21 June 2013

Mr Warwick Anderson
General Manager – Network Regulation Branch
Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601

Dear Mr Anderson

Rate of Return Guidelines Consultation Paper

Queensland Treasury Corporation welcomes the opportunity to provide comments to the Australian Energy Regulator on the Rate of Return Guidelines Consultation Paper.

Should you have any queries in relation to our submission please contact Brian Carrick on (07) 3842 4716 or David Johnston on (07) 3842 4782.

Sincerely

Philip Noble
Chief Executive

Rate of Return Guidelines Consultation Paper

SUBMISSION TO THE AUSTRALIAN ENERGY REGULATOR – JUNE 2013

Summary of QTC's views

▪ QTC welcomes the Australian Energy Regulator's (AER) preliminary position that refinancing risk is a relevant consideration for the return on debt benchmark, and that in this context a portfolio approach offers long-term benefits to consumers through lower price volatility and allows service providers a reasonable opportunity to recover efficient debt financing costs.

▪ The benefits of a portfolio approach will be maximised if it is implemented in full, such that the return on debt allowance is commensurate with the funding costs of the efficient debt portfolio issued by the benchmark firm. This includes the following important attributes:

– Annual updates should be made to the return on debt under a portfolio approach. Not doing so will materially diminish the benefits of a portfolio approach by creating avoidable price volatility for consumers and mismatch risks for service providers.

– The borrowings made to fund the debt portion of new capital expenditure should be compensated at the prevailing 10-year cost of debt rather than a simple trailing average of historical costs. This will reduce the potential for investment distortions in the long-term interests of consumers. This can be achieved under a portfolio approach by using a weighted trailing average which is consistent with benchmark regulation.

– A trailing average or hybrid portfolio approach will only be effective in keeping refinancing risk at an acceptable level if the benchmark debt tenor is sufficiently long. The observed financing practices of regulated and unregulated infrastructure businesses provide strong support for a benchmark debt tenor of no less than 10 years.

– Transitional arrangements could be put in place to manage any impacts on the benchmark efficient entity and consumers arising from the change in approach. An example of a potential transition path is set out in our submission to the Issues Paper.

▪ While a partial implementation of a portfolio approach (which omits annual updating or weighting of new borrowings) may offer reasonably superficial benefits such as administrative convenience, this could introduce significant costs and risks for service providers and consumers:

– Except in the case where the prevailing cost of debt equals the long-term average, a simple average approach would either provide windfall gains or losses to consumers for the cost of debt associated with new investment. To the extent that service providers can adjust their expenditure and borrowing profile or enter into forward interest rate contracts in response to differences between prevailing and long-term interest rates, under a simple average approach service providers could derive significant windfall gains at the expense of consumers.

- If the cost of debt is not updated on an annual basis, service providers are likely to be unable to recover their efficient financing costs on a current basis, and may only recover their costs in the long run in very limited circumstances, which in an environment of non-zero inflation would only occur by chance. Simulation and historical modelling indicates that a true-up at the end of each regulatory period which allowed service providers to recover the difference in interest rates during the regulatory period would result in increased volatility of revenues, and increased price volatility for consumers.

- QTC considers that the issues that are cited in support for adopting an incomplete implementation of the portfolio approach can be addressed by measures that would improve return on debt processes and outputs. In particular:
  - The yield on the 10-year debt benchmark could be estimated using the extrapolated Bloomberg fair value curve and estimates from the Nelson-Siegel yield curve model as developed by the Competition Economists Group (CEG). This will allow a broader range of domestic and offshore debt issues to be used to estimate the yield on the debt benchmark, and ensures that estimates can still be made if Bloomberg decides to no longer produce fair value curves.
  - To ensure stakeholders have confidence in the application of this approach, QTC believes a spreadsheet could be developed to automatically calculate the return on debt and the annual adjustments to the allowed revenues. The spreadsheet could easily be added to the Post Tax Revenue Model (PTRM) workbook. QTC has developed a simple spreadsheet that can be provided to the AER for consideration.
  - There may be options that could reduce the scope for reviews during the regulatory period. For example, the return on debt calculations could be reviewed during the subsequent regulatory determination, similar to the estimation of the opening Regulated Asset Base under the Roll Forward Model.

Structure of this submission

The Consultation Paper raises a number of important issues relating to the application of a portfolio approach to calculate the return on debt and the approach for estimating the yield on the debt benchmark. While some specific questions on these issues have been raised, QTC considers that a broader discussion of these issues is warranted. QTC's views on these issues are presented in Section 1 while our responses to the specific questions raised in the Consultation Paper are provided in Section 2.

Appendix A presents the results of a simulation exercise undertaken by QTC to address a range of issues relating to the annual updating of the return on debt under a portfolio approach.

Section 1 – Key issues and considerations

A portfolio approach for determining the return on debt

QTC considers a trailing average portfolio approach based on 10-year fixed rate corporate debt to be the most appropriate approach for determining the return on debt for the benchmark firm. Debt portfolios with staggered maturity dates out to at least 10-years are commonly used by infrastructure businesses that operate long-lived assets and have above market-average gearing. This type of debt management strategy allows refinancing risk to be kept at an acceptable level by ensuring that a relatively small percentage of the total borrowing matures each year.

