

Draft decision

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## Trailing average cost of debt

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August 2014

We wish to acknowledge the contribution of the following staff to this report:

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We also acknowledge the helpful comments of Dr John Fallon.

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## SUBMISSIONS

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Closing date for submissions: 10 October 2014

Public involvement is an important element of the decision-making processes of the Queensland Competition Authority (QCA). Therefore submissions are invited from interested parties concerning its assessment of this Draft Decision. The QCA will take account of all submissions received.

Submissions, comments or inquiries regarding this paper should be directed to:

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## EXECUTIVE SUMMARY

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The Queensland Competition Authority (the QCA) has reviewed its cost of capital methodology, including its theoretical framework for estimating the regulatory cost of debt. In March 2014, the QCA released an issues paper which considered the trailing average cost of debt approach as an alternative to the existing 'on the day' approach. The trailing average cost of debt approach calculates the regulatory cost of debt as a moving weighted average of the benchmark cost of debt for different periods.

This draft decision paper seeks comments from interested parties so that a final decision paper can be prepared on the trailing average cost of debt approach to estimating the allowed cost of debt for firms regulated by the QCA.

### Existing cost of debt framework

Similar to many other Australian regulators, the QCA's existing practice for estimating the regulatory cost of debt is based on using an 'on the day' approach which uses the benchmark cost of debt that is estimated just prior to the start of the regulatory cycle. The QCA's existing 'on the day' approach is based on consideration of the Net Present Value principle (the 'NPV = 0 Principle') while also addressing refinancing risk. This regulatory approach is a relatively low-cost and objective measure of the regulatory cost of debt which provides regulated firms with incentives to adopt reasonably efficient financing arrangements and match borrowings to the term of the regulatory cycle to minimise interest rate risk.

QCA's existing 'on the day' approach is based on an implicit debt management strategy that the efficient firm will manage refinancing risk by issuing longer term debt and mitigate interest rate risk by undertaking the required swap contracts to effectively align the term of debt issues with the term of the regulatory cycle. However, this debt strategy cannot be fully implemented in practice due to the lack of available credit default swaps to allow regulated firms to align the debt premium component of their debt with the term of the regulatory cycle. Given that the existing approach estimates the benchmark cost of debt at prevailing interest rates, the only way for the regulated firm to closely align the allowed and actual debt risk premium component of the cost of debt is to refinance the entire debt portfolio at the start of each regulatory period.

As a result, the existing regulatory approach results in a minor violation of the NPV = 0 Principle due to the potential mismatches between the allowed debt premium and actual debt premium incurred by the regulated firm. While Lally (2010, pp. 36-41; 2014, p. 45) has demonstrated that this violation is not substantial, other stakeholders have argued that the mismatch between allowed and actual debt risk premiums is relevant, in particular given recent experience since the onset of the Global Financial Crisis (GFC) in 2007-08.

### Consideration of a trailing average to the benchmark cost of debt

The trailing average cost of debt is an alternative approach to setting the regulatory cost of debt. Its proponents argue that the trailing average approach better aligns the regulatory cost of debt with the actual cost of debt incurred by the benchmark firm that adopts an efficient debt financing and risk management policy based on issuing debt at different points in time with a staggered maturity profile.

A trailing average cost of debt approach calculates an historical trailing average of the cost of debt, over a number of years corresponding to some term of debt (e.g. 10 years) preceding and inclusive of the current year. The trailing average can be applied to the total cost of debt (the 'total cost of debt trailing average (TA)' approach) or, alternatively, only to the debt risk premium component of the total cost of debt (and use an 'on the day' rate for the risk-free rate component – referred to as the 'hybrid' approach).

A variation of these approaches involves updating the regulatory cost of debt on an annual basis during the current regulatory cycle.

The trailing average cost of debt approach aims to reflect the cost of debt of the benchmark firm's staggered debt portfolio that consists of existing debt which incurs an historical cost of debt and new debt that is funded at the current prevailing rate. Under this approach, firms would be allowed to recover the regulatory 'trailing average' cost of debt for the benchmark firm but not their actual cost of debt.

A detailed consideration of the trailing average cost of debt approach has occurred in the context of the Australian Energy Market Commission's (AEMC's) Final Rule Determination on the economic regulation of network service providers (AEMC 2012). In response to AEMC's Final Rule Determination, the Australian Energy Regulator (AER) decided to change from its existing 'on the day' approach to a trailing average approach in its final rate of return guideline published in December 2013 (AER 2013c). However, other Australian regulators, including the Economic Regulation Authority of Western Australia (ERA 2013) and the Independent Pricing and Regulatory Tribunal of New South Wales (IPART 2013a), have recently considered the trailing average approach and decided to retain their existing cost of debt approaches.

## Consultation

This draft decision paper responds to specific issues raised about the trailing average cost of debt concept and its implementation. It draws on submissions that were made in response to the QCA's March 2014 issues paper on the trailing average cost of debt and submissions to the QCA that relate to the cost of debt in response to other investigations.

The threshold issue is whether or not to adopt a trailing average cost of debt approach.

Formal submissions in response to the trailing average cost of debt issues paper were made by the Queensland Treasury Corporation (QTC), Queensland Urban Utilities (QUU) and Unitywater. All three submissions strongly supported the adoption of a trailing average approach applied to the total cost of debt. These stakeholders argued that adopting a trailing average cost of debt approach would improve the alignment between the regulatory cost of debt approach and a prudent and efficient debt financing strategy of a comparable unregulated firm. These submissions claimed that a total cost of debt TA trailing average approach would lead to a smoother profile for the regulatory cost of debt compared with the existing regulatory arrangements, decreasing the variation in prices over time and reducing the scope for measurement error.

The QCA also notes that, while QTC and two south east Queensland (SEQ) water entities provided submissions to the QCA that supported the trailing average approach, regulated firms and their customers in other industry sectors did not make submissions.

## Proposed position

The QCA has formed the view that the various arguments in support of a trailing average approach are not sufficiently compelling to change from the existing 'on the day' approach.

The QCA's existing approach has the advantage of being simpler and less costly to implement than the trailing average approaches and is reasonable in terms of allowance of cost of debt that is efficient. The QCA considers that the existing approach will have more efficient investment signals than both trailing average approaches. While a weighted trailing average approach could be applied to address investment distortions, the QCA believes that possible weighting methods have issues in terms of transparency and complexity. The QCA also considers that continuation of the existing approach contributes to regulatory certainty.

The QCA believes that using a single cost of debt approach that applies to all regulated businesses will contribute to regulatory certainty and minimise incentives for regulated firms to seek options on the basis

of revenue maximisation. Furthermore, a significant change to the regulatory framework requires compelling reasons to implement the change that are supported by a broad range of stakeholders. At this point in time, there is not a strong case to change from the existing arrangements.

The three submissions received all supported adopting a trailing average approach to the total cost of debt (i.e. risk free rate and debt margin) as against the hybrid approach, where the trailing average only applies to the debt margin. However in considering these two approaches, the QCA has formed the view that the total cost of debt TA approach suffers from a number of disadvantages relative to the hybrid approach in that the hybrid approach:

- (a) provides a regulatory allowance that more closely aligns with the preferred debt management strategy of the regulated firm given the presence of regulation
- (b) provides better economic signals for new investment than a trailing average for the total cost of debt
- (c) maintains consistency with the choice of a risk-free rate for both the cost of equity and the cost of debt (i.e. prevailing rate aligned to the term of the regulatory cycle).

However, while there are advantages and disadvantages to the QCA adopting a hybrid approach for the regulatory cost of debt, in the QCA's view there is not a compelling case at this time.

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## THE ROLE OF THE QCA – TASK, TIMING AND CONTACTS

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The Queensland Competition Authority (QCA) is an independent statutory authority to promote competition as the basis for enhancing efficiency and growth in the Queensland economy.

The QCA's primary role is to ensure that monopoly businesses operating in Queensland, particularly in the provision of key infrastructure, do not abuse their market power through unfair pricing or restrictive access arrangements.

In 2012, that role was expanded to allow the QCA to be directed to investigate, and report on, any matter relating to competition, industry, productivity or best practice regulation; and review and report on existing legislation.

### Task

This draft decision paper includes consideration of the trailing average cost of debt and its two main forms relative to the existing approach and outlines a proposed position for a regulatory cost of debt methodology.

This paper draws on submissions that were made in response to the QCA's March 2014 issues paper on the trailing average cost of debt and submissions to the QCA that relate to the cost of debt in response to other investigations.

### Key dates

29 August 2014 – Release of Draft Decision

10 October 2014 – Closing date for submissions

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# 1 INTRODUCTION

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The Queensland Competition Authority (the QCA) has reviewed its cost of capital methodology. The cost of capital referred to here is the weighted average cost of capital (WACC) applicable to the assets of regulated businesses under its jurisdiction. The WACC is a weighted average of the cost of equity and the cost of debt, with the respective weights representing the shares of equity and debt in the capital structure of the firm. The cost of equity and cost of debt components of the WACC need to be set at a level to ensure investment can be financed at economically efficient levels, while at the same time ensuring prices to customers are not excessive.

As part of the review of the cost of capital methodology, the QCA has undertaken a review of its cost of debt estimation methodology. This review covered the theoretical framework for estimating the regulatory cost of debt and the appropriate data sources and empirical method for measuring the benchmark cost of debt at a point in time. The latter of these issues is presented in a separate paper, *Cost of Debt Estimation Methodology* (QCA 2014d), that should be read in conjunction with this paper.

The QCA's existing theoretical framework is similar to many other Australian regulators in that an 'on the day' rate is used to estimate the regulatory cost of debt. Recently, however, several proposals have arisen in regulatory contexts that involve moving away from a strictly 'on the day' rate and replacing it with some form of 'trailing average'. The term 'trailing average cost of debt' refers to a moving weighted average of the cost of debt with the weights representing a portion of the total debt of a firm that is assumed to be financed each year.

The most detailed considerations of this issue in the Australian context have been by the Australian Energy Market Commission (AEMC) and the Australian Energy Regulator (AER). In its final rate of return guideline published in December 2013, the AER decided to change from its existing 'on the day' approach to a trailing average approach for estimating the allowed cost of debt for firms that it regulates. It reasoned that this approach provided a more efficient benchmark to the extent that market practice involves a more staggered approach than the typical assumption that all debt is effectively issued at the start of a regulatory period.

The QCA released an issues paper on the trailing average cost of debt along with a companion paper by Dr Lally in March 2014 (QCA 2014c; Lally 2014). The issues paper presented a detailed discussion of the rationale underlying the trailing average cost of debt approach, a consideration of the potential problems with this approach and methodological issues that arise from implementation.

The QCA received formal submissions in response to this issues paper from Queensland Treasury Corporation (QTC), Queensland Urban Utilities (QUU) and Unitywater. All three submissions strongly supported the adoption of a trailing average approach. Each of these submissions emphasised the importance of incorporating the following key elements in the design of a trailing average approach:

- (a) applying the trailing average to the total cost of debt (rather than to the debt risk premium only)
- (b) calculating a weighted average to minimise investment distortions
- (c) updating the regulatory cost of debt on an annual basis during each regulatory cycle.

The purpose of this paper is to outline the QCA's draft position with respect to the regulatory cost of debt approach. This paper includes consideration of the trailing average cost of debt and its two main forms relative to the existing approach and outlines a proposed position for a regulatory cost of debt methodology. A discussion of key methodological and implementation issues relating to the trailing average cost of debt approach is provided in Appendix A.

The paper draws on submissions that were made in response to the QCA's March 2014 issues paper on the trailing average cost of debt and submissions to the QCA that relate to the cost of debt in response to other investigations. A list of the submissions in response to the Trailing Average Cost of Debt Issues Paper is provided in Appendix B.

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## 2 CURRENT APPROACH AND RECENT DEVELOPMENTS

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### 2.1 Regulatory objectives

The QCA's Statement of Regulatory Pricing Principles concluded that economic efficiency is the prime objective of economic regulation and that (QCA 2013b, p. iv):

*The primary consideration in evaluating whether a specific pricing proposal or structure is justified from a public policy perspective is whether it is clearly consistent with increasing overall economic efficiency (comprehensively defined). If this is not the case, there would have to be well justified non-efficiency based reasons as to why that policy should be supported.*

The three types of economic efficiency are: allocative, productive and dynamic. In the context of debt funding, an efficient debt management strategy by the regulated firm will assist in achieving allocative and productive efficiency objectives. In addition, the prevailing cost of debt at the time of investment is generally considered to be the best indicator of future borrowing costs and, as such, provides better signalling for efficient new investment to promote dynamic efficiency.

The QCA's Statement of Regulatory Pricing Principles also states that (QCA 2013b, p. iv):

*A critical regulatory requirement is that prices charged by regulated firms are sufficient to generate adequate revenues to provide appropriate incentives for investment and efficient operation.*

Revenue sufficiency is an aspect of dynamic efficiency and a dominant principle in applying economic regulation in natural monopoly markets. Revenue sufficiency requires that the regulated firm achieves sufficient revenue to ensure appropriate incentives to operate and invest.

The key regulatory principle for ensuring revenue sufficiency under natural monopoly conditions is the Net Present Value principle (the 'NPV = 0' Principle) (discussed below in section 3.2.1). The NPV = 0 Principle is fundamental for achieving economic efficiency by helping to ensure there is sufficient revenue to finance efficient investment.

The allocation of risk between the regulated business and its customers is also an important aspect of economic efficiency. The form of regulation affects the distribution of risk between regulated businesses and their customers and can therefore affect economic efficiency.

Price stability for customers is also a consideration, but is secondary to economic efficiency objectives. This is because there are circumstances where some variability in prices is desirable for allocative efficiency reasons.

