps.treasury.act.gov.au/__data/assets/pdf_file/0009/670149/Industry-Panel-Draft-Report-December-2014.pdf), accessed on 12 August 2020.

IPART 2018, Review of our WACC Method – Issues Paper, available at <https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-administrative-legislative-requirements-sea-wacc-methodology-2017/final-report-review-of-our-wacc-method-february-2018.pdf>, accessed 3 July 2020.

IPART 2018b, Review of our WACC method – Final report, available at <https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-administrative-legislative-requirements-sea-wacc-methodology-2017/final-report-review-of-our-wacc-method-february-2018.pdf>, accessed 15 July 2020.

IPART 2020, Review of Prices for Sydney Water, available at <https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/pricing-reviews-water-services-metro-water-prices-for-sydney-water-corporation-from-1-july-2020/legislative-requirements-prices-for->

sydney-water-corporation-from-1-july-2020/final-report-review-of-prices-for-sydney-water-june-2020.pdf, accessed 18 July 2020.

OTTER 2018, 2018 Water and sewerage price determination investigation – Final report, available at <https://www.economicregulator.tas.gov.au/Documents/2018%20Water%20and%20Sewerage%20Price%20Determination%20Investigation%20Final%20Report.pdf>, accessed 8 July 2020.

QCA 2018a, Draft Report: Seqwater Bulk Water Price Review 2018 – 21, available at [https://www.qca.org.au/wp-content/uploads/2019/05/32392\\_Draft-report-1.pdf](https://www.qca.org.au/wp-content/uploads/2019/05/32392_Draft-report-1.pdf), accessed 11 July 2020.

QCA 2018b, Final Report: Seqwater Bulk Water Price Review 2018 – 21, available at [https://www.qca.org.au/wp-content/uploads/2019/05/33446\\_Final-report-1.pdf](https://www.qca.org.au/wp-content/uploads/2019/05/33446_Final-report-1.pdf), accessed 11 July 2020.



# ICRC

independent competition and regulatory commission

[www.icrc.act.gov.au](http://www.icrc.act.gov.au)