The Consultation Paper acknowledges the importance of managing refinancing risk and concludes that a portfolio approach is:

> '…more reflective of the actual debt management approaches of non-regulated businesses and, therefore, is more likely to represent efficient financing practice.' [1]

There are a number of key features that the return on debt methodology must contain if it is to reflect the cost of debt borne by a benchmark efficient business that implements a portfolio approach to efficiently manage its debt. These key features are as follows:

- Annual updating of the return on debt, since the cost of debt borne by the benchmark efficient business will change at least annually

- Weighting of new borrowings, as the overall cost of debt will be the weighted average of the individual debt instruments in the portfolio, and

- A benchmark debt tenor that is consistent with the average tenor of debt, which would be issued by an infrastructure business with high gearing levels that are typical of the sector.

If any of these features are absent, the return on debt is unlikely to be commensurate with the cost of debt for the benchmark efficient entity, and productive, allocative and/or dynamic efficiency will not be promoted. QTC's analysis (including simulation modelling discussed in Appendix A) confirms that the difference between the return on debt and the benchmark efficient entity will likely be material, such that the allowed rate of return objective would not be achieved. For example:

- If the return on debt is not updated each year in an environment of falling interest rates, the return will not reflect least cost financing. A business could issue debt at an inefficient (ie, high or above market) cost while still being adequately compensated by the fixed return on debt.

- If the return on debt is based on a simple trailing average, and prevailing rates are below the average, the business would receive more than adequate compensation for its cost of debt even if it does not follow least cost funding practices. It could have an incentive to over-invest.

- If the benchmark debt tenor is inappropriately short, the business will not be compensated for reducing refinancing risk by issuing long term debt, and may adopt riskier funding strategies leading to a higher required return on equity.

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[1] AER Consultation Paper, p. 54

QTC recognises that a full implementation of the portfolio approach is more complex than an incomplete implementation and would result in additional administration for the AER. However, such costs are not close to outweighing the value of the inefficiencies generated from an incomplete implementation of the portfolio approach.

However, QTC is concerned over the apparent weighting that is afforded to a simplistic approach. In regards to a number of fundamental features of the portfolio approach (including simple average and annual updating), it appears that the Consultation Paper has given significant weight to the following criterion:

> *'Promote simple over complex approaches where appropriate.'* [2]

Estimating the cost of capital parameters and the benchmark return on debt under the portfolio approach is in many respects a complex task. However, the AEMC's guidance has a clear focus on the quality of the estimation process and outcomes from these processes:

> *'Achieving the NEO, the NGO, and the RPP requires the best possible estimate of the benchmark efficient financing costs. The Commission stated that this can only be achieved when the estimation process is of the highest possible quality.'* [3]

> *'That the regulator would strive for the highest quality estimates to best achieve the NEO, NGO and the RPP can be necessarily expected.'* [4]

In this context, it may inappropriate to promote simple approaches at the expense of other more important objectives, especially if is difficult to assess the potential detriment from a complex model against the costs and risks for consumers and service providers where a simple model is adopted that results in divergence between the return on debt and the cost of debt for a benchmark efficient portfolio.

In QTC's view, the appropriate way to approach the estimation task is to determine the best method or model without any regard to the level of complexity and then progressively work backwards to determine if a less complex method or model can produce an estimate that is of similar quality. This will not prevent a simple method or model from ultimately being chosen, however the process for arriving at this outcome ensures that more complex methods and models are appropriately considered.

Our submission outlines solutions to the issues of complexity and measurement of the return on debt on a frequent basis. In QTC's view, the issues relating to administration and potential for review that are cited as grounds to support a partial implementation of the portfolio model should be considered in light of the significant risks and costs for consumers and service providers.

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[2] AER, *Consultation Paper – Rate of Return Guidelines*, May 2013, p. 21

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Annual updates of the return on debt

In QTC's view, annual updates to the return on debt are essential to the proper application of a portfolio approach where a percentage of the existing debt balance is regularly refinanced at the prevailing cost of debt. A return on debt allowance that does not replicate the cost of debt produced by a benchmark debt portfolio with evenly spaced maturity dates out to 10-years is:

- not an estimate that is commensurate with the efficient debt financing costs for a benchmark service provider, and therefore

- inconsistent with the allowed rate of return objective

Efficient debt financing costs

In previous submissions to the AEMC and AER, QTC expressed a view that efficient debt financing costs are the outcome of implementing efficient debt financing and risk management strategies. An efficient debt financing and risk management strategy is considered to be one that results in a business's equity providers being exposed to an acceptable level of refinancing and interest rate risk.

There appears to be general agreement that a debt portfolio with staggered maturity dates out to 10 years is an efficient debt management strategy for a benchmark service provider with above market-average gearing and long-lived assets. It follows that the efficient financing of this type of debt portfolio can be viewed as an efficient debt financing cost for the benchmark firm[5]. By construction, the cost will change each year as 10 per cent of the existing debt matures and is refinanced at the prevailing 10-year cost of debt.