These regulatory objectives and principles need to be considered and applied when determining an appropriate methodology for the regulatory cost of debt.

### 2.2 The QCA's current cost of debt theoretical framework

At present, the QCA's cost of debt theoretical framework is based on implementing the NPV = 0 Principle while also addressing refinancing risk. This is referred to in this paper as the QCA's existing 'on the day' approach. This framework includes, inter alia, the following key elements:

- (a) using an 'on the day' approach for setting both the risk-free rate and debt risk premium components of the cost of debt (i.e. averaging over the 20 business days preceding the start of the regulatory cycle)

- (b) setting the term of the risk-free rate and debt risk premium equal to the term of the regulatory cycle (N years)
- (c) determining the benchmark regulated firm's 'efficient' (average) term of debt (T years), from issuance to maturity<sup>1</sup>
- (d) if the efficient term of debt (T years) is assessed to be greater than the term of the regulatory cycle (N years), then
  - (i) efficient hedging costs are allowed to enable the firm to enter into interest rate swaps to convert the risk-free rate component of the cost of debt into N-year debt
  - (ii) if credit default swaps are not available in the required quantities to hedge the debt risk premium component, an allowance equal to the difference between T-year and N-year debt premiums is provided to proxy for the transaction costs of credit default swaps
- (e) an allowance for annual debt issuance costs is also provided.

Using an 'on the day' risk-free rate that matches the regulatory cycle satisfies the fundamental regulatory test that the present value of the future cash flows of the regulated firm should equal the initial investment (i.e. the 'NPV = 0' Principle) (Lally 2010). This principle is equivalent to the statement that the regulated price should cover the firm's efficient costs, including the cost of capital (Schmalensee 1989).

The established practice of estimating a risk-free rate prior to the start of the regulatory cycle (i.e. an 'on the day' rate) follows from the fact that present values always involve using a current discount rate, and 'current' in a regulatory context means at the start of the regulatory cycle (Lally 2012, p. 7). The current 'on the day' rate is estimated over a short averaging period (20 business days)<sup>2</sup> that is as close as practicable to the start of the regulatory cycle.<sup>3</sup> This short averaging period balances the trade-off between avoiding anomalies arising from short-term variations in an 'on the day' rate and using the most current information. The same considerations justify using a short averaging period to estimate the debt risk premium. As the Australian Competition Tribunal has stated:<sup>4</sup>

*An averaging period is used to smooth out normal day-to-day market fluctuations in...the benchmark corporate bond rate.*

The QCA's current framework recognises the potential for the regulated firm to face refinancing risk. Refinancing risk is the risk of unusual conditions in credit markets at the time of refinancing, in particular, the unavailability of credit at an efficient price and/or exposure to market power of credit providers that may arise when all of a firm's debt is refinanced contemporaneously (QCA 2010, p.35). Lally (2010, pp. 8-9), the AER (2013c, pp. 103-107) and SFG Consulting (2012, pp. 23-24) have recognised that rolling over the entire debt portfolio at the start of each regulatory period would result in refinancing risk that is unacceptably high.

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<sup>1</sup> PricewaterhouseCoopers (PwC) (2013a, p. 21) concluded that an efficient term of debt of 10 years is an appropriate assumption, consistent with the Authority's most recent regulatory reviews (e.g. South East Queensland Distribution-Retail Price Monitoring 2013-15).

<sup>2</sup> Australian regulators have tended to use different averaging periods, ranging from five to forty days.

<sup>3</sup> In certain circumstances, the QCA may adopt an averaging period that does not immediately precede the start of the regulatory period.

<sup>4</sup> See *Application by United Energy Distribution Pty Limited [2012] ACompT 1 (6 January 2012)*.

Lally (2010, pp. 9-10) has stated that refinancing risk is a valid concern if the average debt term (from issuance to maturity) of relevant comparators materially exceeds the term of the regulatory cycle. This reflects that the only rational reason for a firm, subject to a fixed regulatory cycle, to issue debt longer than the regulatory cycle is to reduce its refinancing risk. Lally (2013, p. 7) claimed that the presence of refinancing risk may compel a firm to not only borrow for a longer period than the regulatory cycle but also to stagger its borrowings so that a relatively small amount matures each year.

To address the potential for refinancing risk, the QCA determines an efficient term of debt (from issuance to maturity) based on comparator analysis.<sup>5</sup> If the QCA assesses the efficient (average) term to be greater than the term of the regulatory cycle, it provides hedging costs to enable the firm to reduce interest rate risk by matching the effective term of debt to the term of the regulatory cycle. This is considered to be consistent with the practice of providing allowances to firms for efficiently managing other business risks, for instance in the allowance of insurance premiums.

To be more specific, Lally (2010, pp. 10-11) has demonstrated that the regulatory cost of debt allowance could still satisfy the NPV = 0 Principle even when the average term of debt (i.e. T years) materially exceeds the regulatory term (i.e. N years) provided that:

- (a) the term of the risk-free rate and debt risk premium in the allowed cost of debt closely matches the term of the regulatory cycle (i.e. N years)
- (b) swap contracts are available to convert the firm's actual schedule of debt issues to one that aligns with the regulatory cycle, in particular it is assumed that the efficient firm in this situation would hedge interest rate risk by entering into:
  - (i) interest rate swap contracts to convert the risk-free rate component into N-year debt
  - (ii) credit default swap contracts to convert the debt risk premium component into N-year debt.

However, Lally (2010, pp. 10-11) recognised that using credit default swaps could be problematic. As a result, Lally (2011, p. 8) proposed two variations to the regulatory 'on the day' approach depending on the feasibility of using credit default swaps:

- (a) if the use of credit default swaps is feasible, then the allowed debt risk premium should comprise the prevailing debt risk premium over the term of the regulatory period (N years) as well as transaction costs for the use of credit default swaps
- (b) if the use of credit default swaps is not feasible, the allowed debt risk premium should equal the prevailing debt risk premium over the term of the efficient term of debt (T years).

Recent evidence suggests that credit default swap contracts for the volume required by regulated firms are not feasible based on the current structure of the Australian credit default swap market (PwC 2013a, p. 7). In setting regulatory prices in recent decisions, the QCA has considered that a notional proxy for the cost of credit default swaps is the difference between

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<sup>5</sup> Comparator analysis is a standard feature of regulation in Australia and refers to identifying a group of 'peer' firms to use to derive an efficient benchmark for the relevant (WACC) parameter of interest. In the present context, benchmarking the efficient term of debt involves looking at businesses with similar capital structures, credit ratings, business activities (e.g. providing an essential, regulated service) and similarity of underlying cash flow volatility.

the T-year and N-year debt risk premiums (QCA 2010, p. 37). This is numerically equivalent to Lally's preferred option of providing a regulatory cost of debt that incorporates a term of the debt risk premium equal to T years (with no allowance for credit default swaps).

Lally (2011, p. 8) did not agree with the use of the debt premium differential as a proxy for the transaction costs of credit default swaps. Lally argued that the debt premium differential is driven by differences in default risk and liquidity between the different terms of debt, while the transaction costs of credit default swaps reflect the extent of competition in the credit default swap market and counterparty risk when dealing in this market. Lally's (2011, p. 8) preferred interpretation of the QCA's existing regulatory cost of debt approach is that it covers an implied debt strategy whereby the firm borrows at the efficient term of debt (e.g. 10 years), enters into interest rate swaps to hedge the risk-free rate component but does not use credit default swaps to hedge the debt risk premium component.

While the QCA's existing 'on the day' approach is considered a good approximation of efficient debt costs of the regulated firm, Lally (2014, p. 41) argued that it results in a minor violation to the NPV = 0 Principle as it reflects a debt policy that cannot be implemented by the regulated firm in practice. In particular, it is not feasible for firms to enter into hedging arrangements to fully address the mismatch between its borrowings and regulatory policy. However, Lally (2010, pp. 36-41; 2014, p. 45) argued that the violation of the NPV = 0 Principle under the existing approach would not be substantial.

The QCA's current framework results in a single *ex ante* estimate of the regulatory cost of debt for the subsequent years of the regulatory period. As a result, this cost of debt is not updated during the regulatory period.

## 2.3 Relevant regulatory developments

Other Australian regulators' methodologies have also applied an 'on the day' rate to estimate the regulatory cost of debt. Recently, however, several proposals have arisen in regulatory contexts that involve moving away from a strictly 'on the day' rate and replacing it with some form of 'trailing average'.

### Trailing average cost of debt approach

A trailing average cost of debt approach calculates an historical trailing average of the cost of debt, over a number of years corresponding to some term of debt (e.g. 10 years) preceding and inclusive of the current year. The trailing average can be applied to the total cost of debt or, alternatively, only to the debt risk premium component of the total cost of debt (and use an 'on the day' rate for the risk-free rate component). A variation of this approach involves updating the regulatory cost of debt on an annual basis during the current regulatory cycle.

The trailing average cost of debt approach aims to reflect the cost of debt of the benchmark firm's staggered debt portfolio that consists of existing debt which incurs an historical cost of debt and new debt that is funded at the current prevailing rate. Under this approach, firms would be allowed to recover the regulatory 'trailing average' cost of debt for the benchmark firm but not their actual cost of debt. This is consistent with incentive-based regulation, as it gives firms the incentive to achieve lower debt financing costs than the benchmark rate.

The use of annual updates of the regulatory cost of debt aims to reflect the financing costs associated with new debt issuance and the refinancing of maturing debt each year. For example, in its final rate of return guideline published in December 2013, the AER proposed that the regulatory cost of debt for each year within a regulatory cycle (following the transitional arrangement period) should be calculated using the following formulae (AER 2013b, p. 19):

$$kd_t = \frac{1}{10} \cdot \sum_{j=1}^{10} rd_{t-10+j}$$

where:

- $kd_t$  refers to the regulatory ('trailing average') cost of debt for regulatory year  $t$
- $rd_{t-10+j}$  refers to the estimated cost of debt that was issued in year  $t-10+j$ .

This approach implicitly assumes that the benchmark efficient firm staggers its borrowing evenly over time, so that 10% of its total debt requires refinancing each year.

A similar approach set out by QTC (2012a) entails estimating a benchmark portfolio of fixed-rate debt with equally spaced maturity dates out to 10 years, with 10 per cent of total debt assumed to mature each year and refinanced with new 10-year fixed rate debt. Over time the average cost of such a debt portfolio would be a 10-year trailing average of 10-year fixed debt. In contrast to the AER method, QTC proposed a weighted average that ensures that the annual weights are adjusted to reflect changes in the regulated firm's debt balance arising from capital expenditure that is incurred in a particular year. This ensures that new capital expenditure during the regulatory period is compensated at the prevailing cost of debt.

To avoid the scope for windfall gains or losses, QTC proposed transitional arrangements that have been incorporated in the AER guideline. Initially the regulatory cost of debt would be determined based on the current approach and each subsequent year a portion of the debt (e.g. 10%) would be refinanced at prevailing market rates.

Under these approaches, firms would be allowed to recover the regulatory 'trailing average' cost of debt based on a benchmark firm but not their actual cost of debt. This is consistent with incentive-based regulation, as it gives firms the incentive to adopt the most efficient debt portfolio.

### AEMC review

A detailed consideration of the trailing average cost of debt approach has occurred in the context of the AEMC's Final Rule Determination on the economic regulation of network service providers (AEMC 2012).<sup>6</sup> While the QCA is not bound by the outcome of the AEMC review, it considers that the conceptual approaches and issues canvassed in that review provide a useful reference point. A conclusion from this review is that the regulator should not set the regulatory cost of debt without considering the interrelationship between the (regulator's) choice of a cost of debt approach and the regulated firm's 'best', or 'efficient', debt management strategy.

A direct implication of this conclusion is that the regulatory approach for setting an 'efficient' cost of debt might differ from regulated firm to regulated firm, depending on the particular characteristics of the firms (e.g. business size, asset profile, ownership structure, etc.). The AEMC (2012, p. 65) reasoned that applying the same regulatory approach to all firms (e.g. 'on the day' rate) may result in a mismatch between the regulatory approach and the firm's debt management strategy. As a result, the rule change does not prescribe a specific, 'one-size-fits-all' approach for estimating the regulatory cost of debt. Rather, it allows for a number of possible approaches, where these are based on one of two possible starting points, namely a:

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<sup>6</sup> On 29 November 2012, the AEMC published its final rule determination and final rule on the network regulation rule changes under sections 102 and 103 of the National Electricity Law (NEL) and sections 311 and 313 of the National Gas Law (NGL).

- (a) current 'on the day' rate – proxied by a short averaging period (e.g. 5-40 days) that immediately precedes the start of the regulatory cycle (broadly consistent with the QCA's current practice) or
- (b) trailing average – an historical trailing average of the total cost of debt, over a number of years corresponding to some term of debt (an 'efficient' term, e.g. 10 years) preceding and inclusive of the current year of the regulatory cycle.

Given these two starting points, the AEMC's final rule gives the regulator the option of varying either approach by:

- (a) applying the trailing average only to the debt risk premium component of the total cost of debt (and using an 'on the day' rate for the risk-free rate component)
- (b) updating the regulatory cost of debt on an annual basis during a particular regulatory cycle and/or
- (c) using the swap rate (that matches the length of the regulatory period) as the base interest rate in the regulatory cost of debt, rather than using the government bond yield.

As a result, there are a number of combinations of possible approaches, each of which might reflect an 'efficient' cost of debt approach for a given regulated firm, depending on that firm's particular characteristics (e.g. business size, asset profile, ownership structure, etc.). There might also be other possible approaches not considered within the AEMC review.