The contractual nature of interest payments means that a service provider has no ability to change the size or timing of the payments, so any shortfalls relative to the return on debt allowance must be funded as they occur. For this reason, QTC considers that the time series properties of efficient debt financing costs are just as important as the long-term average cost[6]. In QTC's view, this is consistent with clause 6.5.2(k)(1) of the Rules, which refers to:

> *'the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective.'*

If the debt financing costs for an efficiently financed benchmark service provider change each year, the same annual change should also be reflected in the benchmark return on debt allowance.

True-up versus annual updates

Regarding the possible use of a true-up to account for material mismatches within the regulatory period the Consultation Paper notes:

> *'QTC has also suggested that annual adjustments of the portfolio approach could apply at the following regulatory reset via and NPV neutral true-up.'*[7]

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[5] This requires unbiased estimates of the yield on the debt benchmark to be made.
[6] For example, a 1-year and 10-year trailing average of the 10-year cost of debt will both produce the same average cost of debt over the long-term. However, the 1-year trailing average is not an estimate of efficient debt financing costs because on a year-by-year basis it will produce materially different estimates compared to the cost produced by a benchmark debt portfolio with evenly spaced maturity dates out to 10-years.
[7] AER Consultation Paper, p. 33

QTC's return on debt proposal is based on quarterly benchmark yield observations and a 10-year averaging period, with the benchmark return on debt being updated annually. To be clear, the 'NPV neutral true-up' referred to in the Consultation Paper relates to the mismatches that occur within each regulatory year. These mismatches occur because the return on debt is updated annually while the underlying benchmark portfolio return on debt changes each quarter. Under QTC's proposal, any intra-year mismatches are reflected in the return on debt for the next regulatory year, not the next 5-year regulatory period.

Arguments against annual updates

The Consultation Paper notes the arguments against annual updating put forward in the ACCC's Regulatory Development Branch (RDB) research paper titled *'Estimating the cost of debt – a possible way forward'*.

The RDB paper argues that while there would be differences between a service provider's efficiently incurred debt financing costs and the return on debt during each regulatory period, over a longer period of time there would be a natural offset. However, in the context of a non-zero inflation and economic growth environment, where the amount of debt on issue is likely to increase over time, alignment of the return on debt with the cost of debt incurred by the benchmark efficient entity would be purely coincidental. The potential for material differences is significant, and creates risks and costs for consumers and network service providers.

A detailed response to these arguments is provided in Appendix A.

Use of weighted or unweighted trailing averages

The Consultation Paper states that an unweighted (ie, simple) trailing average may be preferable to a weighted trailing average if a portfolio approach is used to calculate the return on debt. In reaching this position the Consultation Paper acknowledges the risk that a simple trailing average may lead to investment distortions if a service provider's debt balance changes over time, as would be expected for most, if not all, service providers. A range of different weighting approaches were considered, however the perceived weaknesses associated with these approaches are considered to be more significant than the investment distortions created by an unweighted trailing average[8].

Compensating new borrowings at historical rates

An unweighted average will compensate all increases in the debt balance 'as if' they were funded at historical rates. As it is not possible for a service provider to issue new debt at historical rates, an unweighted trailing average will naturally produce a difference between the return on debt and interest rate on the new debt for the benchmark efficient entity. This breaches the objectives of productive, allocative and dynamic efficiency and is contrary to the AEMC's views regarding incentives for efficient capex:

> *'The impact on the incentives for efficient capex is also an important consideration.* **The incentives for efficient capex are stronger when the difference between the return on debt and the debt servicing costs of the service provider is minimised.'** [9] *[emphasis added]*

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[8] AER Consultation Paper, p. 111-112
[9] AEMC Final Rule Determination, p. 77

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Minimising the difference between the return on debt and the service provider's debt servicing costs requires new borrowings to be compensated at the prevailing cost of debt. This can only be achieved by using a weighted trailing average.

Compensating new investment at historical rates is also inconsistent with the allowed rate of return objective as any meaningful estimate of efficient financing costs must reflect the costs that can actually be achieved in practice.

Perceived problems with weighted trailing averages

The Consultation Paper considers the following alternatives to an unweighted trailing average[10]:

1. weights based on actual debt issuance data
2. weights based on the actual changes in the RAB, adjusted by the benchmark gearing, and
3. weights based on the debt issuance assumptions in the PTRM.

QTC does not agree with the AER's view that the use of weighting departs from a benchmark approach, any more than the allocation of different capital or operating expenditure allowances to each service provider[11]. The benchmark efficient debt financing costs will be different for a service provider that is raising debt to fund growth in its asset base to another service provider, which is mostly refinancing existing debt. Neither is necessarily efficient or inefficient, and the appropriate application of different weightings simply reflects the different investment and funding requirements of the benchmark efficient entity in their circumstances. QTC notes that differences between the benchmark return on debt for different service providers already exist under the 'on the day' approach.

QTC agrees with the AER that weights based on actual debt issuance (the first approach) would be inconsistent with incentive regulation, as the service provider could use more or less equity funding depending on the relative cost of equity and debt[12]. However, if the weighting is based on either the actual growth in the RAB (adjusted by the benchmark gearing) or the investment profile in the PTRM, we are unable to see how this encourages inefficient financing practices or investment distortions.

The potential for investment distortions should be considered on the basis that a service provider has no foresight over future changes in interest rates. In an efficient market there is no such thing as 'high' or 'low' interest rates. Although the prevailing interest rate may be above (below) its long-term average value, this does not mean that interest rates are more likely to fall (rise). Historical Australian and US interest rate data displays extended periods where interest rates moved in one direction rather than reverting to a historical mean.

If the weighting is based on the actual increase in RAB multiplied by the benchmark gearing level (the second weighting approach), the service provider would be compensated at the prevailing benchmark cost of debt at the time of investment and would always be incentivised to raise its actual debt at a lower cost than the benchmark. Under this weighting approach, irrespective of the level of rates, the service provider profits to the extent of the difference

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[10] AER Consultation Paper, pp. 111-112
[11] AER Consultation Paper, p. 112
[12] AER Consultation Paper, p. 112

between the benchmark cost of debt and their own cost of debt, and does not achieve a higher or lower profit when rates are 'high' or 'low'.

The Consultation Paper implies that under this weighting approach a service provider may operate inefficiently by investing when rates are 'high'. However, this argument implicitly assumes that the service provider (or the regulator, or the public) somehow knows the direction of future rates, and the service provider ought to defer investment to a time when rates are lower (assuming this can be done without affecting reliability or security of supply). This expectation that the service provider *should* wait until rates have reverted to a lower level is inconsistent with historical data which shows that interest rates can depart from historical means for extended periods of time.

In QTC's view, it is inappropriate to incorporate, by means of simple average return on debt, a bias towards under-investment when rates are above the simple average (and vice versa) given the potential for structural changes in interest rates. The current interest rate at any point in time is the best estimate of future interest rates, not the long term average rate, and any difference between the prevailing rate and the average rate is not evidence of mis-pricing in the market. It is not possible at any point in time to determine whether rates will revert to their long run average, or move to a new level, and a system which compensates borrowings at a historic average is likely to produce situations where investment decisions are inappropriately influenced by the actual cost of debt versus a deemed return on debt based on historical data.

Similar considerations apply if the weighting is based on the debt issuance assumptions in the PTRM (the third approach). In assessing this approach the Consultation Paper states:

> 'The third approach [weights based on PTRM debt balances] may also lead to investment distortions. During the regulatory control period, a service provider minimising its return on debt might choose not to follow the debt issuance profile assumed in the PTRM. For example, it might choose to postpone investment if the prevailing rate of return on debt is high. However, the incentive to delay the investment would be weaker if a trailing average based on the PTRM assumptions is used. This outcome is not desirable, since it would lead to financing practices that are unlikely to be efficient.' [13]

As stated previously, in an efficient market there is no such thing as a 'high' or 'low interest rate. If the method for estimating the yield on the debt benchmark is properly specified, the estimated yield should represent the efficient cost of debt for the benchmark firm and it is reasonable that new borrowing and refinancing transactions should both be compensated at that yield. Under an incentive-based framework, a service provider can take a view on interest rates in an attempt to outperform the benchmark allowance, however it does so at its own risk.

Using weights based on the assumed debt issuance profile in the PTRM does not remove or weaken the incentive for the service provider to seek to raise debt at or below the prevailing benchmark cost. If the weighting is based on the pattern of investment set out in the PTRM, the service provider bears the risk of a decision to accelerate or defer investment based on their view on interest rates. In the example quoted above, if the service provider delays investment because it expects interest rates to fall, it bears the risk that the required investment must be eventually funded when rates have moved higher.

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[13] AER Consultation Paper, p. 112

The conclusion in the Consultation Paper that the second and third weighting approaches are inappropriate is based on an unrealistic assumption that service providers know the future direction of interest rates. This can be contrasted to the simple average which provides the opportunity for service providers to make windfall gains at the expense of consumers by accelerating or deferring investment based on the relative levels of historic and prevailing rates. This is illustrated in the following example.

Consider a situation where rates have remained at 8 per cent for the past 10 years, and the service provider is considering a large investment that expands the asset base. If rates rise to 10 per cent, the service provider is more likely to be better off deferring the investment another year, rather than paying 10 per cent and receiving an allowance of 8.2 per cent. If in the next year, rates remain at 10 per cent, but the service provider cannot defer another year, the difference in the return on debt and cost of debt has at least narrowed to 1.6 per cent (ie, 10 per cent versus 8.4 per cent).

If rates had risen to 12 per cent, and the service provider could not defer again, it would have lost under this strategy (ie, funded at 12 per cent rather than 10 per cent, with a return on debt allowance of 8.6 per cent), or if rates fall back to 8 per cent, the NSP would have gained by 0.2 per cent. Assuming equal probability of rates rising, falling or remaining the same, the average payoff under the deferral strategy is a cost of 1.6 per cent versus 1.8 per cent if the investment had proceeded originally.