### AER rate of return regulation

The trailing cost of debt issue was considered further by the AER during its consultative process in 2013 to develop revised rate of return guidelines to reflect the changes to the National Electricity Rules and National Gas Rules by the AEMC. Prior to this change, the AER typically used an 'on the day' approach with the term for the risk-free rate and debt premium equal to ten years, with no provision for hedging costs (AER 2009).

While the AEMC rule change provided the AER with the flexibility to apply different cost of debt approaches for different service providers, in its final guidelines the AER proposed using a single cost of debt approach for a single benchmark efficient entity (AER 2013c, pp. 100-102). A key consideration in the AER's final decision not to allow regulated firms to propose a particular cost of debt approach was the importance of providing regulatory certainty and consistency to customers, service providers and investors. The AER also considered that moving to a trailing average approach was a significant change to the regulatory framework, requiring a strong level of commitment from all stakeholders.

The AER also questioned whether providing firms the option of proposing different cost of debt approaches was consistent with incentive-based regulation, since firms may have the incentive to propose an approach that maximises their allowed revenue rather than reflect their actual debt management strategy. While this could be alleviated with transitional arrangements, the AER considered that these would add to the complexity of regulatory policy.

In its final rate of return guideline published in December 2013, the AER decided to change from its current 'on the day' approach to a trailing average approach for estimating the allowed cost of debt for regulated firms. The AER (2013c, pp. 108-109) considered that the efficient debt management strategy of the benchmark firm under the trailing average approach would be to stagger its debt portfolio to align its cost of debt with the regulatory cost of debt allowance. This strategy would manage the firm's interest rate risk by aligning its actual cost of debt with



the regulatory allowance and address refinancing risk by applying the benchmark term of debt. The AER also outlined the following additional benefits of the trailing average approach:

- (a) it lowers variation in prices between regulatory periods, reducing the impact on intertemporal decisions of customers
- (b) it minimises the consequences of a single measurement error
- (c) it may reflect debt management strategies of comparable, unregulated firms.

Key elements of the AER's proposed approach that were outlined in the final guidelines include (AER 2013c, p. 98):

- (a) applying the trailing average to the total cost of debt
- (b) applying the trailing average over a ten year period (covering the current year and preceding years) reflecting the benchmark term of debt (issuance to maturity)
- (c) calculating a simple average that applies equal weights (i.e. 10%) to each element of the trailing average
- (d) annually updating the regulatory cost of debt estimate
- (e) applying transitional arrangements consistent with the proposed approach by QTC, with a 10-year transitional period from the current approach to the trailing average approach (to avoid windfall gains and losses).

### Other Australian regulators

Other regulators use different frameworks. Historically, other Australian regulators' methodologies have shared the same broad-level cost of debt approach; that is, they have applied an 'on the day' rate to estimate the regulatory cost of debt. The cost of debt under this type of approach is generally determined as close as practicable to the commencement of a regulatory pricing period and is not updated during the regulatory period.

While the AER decided to adopt a trailing average cost of debt approach in its rate of return guidelines, the Economic Regulation Authority of Western Australia (ERA) decided to retain an 'on the day' approach in its rate of return guidelines in response to the new National Gas Rules. The ERA (2013, pp. 62-64) considered that the 'on the day' approach has better efficiency properties than either trailing average approach for the following key reasons:

- (a) it is likely to be more productively efficient since an efficient financing strategy requires the prevailing forward-looking rate to be the financing cost on which investment is made
- (b) it allows movements in prevailing interest rates to more quickly be reflected in the price of regulated services faced by users
- (c) it better achieves dynamic efficiency outcomes as it results in improved investment incentives for regulated businesses by using the prevailing cost of debt
- (d) a trailing average approach may provide greater certainty of cost recovery which is inconsistent with the situation faced by otherwise comparable firms operating in competitive markets.

However, ERA (2013, p. 54) did recognise the difficulty faced by regulated businesses in hedging the debt risk premium component of borrowings:

*The debt risk premium will be updated annually in recognition that it is difficult for firms to manage risk related to changes in this component of debt, given the lack of hedging instruments.*

The ERA therefore proposed retaining the 'on the day' approach but with annual updates to the debt risk premium component of the total cost of debt. It should be noted that the ERA's proposed updating of the 'on the day' debt risk premium differs to the updating of the 'trailing average' debt risk premium that would occur under a hybrid approach.

Prior to this decision, the ERA typically used an 'on the day' rate with a five-year term for the risk-free rate and debt margin that corresponds with its five-yearly regulatory reviews (ERA 2011).

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART) also rejected the trailing average approach as part of its price review for Hunter Water Corporation in June 2013. IPART provided the following responses to regulated firms that advocated the trailing average approach (IPART 2013a, pp. 196-197):

- (1) **They overstate the role of IPART.** *Utilities have argued that using the current cost of debt leads to inefficient hedging practice. This argument overstates our role in management of utilities. Our role is to set maximum prices and to oversee license compliance. We do not dictate utilities' expenditure programme, nor do we determine their financing or hedging practice.*
- (2) **They do not reflect the practice of privately owned utilities.** *The arguments for a trailing average do not appear to take account of evidence that private firms in regulated sectors have been able to match their debt costs to on-the-day costs of debt. There is evidence that Victorian energy network businesses have been successful in hedging the base risk-free borrowing costs to on-the-day rates to coincide with regulatory resets, without confronting unmanageable risks of refinancing.*
- (3) **They overstate the optionality of competitive firms.** *The arguments for a trailing average also overstate the extent to which unregulated firms in competitive markets are able to match costs and revenues. Unregulated firms are required to borrow and invest in conditions of uncertainty and many invest in long-term fixed assets. They can adjust operations and capital expenditure as conditions change, as can regulated utilities. Hence they typically adopt a more flexible, adaptive financing strategy using various instruments.*

Prior to its 2013 review of WACC methodology, IPART used an 'on the day' approach with the term for the risk-free rate and debt premium equal to the term of the regulatory cycle. IPART (2013c, p. 13) noted that while its previous view was that current rates were the best predictor of the prevailing interest rate over the regulatory period, in practice the cost of capital used in investment evaluations was more stable than the prevailing rate and reflected longer term expectations.

As part of its 2013 review of WACC methodology, IPART decided to derive an estimated range for the cost of debt using both an 'on the day' rate and a long-term historical average (approximated using 10-year averages), with no annual adjustments during the regulatory period which is typically three to five years (IPART 2013c, pp. 10-15). IPART also decided to adopt a 10-year risk-free rate and debt premium, reflecting recent evidence that this term reflects the efficient financing costs of a benchmark entity operating in a competitive market.<sup>7</sup>

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<sup>7</sup> IPART's primary objective (established in its 2013 review) is to set a WACC that reflects the efficient financing costs of a benchmark entity operating in a competitive market. IPART claims market evidence indicates that firms seek debt with a maturity of 10 years. IPART states that NPV neutrality is less likely to hold under its new cost of debt methodology given the use of a mix of current and historical averages in their calculations (IPART 2013c, pp. 11-13).

The Essential Services Commission's (ESC's) most recent regulatory decision was its 2013-2018 price review for Greater Metropolitan Water (June 2013), in which it used an 'on the day' approach with a 10-year risk-free rate and debt premium (ESC 2013, pp. 102-111). In its final decision, ESC foreshadowed the commencement of a review of its WACC methodology in 2013-14 (ESC 2013, p. 111).

### Other jurisdictions

Rather than using an 'on the day' rate to estimate the regulatory cost of debt, United Kingdom (UK) regulators Ofgem and Ofwat have recognised that regulated firms incur historic rates of debt on existing debt portfolios and forward-looking rates on new debt issuance.

In its development of a new regulatory framework for electricity and gas networks (the RIIO model) that emerged from its comprehensive review of the existing framework (RPI-X@20 Review), the UK regulator, Ofgem, decided to base the cost of debt allowance on a long-term trailing average applied to the entire cost of debt (Ofgem 2010b, pp. 108-109). A 10-year trailing average was selected to reflect the long-term borrowing profile of existing debt issued by firms at a fixed rate (Ofgem 2010c, p. 73). The cost of debt allowance is updated annually using a mechanistic process that is shown in a spreadsheet-based model that is publicly released on Ofgem's website (Ofgem 2013).

A key consideration for Ofgem (2011, pp. 20-21) was the difficulty in setting a fixed cost of debt allowance over the relatively long (eight year) price control period that applies to electricity and gas networks in the UK. In previous reviews, Ofgem considered evidence (including the 10-year trailing average estimate) in setting a fixed cost of debt that was higher than prevailing rates to protect the regulated firm against the risk of unexpected rises in interest rates. However, Ofgem acknowledged that the continued decline in interest rates over the prior 15 years had exposed customers to a regulatory cost of debt allowance that was higher than prevailing interest rates. With interest rates at historic lows, Ofgem considered that a trailing average with annual updates provided a robust option that protects regulated firms and their customers from unexpected increases in interest rates over the regulatory period.

In its first price controls under this new framework<sup>8</sup>, Ofgem decided to implement a simple (equally weighted) approach given the relative simplicity of this approach despite an apparent slightly lower degree of accuracy (Ofgem 2011, pp. 25-28).

In developing its approach for setting price controls for 2015 to 2020, the UK regulator, Ofwat (2013), decided to retain its existing approach of providing a fixed cost of debt allowance over the five-year regulatory period. Ofwat's cost of debt approach for the previous 2010-15 price control period assigned weightings to existing debt costs and to the costs of new borrowings to allow regulated businesses to recover the historic cost of debt associated with existing debt (Ofwat 2009, p. 130).<sup>9</sup>

Ofwat (2013, p. 131) claimed that its existing approach creates strong incentives for companies to outperform the benchmark and protects customers from rises in debt costs during the regulatory period. Ofwat argued that a debt indexation approach would weaken incentives for

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<sup>8</sup> The first price controls by Ofgem to reflect the new RIIO model that incorporated the 10-year simple trailing average index were for electricity and gas transmission (RIIO-T1) and gas distribution (RIIO-GD1) over the eight year regulatory period from 1 April 2013 to 31 March 2021.

<sup>9</sup> For the 2010-15 price control period, Ofwat (2009, p. 130) derived the real cost of debt of 3.6% by applying a 75% weighting to the cost of existing debt (3.4%) and a 25% weighting to the forward-looking cost of debt (4.1% to 4.3%).

regulated businesses to reduce financing costs and partially shift risk to customers who are not able to manage these risks. In a report to Ofwat, PwC (2013b, p. 36) recognised that while Ofgem had adopted a debt indexation approach for electricity and gas networks, Ofgem faced difficulties in predicting a fixed rate debt allowance over a longer (eight year) regulatory period.

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## 3 CONSIDERATION OF THE TRAILING AVERAGE COST OF DEBT APPROACH

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### 3.1 Background

As explained in Chapter 2, the QCA's existing practice for calculating the regulatory cost of debt is an 'on the day' approach which uses the benchmark cost of debt that is estimated over a 20-day period as close as practicable to the start of the regulatory cycle and applied to the entire regulatory debt value (i.e. benchmark capital structure applied to the regulatory asset base). This is a relatively straight-forward approach for deriving a regulatory cost of debt and provides regulated firms with incentives to adopt reasonably efficient financing arrangements.

In a paper that accompanied the release of the QCA's trailing average cost of debt issues paper, Lally (2014) recommended the continuation of the QCA's existing 'on the day approach'. However, Lally argued that an appropriately designed trailing average approach has the advantage that the 'matching' debt strategy is feasible and, based on this criterion, satisfies the NPV = 0 Principle.

There are two main types of trailing average cost of debt approaches which were considered both in Lally's (2014) paper and in the QCA (2014c) issues paper:

- (a) applying the trailing average to the total cost of debt (risk-free rate and debt risk premium) – the 'total cost of debt TA approach' and
- (b) applying the trailing average only to the debt risk premium component of the total cost of debt (and using an 'on the day' rate for the risk-free rate component) – referred to in this paper as the 'hybrid approach'.

The first approach implies that the regulated firm issues fixed rate debt with a staggered maturity profile over the benchmark term of debt.<sup>10</sup> The second approach reflects the debt policy implied by the first approach combined with interest rate swaps that align the risk-free rate component with the term of the regulatory cycle.

This chapter describes and responds to specific issues raised in relation to whether a change to the QCA's regulatory cost of debt approach is warranted. The discussion draws on submissions that were made in response to the QCA's March 2014 issues paper on the trailing average cost of debt, as well as on other relevant information.

### 3.2 Key aspects of different regulatory cost of debt approaches

#### 3.2.1 Net present value principle

A fundamental principle of regulation is the NPV = 0 Principle. This principle states that the present value of the regulated firm's expected cash flows should equal the initial investment, given a discount rate equal to the risk-adjusted opportunity cost of capital and efficient costs. This principle is equivalent to the statement that the regulated price should cover the firm's efficient costs, including the cost of capital (Schmalensee 1989). It seeks to ensure that the regulated firm does not systematically either over- or under-recover its efficient costs.

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<sup>10</sup> A 'staggered' profile could be one in which a regulated firm, for example, rolls over 10% of its debt portfolio each year for the next ten years.

In applying this principle in the context of the cost of debt, Lally (2014, pp. 8-9) outlined an approach based on the combination of a feasible debt policy by the regulated firm and a 'matching' regulatory policy that would not induce the firm to change its behaviour. Lally's approach makes no judgement on whether the firm's debt policy is economically efficient.

However, the QCA's view is that the overarching regulatory objective of economic efficiency should apply when assessing the regulatory cost of debt approach (e.g. an efficient debt management strategy) and more broadly across other aspects of the regulatory framework.