A similar result applies where prevailing rates are lower than the simple average, except that the service provider is able to increase its funding cost advantage by accelerating investment.

This example assumed an equal likelihood of rates rising or falling, and did not require mean reversion for the service provider to benefit. To the extent that interest rates are mean reverting, this would increase the benefit to the service provider from following this strategy.

The ability to hedge the cost of future borrowings provides additional scope to outperform a simple average benchmark cost of debt[14]. For example, if the simple average is 8 per cent but the prevailing rate is 7 per cent, then depending on the slope of the yield curve, the service provider could decide to hedge all or part of the cost of borrowing in future years. With hedging costs, the rates achieved for those future years would likely exceed 7 per cent, but provided the rates are lower than the expected future benchmark return on debt, the service provider would lock in a benefit. There could be an opportunity cost for the service provider if rates fall further, however it would still be compensated at a higher rate than its hedged cost of debt. This indicates that the incentive to hedge future borrowings is economically inefficient, but would be rewarded by the regulatory model. The ability to hedge future borrowings allows the service provider to realise profits under the simple average model without having to change its capital expenditure profile.

If it is assumed that future interest rates would vary around a long run mean, with equal likelihood of rates being higher or lower than the average at any point in time, over the long term the total investment should be around the same. However, the return on debt paid by consumers would equal the long run mean, while the cost of debt for the service providers would be less than the long run mean to the extent that interest rates are mean reverting and expenditure can be shifted during periods of relatively higher or lower rates, or forward

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[14] For example, a forward starting interest rate swap could be used to lock in a base swap rate today on new borrowings that are scheduled to occur in the next year.

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borrowings can be hedged at a rate, which is lower than the expected benchmark return on debt.

If there are long periods of time where interest rates are gradually increasing or decreasing, there could be sustained periods of under- or over-investment relative to the efficient level. If there are periods where rates increase rapidly, and remain at high levels, there is the potential for the lag in the simple average to suppress realised equity returns to the extent that corrective action would be required to increase the future return on debt and return on equity allowance to ensure continued flows of equity capital.

In summary, using a simple average is likely to provide a net benefit to service providers over the long run, although with the potential for sustained periods of over-compensation or periods where under-compensation creates investment issues for the sector. The simple average would also provide strong incentives for service providers to hedge future borrowings when prevailing rates are lower than the simple average, and achieve profits while bearing very little risk at the expense of consumers, even if this behaviour was otherwise economically inefficient. In contrast, the second or third weighting approaches do not create investment distortions and, on the reasonable assumption that service providers are not able to predict the future direction of interest rates, do not create opportunities for excessive returns.

Benchmark debt tenor

The ability for a service provider to use a debt portfolio with staggered maturity dates to manage refinancing risk is directly related to the benchmark debt tenor. As such, the benchmark debt tenor should be chosen based on risk management considerations and objectives. An appropriate benchmark tenor cannot be inferred from arbitrary factors such as the length of the regulatory period.

The Consultation Paper recognises this relationship when considering the benefits of the trailing average portfolio approach:

> *'The trailing average portfolio approach recognises that the most efficient financing for the benchmark entity may be to spread its borrowing requirements over a time period, thus reducing overall refinancing risk.* **Furthermore, this approach is consistent with the nature of regulated services, by reflecting the need to finance investment in long-lived assets.** *A service provider can implement such a debt management strategy by holding a portfolio of fixed-rate debt with staggered maturity dates.'* [15] *[emphasis added]*

In order for a debt portfolio with staggered maturity dates to reflect efficient practice, it must be used in conjunction with a sufficiently long average debt issue tenor. The observed debt maturity profiles of regulated and unregulated infrastructure businesses can be used to determine what represents a sufficiently long tenor.

In QTC's submission to the Issues Paper, information was provided on the debt maturity profiles for a range of infrastructure businesses such as Sydney Airport Corporation, Brisbane Airport Corporation, Telstra and Transurban[16]. These businesses face similar refinancing risks to a regulated service provider as they are funding long-lived assets and have higher gearing compared to the market average.

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[15] AER Consultation Paper, p. 53
[16] QTC, *Rate of Return Guidelines Issues Paper submission*, February 2013, pp. 25-27

The maturity profiles for these businesses are well-spaced out to a maximum tenor of at least 10 years. Based on data to 30 June 2012, the average remaining debt tenor for these businesses was 7.1 years, which is consistent with an average debt issue tenor in excess of 10 years. Subject to market conditions, regulated network service providers have also displayed a preference to issue 10-year debt in order to keep refinancing risk at acceptable levels.

The observed debt maturity profiles for infrastructure businesses demonstrate that maintaining a debt portfolio with staggered maturity dates is efficient practice provided the average debt issue tenor is at least 10 years.

Estimating the yield on the debt benchmark

QTC supports the use of the extrapolated Bloomberg fair value curve when estimating the yield on the debt benchmark. As the fair value yields are produced on a daily basis, they are well suited to a portfolio approach where frequent estimates of the yield on the debt benchmark are required. Bloomberg's independence from the regulatory process provides comfort that its estimates are unbiased and appropriate for determining the benchmark return on debt allowance.

QTC also notes the following issues that have been raised regarding the sole reliance on Bloomberg fair value yields.

Perceived quality of the Bloomberg fair value yields

Perceived problems with the quality of the Bloomberg fair value yields have led some regulators to consider alternative methods to estimate the yield on the debt benchmark. In the draft decisions for Aurora and Powerlink, the AER proposed giving no weight to the Bloomberg fair value yields and instead proposed a simple average yield based on small sample of bonds.

To date, no evidence has been presented that demonstrates that the Bloomberg fair value yields systematically over or under-estimate the true corporate cost of debt on a long-term basis. In this regard, QTC notes recent reports by CEG and PricewaterhouseCoopers (PwC), which have used different estimation methods and data sets to confirm the extrapolated Bloomberg fair value curve out to 10 years.[17]

Short-term estimation errors in the Bloomberg fair value yields (or any other data source) can have a significant impact under the 'on the day' approach because estimates are made over a small number of consecutive days with the final estimate being locked in for the 5-year term of the regulatory period.

In considering the benefits of using a portfolio approach to calculate the return on debt, the Consultation Paper states:

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[17] CEG, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March 2012. PwC, *Estimating the benchmark debt risk premium*, March 2012. PwC, *Debt risk premium for the 2013 Victorian Transmission Review*, March 2013.

'Since a larger number of observations is used to come up with the final estimate, a single measurement will have a smaller distorting impact on the overall estimate than with the short averaging period used for the "on the day" approach.' [18]

A similar conclusion was reached by the ACCC's Regulatory Development Branch (RDB):

'Due to the averaging process in the portfolio approach, the issue with the Bloomberg Fair Value over or under-estimating regulated businesses cost of debt is less problematic than was the case under the point estimate ['on the day'] cost of debt method.' [19]

Based on these observations, using a portfolio approach to calculate the return on debt should alleviate any concerns regarding the perceived quality of the Bloomberg fair value yields when calculating an average return on debt over a 10-year period.

Consideration of a wider range of debt instruments

Bloomberg does not use floating rate notes, debt issues with embedded options or offshore debt issues made by Australian borrowers to construct its fair value curves. As there is evidence that service providers and infrastructure businesses issue these types of debt instruments, adopting a method that allows a broader sample of debt issues to be considered, may provide a better estimate of efficient debt financing costs for a benchmark service provider.

Risk that Bloomberg stops producing fair value curves

The number of fair value yields produced by Bloomberg has decreased over the last few years, and there is always a risk that Bloomberg will decide to no longer produce estimates of the 7-year BBB fair value yield.

QTC considers the best way to address this issue is by developing an alternative fair value curve method to use in conjunction with the extrapolated Bloomberg fair value curve. This will ensure that estimates of the yield on the debt benchmark can still be made if Bloomberg decides to no longer produce fair value curves.

Developing alternative fair value yield curves

CEG has developed a yield curve-fitting method based on the Nelson-Siegel yield curve model[20]. The CEG method allows a broad sample of domestic and offshore debt issues with different credit ratings and wide range of tenors to be used in a robust and coherent way to estimate the 10-year yield for the benchmark credit rating.

CEG's particular application of the Nelson-Siegel model assumes that the shape of the fitted yield curves is the same for different credit ratings, although the absolute level of the curves differs based on the credit rating[21]. This is a very important feature of the CEG approach because it means the average credit rating of the debt issues in the sample does not have to match the benchmark credit rating. An estimate of the 10-year BBB+ yield can still be made

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[18] AER Consultation Paper, p. 55
[19] ACCC Regulatory Development Branch, *Estimating the Cost of Debt – A Possible Way Forward*, April 2013, p. 44
[20] CEG, *Estimating the regulatory debt risk premium for Victorian gas businesses*, March 2012
[21] CEG report, p. 30, paras 103-104

even if most of the debt issues in the sample have a lower or higher credit rating, as is likely to be the case in practice.

In contrast, less sophisticated approaches such as the ERA's 'bond-yield' approach and the bond sample proposed by the AER in the draft decisions for Aurora and Powerlink require an even distribution of credit ratings around the benchmark credit rating. This necessarily limits the number of debt issues that can be used in the estimation process, which makes the final estimate more susceptible to estimation error and makes the inclusion or exclusion of particular debt issues more contentious.

The assumption of a common yield curve shape is reasonable provided the range of credit ratings is not too wide. For example, the fitted yield curves for A- and BBB+ credit ratings are likely to have a similar shape with the BBB+ curve sitting above the A- curve. However, the fitted curve for a AA+ credit rating is likely to be less steep than the fitted BBB+ yield curve.

In QTC's view, there are significant benefits in using the Nelson-Siegel estimates in conjunction with the Bloomberg fair value yields:

- The slope of the fitted BBB+ yield curve between 7 and 10 years can be used to extrapolate the 7-year BBB Bloomberg fair value curve out to a 10-year tenor.