The QCA has applied the NPV = 0 Principle, either implicitly or explicitly, in setting regulatory prices in recent decisions. In particular, the principle has been applied in setting the term for the risk-free rate in QCA decisions on QR Network (QCA 2010, pp. 33-38) and on the SEQ water and wastewater retail/distribution entities (QCA 2011, pp. 233-238).

### QCA's current 'on the day' approach

The QCA's current 'on the day' approach aims to satisfy the NPV = 0 Principle while also addressing refinancing risk. Lally (2010, p. 9) recognised that a regulated firm would generally seek to limit its annual refinancing obligation by choosing a sufficiently long average debt term and by staggering the maturity profile of its debt portfolio. The QCA's current approach recognises the need for regulated firms to manage refinancing risk by firstly assessing whether the benchmark term of debt<sup>11</sup> exceeds the regulatory cycle and, if so, then providing an allowance for hedging costs to enable firms to convert its actual schedule of debt issues to one that aligns with the regulatory cycle to satisfy the NPV = 0 Principle.

For the risk-free rate component of the cost of debt, it is assumed that the efficient firm will borrow 10-year debt and enter into interest rate swap contracts so that the term of the risk-free rate component of its debt issues effectively matches the term of the regulatory period. The derivation of associated swap transaction costs assumes that this strategy is implemented in practice using a two-stage swap process:

- (a) swapping a 10-year fixed rate obligation into a floating rate obligation at the time of issuance of each 10-year bond, and
- (b) swapping from a floating into fixed obligation at the start of each regulatory period over the length of the regulatory cycle (e.g. five years).

Lally (2014, pp. 13-14) argued that, while interest rate swaps could be used to align the risk-free rate with the allowed rate, credit default swaps might not be available in the market to hedge the debt premium component. If this is the case, this debt policy is not feasible (Lally 2014, pp. 13-14):

*This strategy is not feasible (and therefore not viable) because credit-default swap contracts are in general either not available on the desired bonds or in sufficient quantities for many of the regulated businesses in question.*

Lally (2014, p. 41) concluded that the QCA's existing 'on the day' cost of debt approach violates the NPV = 0 Principle:

*Faced with the current regulatory regime, the best a firm can do is to borrow long-term, with staggering, to deal with refinancing risk and to use interest-rate swap contracts to align the risk-free rate component of its cost of debt with the regulatory cycle. Consequently, although the regulator allows a DRP that reflects the rate prevailing at the beginning of each regulatory cycle,*

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<sup>11</sup> The approach does this by assessing the efficient benchmark term of debt. To date, this efficient term has been 10 years.

*the firm pays the trailing average DRP. This mismatch between the DRP allowed by the regulator and the rate actually paid by the business leads to the NPV = 0 principle being violated and also gives rise to very moderate bankruptcy risk.*

The resulting implications for the NPV = 0 test are stated as follows (Lally 2010, p. 11):

*However, with five yearly resetting of the ten year debt margin, the resulting process would violate the NPV = 0 test because the allowed premium would sometimes diverge from that actually incurred by a firm. For example, suppose the firm is established now and partially funds itself with ten year debt involving a current debt premium of 1.5%. The regulator will set prices for the first five years using the same ten year debt premium, and therefore no difference arises in the first five years. However, in five years time, the regulator will reset prices using the ten year debt premium prevailing at that time and this may differ from the current debt premium. In that event, the price allowed by the regulator for that second five year period will diverge from the costs incurred by the regulated firm. Nevertheless, the divergence could be in either direction.*

Lally (2010, pp. 36-41; 2014, p. 45) showed that the violation of the NPV = 0 Principle under the current approach would not be substantial. The key source of divergence from NPV = 0 is the difference in future debt risk premiums between that allowed by the regulator and that incurred by the regulated firm.

While this violation of the principle is not considered to have a material impact, some stakeholders have challenged this view. In analysis for the AEMC, SFG Consulting (2012, pp. 36-37) showed that the current 'on the day' approach results in significantly larger deviations between the regulatory allowance and debt servicing costs than a trailing average approach, resulting in cash flow volatility to equity holders.

### Trailing average approach

Lally (2014, pp. 14-15) argued that the use of an appropriately designed trailing average cost of debt approach does not contravene the NPV = 0 Principle, provided the implicit debt management strategy followed by the firm is consistent with the regulatory arrangements and feasible. In particular, Lally (2014, p. 14-15) considered that each of the following trailing averaging cost of debt approaches has an associated feasible<sup>12</sup> debt strategy and would therefore satisfy the NPV = 0 Principle:

- (a) applying a benchmark trailing average to the total cost of debt – i.e. the total cost of debt TA approach
- (b) applying a benchmark trailing average to only the debt risk premium component of the total cost of debt (and using an 'on the day' rate for the risk-free rate component) – i.e. the hybrid approach.

### Overstatement of cost of debt

In relation to the total cost of debt TA approach, Lally (2014, pp. 43-44) considered that applying a trailing average to the entire cost of debt over the benchmark term of debt (e.g. 10-year risk-free rate and 10-year debt premium) will typically result in an overstatement of the regulatory cost of debt.

This is because the efficient debt policy of a comparable, unregulated firm would be to issue long-term debt to minimise refinancing risk and additionally use interest rate swaps to reduce the effective borrowing term for the risk-free rate to reduce its cost of debt (assuming a positive

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<sup>12</sup> Lally (2014, pp. 13-14) also characterised these trailing average cost of debt approaches as having a matching 'viable' debt policy (defined as feasible and not so inefficient that firms would avoid it). However, this stronger 'viable' criterion is not required to be satisfied under Lally's interpretation of the NPV = 0 principle.

yield curve). While the average term of bonds issued by comparable, unregulated firms could be observed, it would not be possible to measure the impact on this average term of using interest rate swaps to effectively reduce the term of the risk-free rate. Lally (2014, p. 43) suggested that the effective reduction in the term as a result of using interest rate swaps would be chosen by the unregulated firm to:

*...optimally trade off the reduction in refinancing risk from longer term debt, the increase in the risk-free rate with the effective debt term, the transactions costs of the swap contracts, and the increased interest rate volatility arising from a shorter effective debt term.*

Lally argued that if the impact of this interest rate swap activity on the 'efficient' term of debt is ignored, the risk-free rate component of the regulatory cost of debt will be overstated.<sup>13</sup> This overstatement is illustrated using the following example (Lally 2014, p. 44):

*To illustrate this point, suppose that otherwise similar unregulated firms have ten-year debt, use interest rate swap contracts to convert the risk-free rate component of their cost of debt to the three-year rate, the average ten-year DRP is 2%, the average ten-year risk-free rate is 6%, the average three-year risk-free rate is 5%, and the transactions costs of the swap contracts are 0.2%. The average cost of debt of these firms is then 7.2%, comprising the average three-year risk-free rate of 5% and the ten-year DRP of 2%, and the transactions costs of the swap contracts. However, a regulator who merely observed their average debt term of ten years and ignored their interest-rate swap contracts would allow a ten-year cost of debt, with an average rate of 8%. The average overstatement would then be 0.8%.*

This issue does not affect the existing approach of the QCA and the hybrid approach, since these approaches both use an 'on the day' rate for the risk-free rate component with the term of the risk-free rate set equal to the term of the regulatory cycle. The allowed cost of debt would be expected to be lower on average for these two approaches due to the lower term of the risk-free rate in the regulatory cost of debt.

### Stakeholder submissions

The issue that the implied debt management strategy cannot be implemented in practice due to the lack of available credit default swaps was a key disadvantage of the current approach raised in submissions from QTC (2014b), QUU (2014) and Unitywater (2014).

QTC also argued that a total cost of debt TA approach has the advantage of not requiring firms to engage in swap activity to align the risk-free rate component of their debt with the regulatory cycle. QTC claimed that a comparable, unregulated business would not engage in any significant interest rate swap activity.

QTC (2014b) and QUU (2014) submitted that there is no evidence that the regulatory cost of debt is overstated if a trailing average is applied to the entire 10-year cost of debt. QTC (2014b) questioned whether a regulated firm would have an incentive to undertake the debt policy suggested by Lally because entering into shorter-term swaps may not result in lower debt costs on a 'risk-adjusted' basis, given the associated higher interest rate risk and transaction costs.

QTC argued that the appropriate interest rate exposure of an unregulated firm depends on the characteristics of its revenue and its level of gearing. While the use of short-term swaps may be appropriate for firms with revenues that are highly sensitive to the economic cycle or with

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<sup>13</sup> Lally also argued that while the average term of bonds issued by comparable, unregulated firms could be observed, it would not be possible to measure the impact on this average term of using interest rate swaps to effectively reduce the term of the risk-free rate.



relatively low gearing (and lower sensitivity of earnings to interest rate changes), QTC claimed that regulated firms are likely to have relatively stable revenues and comparatively high gearing.

QTC argued that the resulting higher variability in debt costs under Lally's 'overstatement hypothetical' would potentially increase the mismatch between these debt costs and the stable revenue profile of a comparable, unregulated firm. This would increase the probability of financial distress, especially if the firm is highly geared. QTC also questioned whether the lower interest rate associated with the reduced effective borrowing term would more than offset this increase in risk. In conclusion, QTC questioned whether a regulated firm would have an incentive to undertake this kind of debt activity.

### QCA analysis

The QCA noted in the issues paper that, if the total cost of debt TA approach is adopted, there is scope for higher profits to be achieved by the firm from continuing to use swaps and so there could potentially be a violation of the NPV = 0 Principle.

The QCA acknowledges that entering into shorter-term swaps may reduce the initial borrowing costs associated with newly issued 10-year debt, particularly for a typical yield curve that has an upward slope reflecting a higher interest rate for longer term debt. However, the regulated firm would increase its interest rate risk since at the maturity of the short-term swap the firm would need to either enter into a subsequent short-term swap or retain a floating rate obligation over the remainder of the 10-year debt term. The use of shorter-term swaps may therefore increase the variability of the regulated firm's cost of debt. If the regulated firm is earning stable regulated revenues based on the assumption of no swap activity (e.g. under a trailing average applied to the total cost of debt), engaging in this activity may increase the mismatch between revenue and debt costs, increasing the risk of financial distress.

However, for a given benchmark associated with a specific term to maturity, whether the regulatory cost of debt is based on the 'on the day' rate or an average of that 'on the day' rate over time, the average cost of debt will not be systematically different over the long run. Given the trailing average applied to the total cost of debt will include a 10-year risk-free rate as compared with a shorter term risk-free rate under the other two approaches, it is expected that adopting this approach would systematically lead to an average cost of debt being higher in the long run. Estimates obtained by the QCA during recent water investigations suggest that the transactions costs for interest rate swaps are considerably less than the term premium for the 10-year risk-free rate (Evans and Peck, 2013).<sup>14</sup> In addition, QTC's proposed transitional arrangements (QTC 2014b, pp. 10-11) commence with the prevailing 'on the day' cost of debt (i.e. 10-year risk-free rate and 10-year debt risk premium) in the first year of the initial regulatory cycle.

Therefore, the QCA agrees with Lally that there is potential for an overstatement of the regulatory cost of debt under the trailing average applied to the total cost of debt. This could result in a material violation of the NPV = 0 Principle.

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<sup>14</sup> Interest rate swap transaction costs are typically around 15-20 basis points per annum. This compares with the prevailing spread between five-year and 10-year Commonwealth Government bonds which averaged 67 basis points over 2013-14 (Source: QCA analysis of RBA Statistical Table F2 - Capital Market Yields - Government Bonds - Daily).

### 3.2.2 Efficient investment signalling

The prevailing cost of debt at the time of investment is generally considered to be the best indicator of future borrowing costs and, as such, provides better signalling for efficient new investment to promote dynamic efficiency.

The QCA's existing 'on the day' approach commonly results in a single *ex ante* estimate of the regulatory cost of debt being applied to all new capital expenditure that may occur in subsequent years of the regulatory period. As a result, this approach does not take into account changes to the prevailing cost of debt during the regulatory period. The regulated firm will be exposed to the risk that the prevailing cost of debt at the time of future investment is significantly different to the regulatory 'on the day' cost of debt for at least the remainder of the current regulatory period (ACCC 2013, p. 7).

For a large capital expenditure project requiring significant debt financing, there may be incentive problems if the prevailing cost of debt is materially higher than the allowed cost of debt. This would result in the regulated firm earning an allowed cost of debt return for the new investment that is less than the debt servicing costs over the remainder of the regulatory period. The regulated firm may be incentivised to delay commencement of this project to a point in time when the prevailing cost of debt is more favourable (or until the beginning of the next regulatory cycle, when the allowed cost of debt would be set to the prevailing rate).

Lally (2014, pp. 18-19) noted that if the timing of the new capital expenditure is known, the risk associated with movement in the risk-free rate can be hedged using a forward-starting swap contract. Lally acknowledged that the movement in the debt risk premium cannot be hedged in the absence of credit default swaps. However, there are other regulatory mechanisms that could be used to deal with unexpected changes in interest rates.<sup>15</sup>

Lally (2014, pp. 18-19), SFG Consulting (2012, pp. 63-67) and the ACCC's Regulatory Development Branch (2013, p. 19) have argued that a trailing average cost of debt approach could distort incentives if capital expenditure is compensated at the historical trailing average cost of debt rather than the prevailing rate at the time of investment. While possible investment distortions are also an issue under the current 'on the day' cost of debt approach, the risk-free rate component can be hedged if the timing of future investment is known (Lally 2014, pp. 18-19). In addition, Lally argued that the 'on the day' rate will generally be more contemporary at the time of investment than an historical average rate.

#### Weights within the trailing average approach

SFG Consulting (2012, p. 7) concluded that if a trailing average cost of debt approach is implemented then it is important that there is an associated mechanism for managing this incentive distortion.

QTC outlined its proposed mechanism for managing investment incentives in the calculation of a trailing average cost of debt in its October 2013 submission to the AER Consultation Paper (QTC 2013c, pp. 28-29). This method calculates weights that reflect debt issuance as a result of capital expenditure with the objective of compensating new borrowings at the prevailing cost of debt. Under this proposed approach, new debt arising from capital expenditure is initially

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<sup>15</sup> For example, the Dalrymple Bay Coal Terminal (DBCT) 2006 undertaking provides for the cost of debt for new investment capital to be re-estimated, based on changes in the risk-free rate, as at the commissioning date of a major expansion (BBI (DBCT) Management Pty Limited 2006).

compensated at the prevailing cost of debt and in subsequent years this cost of debt converges to the simple (equally weighted) trailing average.

In his review of QTC's proposed weighting mechanism, Lally (2014, p. 19) raised concerns with the additional complexity that it would add to the trailing average approach:

*These problems can be eliminated by applying the prevailing rate to both new debt arising from capex and new entrants, and then gradually adjusting the rate towards the trailing average in the manner proposed by the QTC, but this adds to the complexity of the trailing average regime.*

Recent moves to adopt a trailing average cost of debt approach by the AER (2013b) and Ofgem (2011) in the UK have favoured the estimation of a simple (equally weighted) trailing average. This estimation approach assumes that the benchmark firm issues fixed rate debt in equal proportions over the average term of debt, maintaining a constant debt balance over time. This may occur, for example, by the regulated firm largely funding its renewal capital expenditure through its regulatory depreciation allowance, with new debt issued each year only required to refinance existing debt. Both the AER and Ofgem adopted this approach due to its reduced complexity and greater transparency.

### Stakeholder submissions

QTC (2014b, p. 1) argued that a trailing average approach could distort investment incentives unless new capital expenditure is weighted at the prevailing cost of debt, rather than the trailing average cost of debt:

*To provide correct investment signals, new borrowings should be compensated at the prevailing 10-year debt yield. This can be achieved by calculating a weighted trailing average based on changes in the benchmark debt balance.*

In its submission to the trailing average cost of debt issues paper, QTC stated that it does not support the use of a simple (equally weighted) trailing average. QTC (2014b, p. 9) identified the following disadvantages with a simple trailing average approach:

- *An unweighted trailing average assumes that a firm can issue debt at historical rates to fund new investment, which is not possible in practice.*
- *Unless the RAB is constant, an unweighted trailing average will create a mismatch between the regulated cost of debt and the true cost of new debt. As a consequence, the firm's investment decisions will be affected by the difference between the prevailing debt yield and the trailing average cost of debt.*
- *Due to the use of overlapping data, large and persistent mismatches between the unweighted trailing average and the prevailing debt yield will naturally occur.*
- *An unweighted average creates a bias towards under-investment when the prevailing debt yield is higher than the simple trailing average (and vice versa). Due to the persistence of the mismatches between these costs, it may take several years for the trailing average to 'catch up' to the prevailing cost of debt.*

As part of its submission to the trailing average cost of debt issues paper, QTC submitted a spreadsheet model to demonstrate its proposed method for calculating a weighted trailing average using benchmark debt balances derived from the regulated firm's RAB.<sup>16</sup> QTC, QUU (2014, p. 4) and Unitywater (2014, p. 2) argued that the spreadsheet model demonstrated that calculations undertaken were simple and transparent. The key purported advantage of this

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<sup>16</sup> The weighting method outlined in QTC's submission to the QCA issues paper is consistent with its proposal outlined in its submission to the AER Draft Rate of Return Guideline in October 2013 (QTC 2013c, pp. 28-29).

approach is that it allows debt financing associated with new investments to earn the prevailing cost of debt rather than the trailing average cost of debt.

Appendix B of the QTC submission explained the proposed weighting approach, summarising the key benefits of the method as follows (QTC 2014b, p. 21):

*This method is simple, transparent and avoids creating a 'lumpy' debt maturity profile when the benchmark debt balance changes.*

### QCA analysis

If there is a sufficiently large increase in debt issuance in a particular year, Figure 1 shows that the difference between the simple and weighted trailing average approaches could be material. In this example, it is assumed that the hypothetical firm undertakes a capital investment programme with no new (net) borrowings required over this 10-year period except for that arising from a large investment in Year 3, resulting in the regulatory asset base (RAB) (and benchmark debt balance) increasing by 100% in this year.

While the calculations used in the proposed QTC weighting approach are relatively simple, the presentation of this weighting method in Appendix B (and in the spreadsheet model) of the QTC submission (2014b) as a simple average of adjusted historical rates is not readily intuitive and therefore not fully transparent in terms of how the weight applied to each time period is derived.

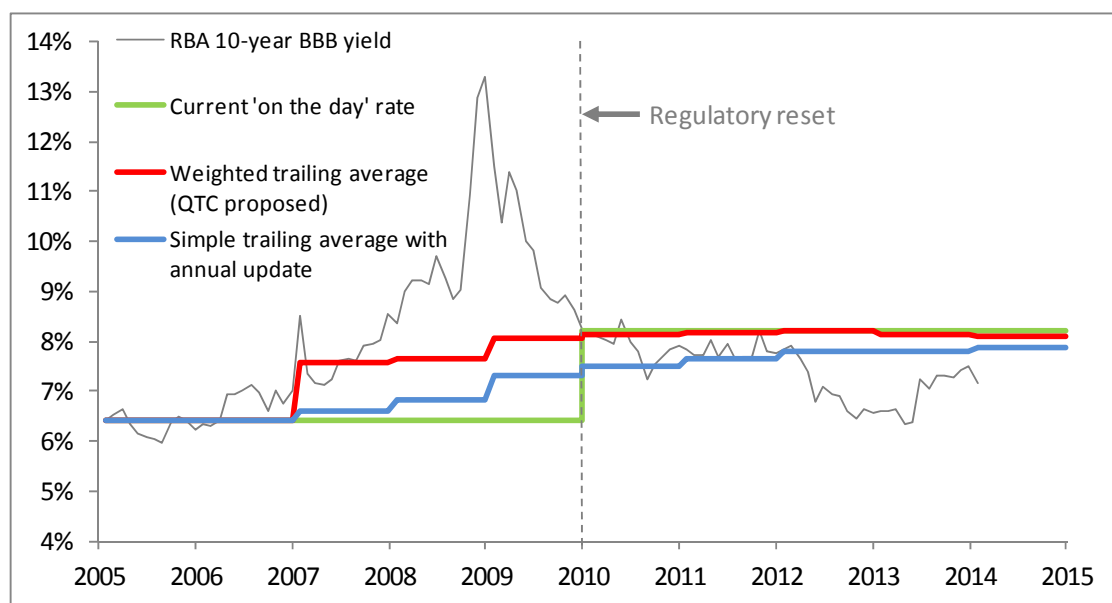
The complexity of the proposed QTC weighting approach is a key issue. This is partly due to the difficulty in representing how an increase in debt balance will be efficiently financed to manage refinancing risk (particularly in the context of a substantial investment). In response to a substantial increase in debt arising from new investment, a firm may seek to minimise refinancing risk by issuing long-term debt while also aiming to maintain a roughly uniform maturity profile. As shown in Figure 1, the QTC approach uses the prevailing rate in the initial year which then converges to the simple (equally weighted) trailing average over a 10-year period. The adjustment mechanism aims to achieve a smoother refinancing profile over time, avoiding the potential for an uneven debt profile used to calculate weights if the firm has a 'lumpy' investment profile over time.

However, this is only an approximation as the debt strategy underlying the QTC's proposed approach could not be implemented in practice. The additional weight assigned to an increase in debt balance in a particular year diminishes by 10% in each subsequent year. This mechanism effectively assumes that 10% of the new debt is refinanced in each of the subsequent 10 years. As a result, this convergence does not reflect feasible refinancing practices and introduces a distortion to the estimation method.

There is also the issue of whether to use the actual or forecast RAB to calculate weights:

- (a) Using actual data may distort incentives as the regulated firm would be able to influence the overall regulatory cost of debt through the timing of its investments and may not have the incentive to adopt more efficient financing arrangements if market conditions change.
- (b) Using forecast data may not provide the regulated business with the incentive to review the timing of new investment in response to changes in the prevailing cost of debt. Furthermore, if forecast investment does not occur, then there will be distortions as the regulatory cost of debt will not reflect the actual debt costs incurred.

**Figure 1 Comparison of simple and weighted approaches with annual updates for a hypothetical firm with an increasing debt balance**



Source: RBA Statistical Table F3 – Aggregate Measures of Australian Corporate Bond Spreads and Yields, QCA analysis

The QCA considers that using actual or forecast capital expenditure data to calculate weights is not consistent with estimating the cost of debt using an industry benchmarking method.

The QTC's weighting approach will also result in different WACC benchmarks for each business, even if all other WACC benchmark parameters are the same.

In the QCA's view, consideration of a trailing average approach should be limited to a simple (equally weighted) method as this is more transparent and avoids the complexities associated with weighting.

The QCA considers that its existing 'on the day' approach will likely mean less investment distortions as compared with simple (equally weighted) trailing average approaches since the risk-free rate component of investment funding can be hedged using forward-starting swaps and the 'on the day' debt risk premium will generally be more contemporary at the time of investment than the historical trailing average rate. As a result, the current approach is likely to provide better signals for efficient new investment at the time of the regulatory reset.

The QCA considers that these investment distortions will also be lower under the hybrid approach than under the total cost of debt TA approach because the distortion only relates to the debt risk premium component of debt. Under the hybrid approach, the risk-free rate component is consistent with the current 'on the day' approach.

### 3.2.3 Efficient debt financing costs

Lally (2013, p.7) claimed that a regulated firm will manage refinancing risk by borrowing for a longer term than the regulatory cycle and staggering its borrowings so that a relatively small amount matures each year. In its report to the QCA on its recommended estimation methodology for the cost of debt, PwC (2013a, p. 19) suggested that:

*From first principles we would expect that on average, a typical benchmark regulated business would issue debt for a period longer than the typical regulatory period of 5 years. A prudent debt manager would seek to issue debt that results in a relatively even and manageable debt refinancing task in each year. Limiting the annual refinancing obligation reduces the exposure of*

*the firm to unforeseen events in financial markets that may make refinancing difficult or excessively costly in the short term.*

The existing QCA 'on the day' approach recognises refinancing risk by assuming that the benchmark firm will issue longer term debt (10 years in recent decisions) to reflect refinancing risk. The QCA approach provides allowances to cover the cost of converting 10 year debt to a term that matches the term of the regulatory cycle.

Lally (2014, p. 44) considers that a regulated firm will hedge interest rate risk by entering into interest rate swap contracts to convert the risk-free rate component of their cost of debt to the term of their regulatory cycle. Based on submissions from regulated network service providers, the AER (2013c) concluded that an efficient debt policy under the established 'on the day' approach was:

*Holding a debt portfolio with staggered maturity dates and using swap transactions to hedge interest rate exposure for the duration of the regulatory period.*

In its 2009 WACC review, the AER received submissions from Treasurers of regulated businesses on their debt financing practices. The AER (2009, p. 153) observed that:

*According to Treasurers' statements, typically businesses hedge the base interest rate risk for up to 100 per cent of their debt portfolios at the time of the regulatory reset.*

In its report to QCA on an estimation methodology for the benchmark cost of debt, PwC (2013a, pp. 7-8) observed that:

*The first of these propositions – that the underlying base interest rate component can be swapped into an obligation matching the length of the regulatory period – is now reasonably well accepted where the prices of regulated businesses are reset mechanically with reference to spot interest rates at each price review.*

While the QCA's existing 'on the day' cost of debt approach recognises that credit default swaps are not available in the required quantities to hedge the debt risk premium component, recent regulatory reviews by the QCA have still provided a proxy for credit default swap costs, equal to the difference in term premiums of 10-year debt and regulatory-period debt. Lally's (2011, p. 8) preferred interpretation of the QCA's existing regulatory cost of debt approach is that it covers an implied second-best debt strategy whereby the firm issues 10-year debt but does not use credit default swaps to hedge the debt risk premium component. However, the allowance under the existing approach is based on the prevailing debt risk premium at the beginning of the regulatory cycle rather than the trailing average debt risk premium that would arise from a staggered borrowing profile to manage refinancing risk.

In contrast, the hybrid approach recognises that the benchmark firm would seek to address refinancing risk through both longer term debt and staggered issuance, while addressing interest rate risk through the use of interest rate swaps. This approach reflects the difficulty in hedging the debt risk premium by providing a debt premium allowance that recognises standard approaches for managing refinancing and interest rate risk by regulated businesses.