- By giving some weight to the Nelson-Siegel estimates, the yield on the debt benchmark will reflect the yields on debt issues that are not used in the construction of the Bloomberg fair value curves. The inclusion of non-overlapping data in the estimation process should provide incremental information that will lead to a better estimate of the yield on the debt benchmark.

- If Bloomberg decides to no longer produce fair value curves, the Nelson-Siegel estimates can be used as an automatic replacement.

Frequency of estimation

To reduce the impact of non-systematic estimation errors, QTC suggests that the yield on the debt benchmark could be estimated on a quarterly basis with each estimate being equal to an average of the daily Bloomberg and Nelson-Siegel estimates during March, June, September or December. Based on a 10-year averaging period this approach will give a 2.5 per cent weight to each quarterly estimate.

Development of a spreadsheet model

The complexity involved in the portfolio model with annual updating and weighting means that it is best presented in the form of a spreadsheet. This would allow all stakeholders the ability to assess how the return on debt would be calculated under the portfolio approach under different weightings and changes in interest rates.

The precedent exists in the PTRM, which has been available as a pro-forma spreadsheet template for several years, and we note the AER has recently begun publishing actual PTRM submissions for service providers.

Section 2 - Responses to specific questions

> **Question 3.1 - Do stakeholders agree with our proposition that we should continue to determine the rate of return by ultimately selecting point estimates (possibly from within ranges) of the return on equity, the return on debt, and gearing?**

QTC agrees that point estimates for the return on equity, return on debt and gearing should be made to determine the overall rate of return.

The requirement in the Rules for the AER to consider a wider range of estimation methods, financial models, market data and other evidence suggests that a point estimate for the return on equity should either be selected from a range or based on an average of multiple point estimates from different estimation methods or financial models.

Regarding the return on debt, QTC considers that a clear distinction should be made between estimating the yield on the debt benchmark at a particular point in time and calculating the benchmark return on the efficient portfolio of debt instruments.

The yield on the 10-year BBB+ debt benchmark is currently estimated using the extrapolated Bloomberg fair value curve. If the AER decides to use additional estimation methods, a point estimate for the yield on the debt benchmark will need to be selected from a range or based on an average of multiple point estimates.

Once this has been done, a point estimate of the return on debt for the service provider should be calculated. Under a portfolio approach, the return on debt should be based on a weighted average of the historical point estimates of the yield on the debt benchmark over an averaging period, which matches the benchmark debt term.

> **Question 3.2 - What is the appropriate term for the return on equity? Do stakeholders support Lally's recommendation based on the present value principle that the appropriate term should be consistent with the regulatory period?**

The return on equity should continue to be calculated using 10-year parameters, such as the risk-free rate (if required). A 10-year term is considered appropriate irrespective of the length of the regulatory period.

In QTC's view, satisfying the present value principle does not require the term for the return on equity to match the length of the regulatory period. Satisfying this principle requires the best estimate of the return on equity to be made, which means it must reflect the risks faced by the equity providers when funding assets with very long economic lives.

Risks faced by equity providers

The providers of equity capital to regulated businesses tend to be long-term investors such as infrastructure and superannuation funds. These investors commit funds on a long-term basis and, as a consequence, face risks that extend well beyond the 5-year term of the regulatory period. Even though the return on equity is reset every 5 years, there is an expectation that the

equity providers will commit funds for a much longer time period, and compensation for this commitment should be reflected in the return on equity.

Matching the term of the return on equity with the length of the regulatory period incorrectly assumes that an equity provider is in exactly the same position as the owner of a bond that matures at the end of the regulatory period. In reality, the bond holder has a degree of flexibility at maturity, which the equity provider does not have. At maturity, the bond holder receives their original investment in cash, and this provides options for re-investment or for alternative investments to be pursued.

The equity provider is not in this position at the end of each 5-year regulatory period as there is no evidence that the market value of equity in a listed company converges with the assumed value of equity in the RAB at the end of each regulatory period. Furthermore, any decision to divest will involve costs that are not faced by the owner of a maturing bond. There is an expectation that the equity provider will continue to commit funds for multiple regulatory periods even though the return on equity is reset every 5 years.

The margin between 5- and 10-year risk-free rates reflects the extra compensation required by investors for committing funds for an additional 5 year period. QTC considers that, by committing funds for even longer time periods, equity providers are in a position that is more comparable to the owner of a 10-year bond rather than a 5-year bond. This favours the use of 10-year parameters to estimate the return on equity.

Finally, regulated businesses must raise capital in competition with other long-lived assets including property and infrastructure classes, which provide appropriate long-term returns for long-term investment. Using shorter-term parameters to determine the return on equity will place regulated businesses at a disadvantage relative to these asset classes and this may constrain the ability of these businesses to attract and retain the capital required to maintain efficient investment levels.

This provides further support for using 10-year parameters to estimate the return on equity.