The AER (2013c, p. 102) considered that the trailing average cost of debt approach results in a regulatory cost of debt that aligns more closely with the efficient debt financing costs of the benchmark firm. In its review of its rate of return guidelines, the AER (2013c, p. 105) also observed from submissions by regulated firms that:

*Many debt financing strategies may have been available to service providers under the current 'on the day' approach. However, we observe that most service providers hold a diversified portfolio of debt with staggered maturity dates. This means that a service provider will only have to refinance a proportion of its debt at any point in time. Holding a portfolio of debt with different terms to maturity allows a service provider to manage its refinancing risk.*

## Stakeholder submission

QTC (2014b), QUU (2014) and Unitywater (2014) argued that efficient debt costs should be determined by the observed debt management practices of comparable, unregulated firms. QTC contended that matching the term of the risk-free rate to an arbitrary factor such as the regulatory period is not consistent with competitive market outcomes. QTC (2014b, p. 1) concluded that:

*A decision to retain the 'on the day' approach or only apply the trailing average to the debt risk premium (DRP) would incorrectly imply that efficient debt costs and debt management strategies are determined by factors such as the term of the regulatory period.*

Unitywater (2014, p. 2) submitted that it reviewed its debt management policy during 2012-13 with a view to minimising costs, hedging interest rate risk and managing refinancing risk:

*This has been achieved through a portfolio of fixed rate debt with staggered maturities out to approximately ten-years. The portfolio cost of debt is updated each year to reflect the interest rates on refinancing and new borrowing transactions performed during the year.*

QTC claimed that the total cost of debt TA approach more closely reflects debt management practices of comparable, unregulated firms. QTC contended that a comparable, unregulated firm would stagger its debt portfolio to achieve a relatively stable long-term cost of debt that aligns closely with its relatively stable revenues, minimising the mismatch between the firm's revenues and its debt servicing costs.

QTC (2014b, p. 5), QUU (2014, p. 3) and Unitywater (2014, p. 2) argued that a comparable, unregulated firm would be unlikely to use interest rate swaps to reset the base interest rate on its entire debt portfolio every five years, as is required to hedge interest rate risk under either the existing 'on the day' approach or the hybrid approach.

## QCA analysis

Irrespective of whether the total cost of debt TA approach closely reflects the debt financing strategy of an unregulated firm, it is not necessarily the role of the regulator to attempt to fully replicate competitive behaviour. Regulation should seek to replicate competitive market outcomes in the sense that unregulated firms in competitive markets charge prices that just cover efficient costs, including the cost of capital.

Consistent with generally accepted regulatory practice in Australia, the QCA uses a benchmark cost of debt. The QCA considers that the appropriate benchmark entity will have systematic risk similar to that of the regulated entity. As the form of regulation affects this systematic risk, it follows that relevant comparators are typically other regulated firms.

A regulated firm will have circumstances that differ from those of unregulated firms in competitive markets, and the cost of capital allowed by the regulator must compensate it for relevant risks rather than necessarily matching the cost of capital of a comparable unregulated firm in a competitive market. The key consideration should be approving a methodology that helps to achieve economic efficiency, taking into account the form of regulation and relevant risks.

### 3.2.4 Implications for the cost of equity

Moving to a trailing average cost of debt approach may have implications for the cost of equity if the regulatory cost of debt approach adopted changes the risk profile of returns to equity holders. SFG Consulting (2012) demonstrated differences in the volatility of equity returns between different regulatory cost of debt approaches using simulation analysis. This showed

that the volatility of return to equity holders is minimised when the regulatory approach matches the firm's debt strategy (for example, both following a trailing average approach).

An additional issue with applying the total cost of debt TA approach is that a different risk-free rate will be used for the cost of equity (prevailing risk-free rate with a term aligned with the regulatory cycle) and cost of debt (trailing average risk-free rate with a term aligned with the benchmark term of debt – generally 10 years).

Lally (2014) considered that there was no inconsistency in using the prevailing risk-free rate in setting the regulatory cost of equity and using a trailing average cost of debt approach. Lally argued that, provided it is feasible for firms to engage in a debt strategy in which the total cost of debt or the debt risk premium is a trailing average, regulatory use of a trailing average regime will satisfy the NPV = 0 Principle. However, Lally did not specifically comment on the inconsistency in the term of the risk-free rate used if the trailing average is applied to the total cost of debt.

### Stakeholder submissions

There were no stakeholder submissions on this issue.

### QCA analysis

The adoption of a trailing average approach may affect the regulated firm's systematic risk exposure. However, Lally (2014) considered that any potential impact would likely be minimal because the choice between an 'on the day' debt premium (i.e. the current approach) and a trailing average will not affect the average net cash flow outcome over time.

The second issue is the use of different risk-free rates for determining the cost of equity and the cost of debt under a total cost of debt TA approach. Whereas a 10-year risk-free rate would be used in the total cost of debt TA approach, the risk-free rate with a term equal to the length of the regulatory cycle would be used to estimate the cost of equity. This situation does not arise in the case of the hybrid approach as the prevailing risk-free rate with a term equal to the length of the regulatory cycle would be used for both the cost of equity and the cost of debt.

In the QCA's view, the prevailing risk-free rate with a term set to the length of the regulatory period should be used to estimate both the cost of equity and the cost of debt so that the NPV = 0 economic efficiency criterion is not violated. As outlined in the QCA final decision paper on WACC market parameters (QCA 2014e), the QCA's position is to estimate the risk-free rate within the cost of equity with a term to maturity consistent with the regulatory cycle so as to satisfy the NPV = 0 Principle. In terms of the cost of debt, the QCA considers that the regulated firm can use interest rate swaps to hedge interest rate risk and reduce base interest rate costs where there is certainty that the regulatory cost of debt is based on the prevailing risk-free rate at the beginning of the regulatory cycle. This supports a term of the risk-free rate for the cost of debt equal to the term of the regulatory cycle to satisfy the NPV = 0 Principle.

### 3.2.5 Variation in output prices

Under the current QCA approach, the risk remains that the regulatory cost of debt is exposed to 'step changes' between regulatory reviews, since the prevailing cost of debt may substantially change from the beginning to the end of the regulatory period. If steps are not taken to smooth this short-term impact on prices over a longer term when prices are determined and there are no other adequate elements of the regulatory framework (such as unders-and-overs accounts or trigger mechanisms), then consumers could be exposed to prices being set, for example, at a



time of temporarily low interest rates, resulting in large 'step changes' in prices between regulatory reviews as interest rates increase.

In deciding to move to a trailing average cost of debt, the AER (2013c, pp. 109-110) concluded that this approach will smooth the movement in the regulatory cost of debt resulting in lower price volatility for consumers. Lally also contended that output prices may show less variation over time under a trailing average cost of debt approach. Using market data from 2003 to 2013, Lally (2014, pp. 24-27) compared the variation in the allowed cost of capital between the 'on the day' and trailing average cost of debt approaches. From this analysis, Lally (2014, p. 27) concluded that:

*Using data from 2003 to 2013, output prices would have exhibited moderately less variation if a trailing average were applied to the DRP compared to the current regime and substantially less if a trailing average were also applied to the risk-free rate component of the cost of debt.*

While it was acknowledged that the trailing average approach smooths the impact of prevailing interest rates on consumer prices, ERA (2013) highlighted the adverse implications for economic efficiency. The ERA argued that smoothing of prices resulted in adverse implications for allocative efficiency due to weaker price signalling to users of regulated services.

### Stakeholder submissions

This issue was raised as a disadvantage of the current approach in all three submissions received on the issues paper.

Unitywater highlighted the movement in the allowed cost of debt and weighted average cost of capital (WACC) between the 2010-11 to 2012-13 regulatory period and the 2013-14 to 2014-15 regulatory period. Unitywater (2014, p. 1) stated that:

*...one of the most important goals is to achieve greater regulatory certainty to enable the development of forward looking price paths to avoid price shocks as well as guiding participant's expectations.*

QTC (2014b) argued that the total cost of debt TA approach will result in a more stable regulatory cost of debt that will align more closely with the actual cost of debt faced by a benchmark efficient firm. QTC claimed that applying the trailing average to the debt premium only will expose consumers to greater interest rate risk. This risk arises due to the possibility of 'step changes' in prices between regulatory reviews, since the risk-free rate component may substantially change when it is fully reset at the start of each regulatory cycle.

### QCA analysis

It is not clear that volatility is an apt term as volatility in a financial or price context usually refers to frequent and material fluctuations. The main observation in relation to the cost of debt in recent years is that it has reduced substantially relative to longer term trends rather than exhibiting a volatile pattern. The issue is a step change in debt costs, rather than volatility, and whether and how this should be addressed.

Variability in the cost of debt is not necessarily a problem per se. There are some situations where consumers who are not averse to price risk might prefer some price variability as it gives them an opportunity to change consumption levels. However, this is a second order issue compared with determining an allowance for recovery of an efficient benchmark cost of debt.

In any case, depending on other factors that impact on prices in the new regulatory period, any potential step changes in prices could be addressed by smoothing prices over a longer term

than the current regulatory cycle. Possible approaches to price smoothing are outlined in the recent QCA (2014b) Information Paper *Financial Capital Maintenance and Price Smoothing*.

### 3.2.6 Risk of financial distress

Any mismatches between the allowed cost of debt and actual debt servicing costs will impact on the return attributable to equity holders. Reducing this mismatch may also reduce the risk of financial distress for the regulated firm.

Lally (2014, pp. 20-23) assessed the net cash flows faced by a hypothetical firm<sup>17</sup> under the current 'on the day' approach during the post-GFC period (2007 to 2013) in the context of the regulated firm's risk of financial distress. The net cash flows attributable to the allowed cost of capital were assumed to equal the regulatory return on equity adjusted for any mismatches between the allowed debt risk premium and that actually incurred by the firm. Lally (2014, p. 22) showed that the downside risk associated with the movements in net cash flows to equity holders is low in this particular example (resulting in minimal risk of bankruptcy under the current 'on the day' approach).

### Stakeholder submissions

QTC (2014b) claimed that a key disadvantage of the current 'on the day' approach is that windfall gains and losses will regularly occur as it is not possible for the regulated firm to replicate the implied debt management strategy. A key purported advantage of the trailing average cost of debt approach is that it reduces the potential for mismatch between the allowed cost of debt and efficiently incurred debt financing costs.

### QCA analysis

The QCA acknowledges that it is difficult for firms to manage interest rate risk related to changes in the debt risk premium component of the cost of debt. This is due to the lack of hedging instruments to manage the interest rate risk arising from the mismatch between the prevailing debt risk premium (used to set the regulatory cost of debt under the current 'on the day' approach) and the debt risk premium attributable to the regulated firm's existing and new debt.

The hybrid approach (with annual updates – see Appendix A) provides good protection to regulated businesses if there is a financial crisis where risk premiums increase.

### 3.2.7 Implementation and complexity

The trailing average cost of debt approach aims to more closely align the regulatory cost of debt with the actual cost of debt faced by the benchmark firm. However, this greater precision may introduce increased complexities to the regulatory approach. In particular, the following aspects of the trailing average cost of debt methodology can potentially increase the complexity and administration costs of the regulatory approach as compared with current practice:

- (a) the more frequent (annual) estimation of the benchmark cost of debt, as compared with existing practice of a single measurement at the start of each regulatory period

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<sup>17</sup> Lally (2014, pp. 20-23) assumes that the hypothetical firm engages in interest rate swaps to ensure that the risk-free rate component of the firm's actual cost of debt aligns with the regulatory allowance. Lally also assumes that the firm holds a staggered debt portfolio so that the debt risk premium component of the firm's actual cost of debt is similar to the benchmark trailing average.

- (b) methodological and transparency issues associated with calculating weights that ensure new borrowings arising from investments are compensated at the prevailing rate.

### Stakeholder submissions

The benefits of using the trailing average approach are considered by stakeholders to outweigh the higher transactions costs associated with annual updating of debt estimates. QTC (2014b, p.2) argued that, while implementing a trailing average cost of debt approach involves more steps than the existing approach, this is not considered to be overly complex.

QTC (2014b) also submitted a spreadsheet model to demonstrate how key features of the trailing average approach can be implemented in practice. QTC (2014b, p. 4) argued that these calculations are simple and transparent.

QTC (2014b, p. 5) also presented a possible approach for interpolating PwC econometric estimates to cover a larger range of possible averaging periods within each year.

### QCA analysis

The QCA considers that the costs associated with a trailing average approach with an annual updating mechanism will generally be higher since cost of debt estimates would need to be updated on a more frequent (i.e. annual) basis. Under the QCA's existing 'on the day' approach, cost of debt estimates are generally only required to be estimated at the beginning of each regulatory period, which for most regulatory frameworks is greater than one year.

As outlined in section 3.2.2, the QCA does not support the use of a weighting approach due to issues with greater complexity and a lack of transparency of possible approaches.

The QCA believes that the cost of debt method used should be as simple and transparent as possible and on this basis favours the 'on the day' approach.

## 3.3 Allowing the use of different approaches by different firms

In its report as part of the AEMC's Final Rule Determination on the economic regulation of network service providers, SFG Consulting (2012) found that each of the two main types of trailing average approach (i.e. average of the total cost of debt and average of only the debt risk premium), as well as the current 'on the day' approach, had support from different regulated firms.

The AEMC review concluded that the link between the regulatory cost of debt approach and the regulated firm's efficient debt management strategy needs to be considered when developing regulatory policy. The AEMC review concluded that the 'best', or most 'efficient', cost of debt benchmark might not be the same across regulated firms, as they will have different ('efficient') debt management strategies depending on the particular characteristics of the firms (e.g. business size, asset profile, ownership structure, etc.).

Moreover, as noted above, firms may be subject to different forms of economic regulation (ranging from price determination for defined regulatory periods to more light-handed annual performance assessments), and this may also affect the most appropriate cost of debt approach. Therefore, applying the same benchmark cost of debt methodology to all firms may result in a mismatch between the regulatory approach and the firm's debt management strategy.

Lally (2014, pp. 31-32), the AER (2013c, pp. 100-102) and the ACCC's Regulatory Development Branch (2013, pp. 25-26) strongly believe that a single cost of debt approach should be applied to minimise incentives for regulated firms to choose an option (or switch between options over

time) on the basis of revenue maximisation rather than actual debt management practices. Lally (2014, p. 32) also pointed out that, even if the regulator had sole discretion, the possibility of reviews being sought will still remain in instances of a firm's revenue not being maximised by the chosen approach.

### Stakeholder submissions

QTC (2014b, p. 11) submitted that different cost of debt approaches may be applicable for different regulated firms, but mechanisms need to be in place to minimise incentives for regulated firms to switch between options on the basis of revenue maximisation. In QTC's view, the choice should be restricted to the two types of trailing average approach, as only these approaches have an implied debt management strategy that can be implemented in practice.

In addition, QUU (2014, p. 5) submitted that under a lighter-handed regulatory framework in which the regulated firm is responsible for setting prices the QCA should provide guidance on, rather than prescribe, appropriate methods for calculating WACC parameters such as the cost of debt.

### QCA analysis

While the QTC submitted that the trailing average approach applied to the total cost of debt will more closely align with the efficient debt costs of a comparable, unregulated firm, this view has not been presented by regulated firms outside of the SEQ water retailer sector. It is not clear that financing risks across different regulated businesses differ sufficiently to justify the use of multiple definitions of the benchmark entity.

The QCA believes that the use of a single cost of debt approach will minimise incentives for regulated firms to seek options on the basis of revenue maximisation. While transitional arrangements can minimise incentives for firms to switch between options based on maximising revenue, this will add to the complexity of the regulatory framework.

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## 4 SUMMARY OF PROPOSED POSITION

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### 4.1 Overview

In response to submissions provided to the QCA on the issues paper on the trailing average cost of debt approach (2014c), the QCA examined the following three regulatory cost of debt approaches in detail:

- (a) the QCA's existing 'on the day' approach
- (b) a trailing average applied to the total cost of debt (the total cost of debt TA approach)
- (c) a trailing average applied only to the debt risk premium component of the cost of debt, and continued use of an 'on the day' estimate for the risk-free rate component (the 'hybrid' approach).

The QCA assessed the three cost of debt approaches listed above against factors relevant to the regulatory objectives and principles outlined in section 2.1. The levels of complexity and implementation costs were also important criteria in the QCA's consideration of these alternative methods.

Table 1 below summarises the key advantages and disadvantages of these three approaches.

The QCA's view is that the existing 'on the day' approach is preferred over the trailing average approaches for the following reasons:

- (a) the 'on the day' approach will lead to more efficient investment signals compared with both trailing average approaches
- (b) the 'on the day' approach is simpler and less costly to implement than the trailing average approaches
- (c) continuation of the established 'on the day' approach will contribute to regulatory certainty
- (d) consistent with the regulatory cost of equity, the 'on the day' approach uses a prevailing risk-free rate with the term equal to the term of the regulatory period
- (e) the QCA's existing 'on the day' approach provides regulatory allowances to compensate the benchmark firm for the costs of managing interest rate and refinancing risks.

The QCA considers that a significant change to the regulatory framework requires a compelling case for change supported by a broad range of stakeholders. The QCA is not persuaded that such a case has been made at this time. Note that this is the QCA's draft view, and not necessarily its final view. In this context, the QCA notes that the ERA and IPART have reached similar conclusions, but the AER has a different view and has adopted the trailing average approach for all of its regulated entities.

The QCA's reasons for its position are outlined below.<sup>18</sup>

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<sup>18</sup> Appendix A responds to specific issues raised in submissions from stakeholders about estimating the trailing average cost of debt and its implementation.

**Table 1 Comparison of Different Regulatory Cost of Debt Approaches**

Approach	Advantages	Disadvantages
'On the day' approach	<ul style="list-style-type: none"> <li>• More efficient investment signals compared with both trailing average approaches as: <ul style="list-style-type: none"> <li>– the risk-free rate component of investment funding can be hedged using forward-starting swaps and</li> <li>– the 'on the day' debt risk premium will be more contemporary at the time of investment than trailing average rate.</li> </ul> </li> <li>• Simpler and less costly to implement than the trailing average approaches.</li> <li>• Continuation of the approach contributes to regulatory certainty.</li> <li>• Consistent with the regulatory cost of equity, uses a prevailing risk-free rate with the term equal to the regulatory period.</li> <li>• Provides allowances to compensate the benchmark firm for the costs of managing interest rate and refinancing risks.</li> </ul>	<ul style="list-style-type: none"> <li>• Matching debt policy not feasible due to lack of suitable credit default swaps (minor violation of NPV = 0 Principle).</li> <li>• Potential for step changes in allowed cost of debt and prices between regulatory periods.</li> </ul>
Total cost of debt TA (equally weighted)	<ul style="list-style-type: none"> <li>• Matching debt policy is feasible.</li> <li>• Results in smoother changes in allowed cost of debt and prices between regulatory periods.</li> <li>• Gives more protection to the regulated entity (relative to the on the day approach) in the event of unexpected increases in interest rates within the regulatory period.</li> </ul>	<ul style="list-style-type: none"> <li>• Greater investment distortions as compared with other approaches, as trailing average may differ materially from prevailing rate.</li> <li>• The QCA's view is that there is a potential overstatement of the cost of debt as a longer term risk-free rate typically has a higher yield, and the use of swaps is ignored. The QCA considers that this could result in a material violation of the NPV = 0 Principle.</li> <li>• More complex and costly to implement than the 'on the day' approach.</li> <li>• Uses long-term trailing average risk-free rate (aligned to benchmark term of debt) which would generally differ from shorter term prevailing rate (aligned to term of regulatory cycle) in the cost of equity.</li> </ul>
Hybrid approach	<ul style="list-style-type: none"> <li>• Lower investment distortions as compared with the total cost of debt TA, as risk-free rate component of investment funding is contemporary and can be hedged.</li> <li>• Matching debt policy is feasible.</li> <li>• Provides allowances to compensate the benchmark firm for the costs of managing interest rate and refinancing risks.</li> <li>• Gives more protection to the regulated firm (relative to the on the day approach) in the event of unexpected increases in interest rates within the regulatory period.</li> <li>• Uses a prevailing risk-free rate with the term equal to the length of the regulatory cycle which is the same risk-free rate used in the regulatory cost of equity.</li> </ul>	<ul style="list-style-type: none"> <li>• Greater investment distortions as compared with the 'on the day' approach since the 'on the day' debt risk premium will generally be more contemporary at the time of investment than the trailing average rate.</li> <li>• More complex and costly to carry out than the 'on the day' approach, although costs are generally expected to be reasonable.</li> <li>• Potential for step changes in allowed cost of debt and prices between regulatory periods.</li> </ul>

## 4.2 Analysis

Submissions to the issues paper were made only by the QTC, QUU and Unitywater. These stakeholders strongly support the application of a trailing average to the total cost of debt. A key advantage highlighted in the submissions is the ability to implement the implied debt management strategy to reduce the potential for mismatches between allowed and actual debt costs. In addition, it was argued that this may lead to a smoother profile for the regulatory cost of debt compared with the current typical regulatory arrangements, decreasing the variation in prices over time and reducing the scope for measurement error.

However, in considering the two trailing average approaches, the QCA's view is that the total cost of debt trailing average approach suffers from a number of disadvantages relative to the hybrid approach in that the hybrid approach:

- (a) provides a regulatory allowance that more closely aligns with the preferred debt management strategy of the regulated firm given the presence of regulation
- (b) provides better economic signals for new investment than a trailing average for the total cost of debt
- (c) maintains consistency with the choice of a risk-free rate for both the cost of equity and the cost of debt (i.e. prevailing rate aligned to the term of the regulatory cycle).

The QCA agrees with Lally that there is potential for an overstatement of the regulatory cost of debt under the total cost of debt TA approach. Given that the term structure of interest rates is generally upward sloping, the provision of a 10-year risk-free rate under this trailing average approach would be expected to systematically lead to an average cost of debt that is higher in the long run. In addition, this higher cost of debt could be locked in during the initial regulatory reset under transitional arrangements that provide for the prevailing cost of debt (with a 10-year risk-free rate and a 10-year debt risk premium) at the commencement of the trailing average approach.

Under present conditions, the difference between setting the risk-free rate on the basis of 10-year and five-year bonds is material. In addition, this difference will be greater for those businesses subject to a regulatory framework in which WACC parameters are reset on a more frequent basis than five yearly. Under these circumstances, the QCA does not consider that it is reasonable to increase the term of the risk-free rate to 10 years.

The QCA considers that a further key disadvantage of the total cost of debt TA approach is the inconsistency this creates between the term of the risk-free rate used in the return on debt and return on equity. In the QCA's view, the prevailing risk-free with a term set to the length of the regulatory period should be used to estimate both the cost of equity and the cost of debt.

While the hybrid approach is not supported by QTC or the water businesses, this approach does address the fundamental problem associated with the QCA's existing 'on the day' approach – namely that the assumed debt strategy can be implemented by the regulated firm when this is not feasible. Given that it is expected that regulated firms would undertake a similar level of hedging activity as under the current 'on the day' approach, a similar allowance for hedging costs would be provided as part of the regulatory cost of debt allowance. This would compensate firms for variation in the risk-free rate during the regulatory cycle, but it is acknowledged that there may be some variation in the risk-free rate between regulatory periods.

In particular, the hybrid approach addresses a weakness of the current approach by providing a regulatory allowance that more closely aligns the preferred debt management strategy of the

regulated firm given the presence of regulation. This approach will reflect that the efficient debt policy of a regulated business is to manage refinancing risk by staggering its borrowings and issuing longer term debt and manage interest rate risk hedging base interest rate exposure using interest rate swaps.

This approach will also protect regulated firms during a major financial crisis that occurs during the regulatory cycle (i.e. after rates are set). During periods of financial crisis, investors will tend to move out of risky assets and into government debt resulting in the dual effect of a reduction in the risk-free rate and an increase in the debt risk premium. In these circumstances, under a hybrid approach, regulated firms will generally be receiving a higher risk-free rate (based on the prevailing rate at the beginning of the regulatory period) than actual debt costs and a trailing average debt risk premium which aligns with their actual debt costs assuming a staggered debt profile (updated annually during the regulatory period). This will provide them with a financial buffer in times of a crisis. In this respect it is considered important in terms of meeting regulatory objectives to ensure the financial viability of utility type infrastructure businesses. This in turn justifies a treatment of risk that provides reasonable assurance in the event of general financial market pressures.

The hybrid approach also maintains consistency with the choice of term for the risk-free rate matching the regulatory period for both the cost of equity and the cost of debt.

However, Lally (2010) has previously demonstrated that the QCA's existing approach results in only a minor violation of the NPV = 0 Principle. Submissions by stakeholders to the Trailing Average Cost of Debt Issues Paper have not provided evidence contrary to this view.

In addition, the QCA considers that the existing 'on the day' approach will likely mean more efficient investment signals as compared with the hybrid trailing average approach since the 'on the day' debt risk premium will generally be more contemporary at the time of investment than the historical trailing average rate. The QCA does not support the use of a weighting approach to address these greater distortions associated with the hybrid approach due to issues with the complexity and transparency of possible approaches. As highlighted in the submission from QTC (2014b, p. 9), there are several disadvantages with a simple trailing average cost of debt approach, including investment distortions with persistent mismatches between allowed and actual debt costs as the trailing average will substantially lag the prevailing cost of debt.

The QCA also considers that the regulatory allowances for the transactions costs of managing interest rate and refinancing risks provided under the existing 'on the day' approach are reasonable.

The QCA also notes that while QTC and two SEQ water entities provided submissions to the QCA that supported the trailing average approach, regulated firms and their customers in other industry sectors did not make submissions. In its report as part of the AEMC's Final Rule Determination on the economic regulation of network service providers, SFG Consulting (2012) found that each of the two main types of trailing average approach (i.e. total cost of debt trailing average approach and hybrid approach), as well as the current 'on the day' approach, had support from different regulated firms.

There are three key aspects to formulating a QCA position. The first is whether there is a justification for changing from the current approach to a trailing average approach. The second is whether to adopt a total cost of debt TA or a hybrid approach. The third aspect relates to a number of specific implementation issues.

While there are advantages and disadvantages to the QCA adopting a trailing average approach for the regulatory cost of debt, there is not a compelling case to change from the current



arrangements. The QCA considers that the existing approach will have lower investment distortions than both trailing average approaches, and the violation to the NPV = 0 Principle is not considered to be substantial. The QCA's existing approach has additional advantages of being simpler and less costly to implement than the trailing average approaches. The QCA also considers that continuation of the existing approach will contribute to regulatory certainty.

However, the assessment of the trailing average concept has highlighted that one key advantage of the concept is that it is likely to provide greater assurance of a regulated entity being able to deal with an unexpected increase in interest rates. The QCA acknowledges that under the existing cost of debt approach, the benchmark firm faces different constraints to an unregulated firm in modifying prices in response to an unexpected increase in interest rates.

But in this respect, other regulatory mechanisms could be used to accommodate unexpected material changes in the cost of debt within a regulatory period. For example, one approach could be to define *ex ante* material events that trigger a cost pass-through or review of regulatory arrangements. This could include the regulated firm undertaking a significant investment program or large refinancing requirement during the particular regulatory period. This approach could directly recognise the difficulty faced by regulated businesses in hedging the debt risk premium component of borrowings.

The appropriateness of this approach would need to be considered in the context of the relevant regulatory framework.

The QCA believes that the use of a single cost of debt approach that applies to all regulated businesses will contribute to regulatory certainty and minimise incentives for regulated firms to seek options on the basis of revenue maximisation. Furthermore, a significant change to the regulatory framework requires compelling reasons to implement the change that are supported by a broad range of stakeholders. At this point in time, there is not a strong case to change from current arrangements.

The QCA's view is consistent with the conclusions in the paper by Dr Martin Lally that accompanied the release of the QCA's trailing average cost of debt issues paper. Lally (2014, pp. 41-46) compared the QCA's existing approach with the two variations of the trailing average concept considered in this paper. Lally recommended the continuation of the QCA's existing 'on the day' approach for the following key reasons:

- (a) there are lower investment distortions associated with the existing 'on the day' approach as compared with both trailing average approaches<sup>19</sup>
- (b) the 'on the day' approach is easier to implement and avoids transitional arrangements that are required if a trailing average approach was adopted
- (c) the violations of the NPV = 0 Principle for the QCA's existing 'on the day' approach are not a major issue
- (d) the increased bankruptcy risk associated with the existing 'on the day' approach as compared with both trailing average approaches was minor during the GFC.

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<sup>19</sup> Assuming there is no mechanism (e.g. QTC proposed approach) to assign the prevailing rate to investments.

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## GLOSSARY

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### A

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator

### C

CAPM	Capital Asset Pricing Model
CGS	Commonwealth Government Securities

### D

DRP	Debt Risk Premium
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### E

ERA	Economic Regulation Authority Western Australia
ESC	Essential Services Commission

### G

GFC	Global Financial Crisis
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### I

IPART	Independent Pricing and Regulatory Tribunal
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### P

PwC	PricewaterhouseCoopers
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### Q

QCA	Queensland Competition Authority
QTC	Queensland Treasury Corporation
QUU	Queensland Urban Utilities

### R

RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia

### S

SEQ	South east Queensland
SIC	Schwarz Information Criterion

### T

TA	Trailing average
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### U

UK	United Kingdom
US	United States

### W

WACC	Weighted Average Cost of Capital
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## APPENDIX A: IMPLEMENTATION ISSUES RELATING TO TRAILING AVERAGE APPROACH

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There are further implementation issues that would need to be considered if a trailing average cost of debt approach were to be adopted. This appendix responds to specific issues raised in submissions from stakeholders about estimating the trailing average cost of debt and its implementation. Dr Martin Lally (2014) also provided advice on key implementation issues related to the adoption of a trailing average cost of debt approach. This advice has been considered in the analysis presented in this chapter.

In considering the various issues associated with implementing a trailing average approach the QCA makes the following observations:

- (a) the trailing average should be applied over a 10-year period (covering the current year and preceding years) reflecting the benchmark term of debt (issuance to maturity)
- (b) the standard practice of using a 20 day averaging period should be implemented to estimate the benchmark cost of debt on an annual basis under a trailing average approach
- (c) the trailing average estimate should be updated annually (with linkage to prices dependent on the type of regulatory framework)
- (d) transitional arrangements should be consistent with the QTC's proposed approach, with a 10-year transitional period to the trailing average approach.

The latter two of these issues are discussed in further detail below.

### Annual updating of the regulatory cost of debt

Under the trailing average cost of debt approach, the regulator could retain the same regulatory 'trailing average' cost of debt over the entire regulatory period, or subject this to annual updating within the regulatory period to incorporate the particular year's prevailing cost of debt in the trailing average. Updating the trailing average cost of debt on an annual basis can potentially further reduce interest rate risk arising from the mismatch between the allowed cost of debt and the actual debt servicing costs incurred by the firm.

The AER (2013c, p. 112) decided to update the regulatory cost of debt annually under its proposed trailing average approach. This decision was based primarily on the principle that annual updates can help to minimise the mismatch between the allowed and actual cost of debt, as changes in the prevailing rate will be reflected in the regulatory cost of debt on a timelier basis. The AER considered that it is feasible to update the regulatory cost of debt annually at a reasonable cost. The AER sought to minimise the annual cost by using a third party data source<sup>20</sup> to estimate the annual benchmark cost of debt that is used to automatically update the regulatory cost of debt using a simple (equally weighted) trailing average method.

Lally (2014, pp. 30-31) also suggested that if a trailing average cost of debt approach is adopted, then annual updates of the regulatory cost of debt should be a part of this approach:

*In summary, if a regulator does adopt a trailing average regime for the cost of debt or the DRP, the results from fixing that value at the beginning of the regulatory cycle or engaging in annual*

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<sup>20</sup> AER (2014) have not proposed a specific data series to use in future regulatory determinations. Rather, AER have noted that a decision on the specific third party data series to use will be undertaken at the time of a regulatory determination.

*updating (either formally or via an 'unders and overs' account) can be significantly different. Furthermore, the use of a trailing average regime is premised on the need to better match the allowed cost to that actually incurred. Since the cost actually incurred better corresponds to the trailing average with annual updating, this suggests that annual updating should be used if a trailing average regime is adopted.*

If annual updates of the regulatory cost of debt are to be implemented as part of a trailing average cost of debt approach, the linkage with allowed revenues (and prices) also needs to be considered. Issues include whether the update in the allowed revenues (and prices) is a mechanistic process that is simple and transparent or closer in form to an annual determination. Possible implementation options include (AER 2013c, p. 112):

- (a) annually reviewing the allowed revenue (and prices) in each year of a regulatory period to reflect the updated regulatory cost of debt
- (b) applying a retrospective true-up as part of the next regulatory review, with prices in the next regulatory period reflecting any under- or over-recovery in present value terms.

Under the first option, if prices automatically reflect the impact of an annually updated regulatory cost of debt this may result in increased price volatility within the regulatory period. This could be partially mitigated by only adjusting prices if the change in the regulated cost of debt is greater than a specified threshold. This type of mechanism would implicitly assume that the change in the cost of debt was expected to continue. However, reviewing the allowed revenue annually may also be associated with greater complexity and costs, particularly if the updating process involves expert judgement.

A retrospective true-up could result in reduced complexity and costs as compared with annual adjustments to allowed revenues and prices, but may result in higher step changes in allowed revenues and prices at the start of each regulatory period. However, this could be addressed by smoothing of prices over a longer term than the current regulatory cycle.<sup>21</sup> This would in effect mean that under-recovery of costs could be capitalised into the RAB for recovery over a longer term than the current regulatory cycle. The optimal price profile can be considered as a separate issue but requires reasonable surety of RAB recovery which is likely for much regulated essential infrastructure.

### Stakeholder submissions

QTC (2014b), QUU (2014) and Unitywater (2014) supported the annual update of the regulatory cost of debt. QTC argued that the design of a trailing average approach results in the regulatory cost of debt changing each year as maturing debt is refinanced at the prevailing cost of debt.

QTC (2014b) submitted additional analysis to demonstrate the extent of potential mismatches if annual updates do not occur. QTC conducted simulation analysis of Australian corporate interest rates and also presented analysis based on long-term historical US corporate interest rates. QTC concluded that (2014b, p. 7):

*This analysis demonstrates that the mismatches can be significant and will tend to display persistence over time. The persistence of the mismatches is important because it can lead to extended periods of sustained over- or under-compensation.*

Under a trailing average approach, QTC argued that the regulatory cost of debt (and prices) should be updated each year rather than applying a retrospective true-up at the end of the regulatory period. This is claimed to be a better outcome for customers as it avoids to possible step changes in the allowed cost of debt and prices and the beginning of each regulatory period. In addition, it is argued that this will reduce the annual mismatch between the allowed cost of debt and the regulated firm's actual debt costs.

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<sup>21</sup> Possible approaches to price smoothing are outlined in the recent QCA (2014b) Information Paper *Financial Capital Maintenance and Price Smoothing*.

QTC (2014b) also proposed an approach for deriving an annual revenue adjustment that accounts for annual updates to the cost of debt during the regulatory period. Under this approach, expected annual allowed revenues are derived at the beginning of the regulatory period based on an expected annual cost of debt that remains constant at the trailing average in the first year of the regulatory cycle. The annual revenue adjustment is derived by multiplying the annual benchmark debt balance (closing RAB multiplied by the benchmark gearing ratio) by the difference between the annually updated cost of debt and the expected cost of debt.

### QCA analysis

As noted by the QTC (2014b, p. 19), the level of persistence of mismatches between allowed and actual debt costs based on long-term historical US corporate interest rates is much higher than simulated mismatches. The QCA has reservations, though, on whether these historical observations are directly relevant in the current context. In addition, the concern with possible extended periods of over- or under- compensation of regulated businesses does not recognise the potential option of using retrospective true-up mechanisms to ensure prices recover efficient costs over time.

If a trailing average cost of debt approach was adopted, the QCA favours the incorporation of annual updates of the regulatory cost of debt. This process will allow the regulated firm to implement a debt financing and risk management strategy that can closely match the particular trailing average approach. In addition, this can be undertaken at a reasonable cost.

The mechanism for linking the annual update of the regulatory cost of debt with allowed revenues and prices would need to consider the type of regulatory framework.

### Transitional arrangements

The adoption of a trailing average cost of debt approach requires consideration of whether transitional arrangements are required to ensure regulated firms or customers are not adversely affected. Possible considerations when designing transitional arrangements include:

- (a) consideration of existing debt exposures of regulated firms that have been influenced by the existing 'on the day' cost of debt approach and may require restructuring as part of moving to a trailing average approach (Lally 2014, pp. 32-35)
- (b) minimising the potential for gaming by regulated firms to lock in windfall gains (AER 2013c, p. 120)
- (c) practical issues regarding the availability of historical cost of debt information (up to 10 years prior to the initial year of the trailing average approach) (Lally 2014, pp. 32-35)
- (d) ensuring regulated firms are not exposed to unforeseen risks that may increase the regulatory risk perceived by investors (SFG Consulting 2012, p. 46).

Lally (2014, p. 44) believed that under the current 'on the day' approach, regulated firms have generally issued long-term debt with a staggered maturity profile and entered into interest rate swaps to align the risk-free rate component of borrowings with the regulatory period. The AER (2013c, pp. 103-107) also concluded that this debt management strategy was consistent with observed practice of regulated firms. Transitional arrangements could cater for the switch away from hedging the risk-free rate component over time, as this type of risk management practice may not be required under a trailing average cost of debt approach (if the trailing average is applied to the entire regulatory cost of debt).

Transitional arrangements proposed by QTC (2012c, p. 2) have been incorporated into the AER's proposed transition to a trailing average cost of debt approach (AER 2013c, p. 123). These proposed arrangements cover the length of the benchmark firm's efficient term of debt (e.g. 10 years), commencing with the prevailing 'on the day' cost of debt (i.e. at 100% weight) in the first year of the initial regulatory cycle. The

weighting of this initial prevailing rate diminishes by 10% each year as the prevailing 10-year benchmark cost of debt each year is weight averaged (i.e. at 10% weight) into the calculation.

Lally (2014, p. 34) noted that the QTC transitional approach addresses the practical considerations regarding historical data that arise as part of implementing a trailing average cost of debt approach.<sup>22</sup> Additionally, this approach ensures a gradual transition over the benchmark 'efficient' term of debt, minimising regulatory risk as firms are provided with sufficient time to restructure their debt exposures. In addition, Lally (2014, pp. 35-41) showed that QTC's proposed arrangements minimise any possible windfall gains or losses<sup>23</sup> and therefore address concerns over possible gaming (QTC 2013a, p. 28).

#### Stakeholder submissions

QTC (2014b, p. 10) noted in its submission that transitional arrangements proposed by QTC were incorporated in the AER's proposed trailing average approach in its Final Rate of Return Guideline. QUU (2014) argued that these transitional arrangements ensure that regulated businesses cannot switch between regulatory approaches depending on the prevailing market conditions at each regulatory review.

QTC (2014b, p. 11) also suggested that it may be appropriate for transitional arrangements to incorporate some historical data if a regulated firm could demonstrate that it already has a debt policy that matches the trailing average approach.

#### QCA analysis

The incorporation of transitional arrangements (e.g. QTC's proposed approach) for firms adopting a trailing average approach will need to minimise the potential for regulated firms to lock in windfall gains. Mechanisms also need to be in place to minimise incentives for regulated firms to switch between options on the basis of revenue maximisation. This may involve providing a once-only opportunity to move to a trailing average approach; transitional arrangements for moving back to the current 'on the day' approach; or using a single approach for all firms within a particular regulatory framework.

Of the various options, the QCA considers that the better approach would be QTC's transitional arrangements as they minimise the potential for regulated firms to lock in windfall gains arising from the relatively high costs of debt associated with the global financial crisis, address practical considerations regarding the availability of historical cost of debt information and provide a gradual transition that minimises the exposure of regulated firms to unforeseen risks.

Given that the prevailing cost of debt is presently historically low, in comparison to the previous 10-years, allowing the incorporation of historical data (rather than starting the trailing average approach so that the cost of debt for the first year matches the current cost of debt for that year and then developing the trailing average over time) as proposed by QTC in specific instances may provide a windfall gain to regulated businesses. Particularly given that regulated businesses will have benefited in previous regulatory reviews. Lally (2014, pp. 35-41) has demonstrated possible windfall gains that could arise with the inclusion of historical data in transitional arrangements for regulated firms that have a debt strategy consistent with the 'hybrid' approach.

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<sup>22</sup> Since the QTC's proposed approach uses the prevailing 'on the day' cost of debt in the first year of the initial regulatory cycle, there is no requirement for historical cost of debt estimates at the time of implementation of the trailing average approach.

<sup>23</sup> Lally (2014, pp. 36-38) outlined a simple example where the windfall gain or loss was represented by the accumulation of annual profits/losses equal to the allowed debt premium minus the debt premium paid (assuming the firm adopted a staggered maturity profile). The results presented were for a trailing average approach applied to the debt risk premium only, but would be unchanged for the trailing average approach applied to the total cost of debt.

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## APPENDIX B: SUBMISSIONS

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<i>Participant</i>	<i>Submission number</i>
Queensland Treasury Corporation	1
Queensland Urban Utilities	2
Unitywater	3

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