Implications for the term of the return on equity

In QTC's view, the use of 10-year parameters to calculate the return on equity is appropriate. Using a term that is longer than the length of the regulatory period does not violate the present value principle, because it provides compensation for the risks that are faced by equity providers when committing funds across multiple 5-year regulatory periods. Compensation for these risks will not be provided if the return on equity is based on the arbitrary length of the regulatory period.

Question 3.3(a) - What is the appropriate term for the return on debt?

QTC considers that a 10-year term for the return on debt continues to be appropriate for a benchmark service provider with long-lived assets and above market average gearing. A 10-year term is reflective of actual debt issuance practices and is considered appropriate irrespective of the length of the regulatory period.

The key consideration in determining the appropriate benchmark debt term is the ability for the service provider to manage refinancing risk, which requires taking into account the nature

of the service provider's assets and the level of gearing. If a portfolio approach is used to calculate the return on debt, the benchmark debt term will also affect the level of interest rate risk faced by consumers, with longer tenors producing a more stable return on debt allowance relative to shorter tenors.

As a leveraged business can never completely eliminate refinancing risk, it is important for the business to structure its borrowings in a way that keeps refinancing risk at an acceptable level. A reasonable estimate of a business's refinancing risk exposure is the percentage of total debt that matures each year, and in particular the percentage that matures within the next 12 months.

Subject to market-based constraints, a business can determine the level of refinancing risk exposure by maintaining an equally spaced maturity profile out to a maximum debt tenor, with an equal percentage of debt maturing each year. It follows that a firm's refinancing risk exposure is directly related to the average tenor of debt that is issued to refinance each maturing debt.

An equally spaced maturity profile out to 10 years will result in 10 per cent of the total debt maturing each year. To maintain this profile, and a constant refinancing risk exposure, each maturing debt must be refinanced with new 10-year debt. As outlined in Section 1, the prudence and efficiency of this strategy is supported by the actual debt management practices of a range of regulated and unregulated infrastructure businesses.

These considerations provide strong support for a 10-year term for the return on debt.

> **Question 3.3(b) - Do stakeholders agree with the view that a specific term is not required, if we apply an approach that is similar to the ERA's 'bond-yield approach'?**

QTC disagrees with the view that a specific debt term is not required. A specific debt term is essential regardless of the method or methods used to estimate the value of the debt benchmark. Any meaningful estimation process must start with a clear understanding of what is to be estimated.

As outlined previously, the benchmark debt term should be consistent with sound financial risk management principles such as keeping refinancing risk at an acceptable level. The benchmark debt term is therefore the key *input* into any process for estimating the yield on the debt benchmark[22]. Treating the benchmark debt term as an output effectively attaches no economic significance to the debt term and instead allows it to be determined by factors such as data availability or the particular choice of debt issues to be used in the estimation process.

QTC supports the use of a broad sample of domestic and offshore debt issues with a wider range of tenors and credit ratings to estimate the value of the debt benchmark. However, this does not mean that something other than the yield on a 10-year fixed rate corporate borrowing should be estimated. The most effective way to estimate a 10-year yield using yields on debt

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[22] Attempting to estimate the value of the debt benchmark without first specifying benchmark debt term is analogous to trying to calculate a trailing average without first specifying the length of the averaging period.

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issues with a wide range of tenors is by fitting a yield curve to the data using a model such as the Nelson-Siegel yield curve model.

> ## Question 3.4 - For parameter estimates, should we adopt point estimates, ranges, or point estimates from within a range?

Parameters such as the yield on the debt benchmark should be expressed as a point estimate. If a range of point estimates are available, the final point estimate should be a simple or weighted average of the individual point estimates. If a weighted average is used, the weights should be explicitly set out in the Guidelines.

> ## Question 3.5 - At what stage (during a determination or the guidelines process) should point estimates or ranges of the return on equity, return on debt and parameter estimates, be established?

As outlined in our response to Question 3.6, QTC considers that annual updates to the return on debt are essential under a portfolio approach. As such, a service provider's return on debt and the yield on the debt benchmark should be determined on a regular basis during each regulatory period.

Under a portfolio approach QTC considers that the yield on the debt benchmark should be estimated on a quarterly basis, with each estimate being equal to the average of the daily estimates during March, June, September or December. Based on a 10-year benchmark debt tenor and averaging period, this approach will reduce the impact of non-systematic estimation errors by giving a 2.5 per cent weight to each quarterly estimate.

> ## Question 3.6 - Should we make annual adjustments to the return on debt?

In QTC's view, annual adjustments to the return on debt are essential to the proper application of a benchmark portfolio approach where a percentage of the existing debt balance is regularly refinanced at the prevailing cost of debt.

Not updating the return on debt each year to reflect the interest rates achieved on annual refinancing and new borrowing transactions will create the potential for significant mismatches between the portfolio cost of debt and the return on debt allowance. Allowing regulatory design to create significant mismatches between efficiently incurred debt costs and the return on debt is inconsistent with clause 6.5.2(k)(1), which refers to:

> *'the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective.'*

An analysis of the potential size of the mismatches caused by not annually updating the return on debt is provided in Appendix A.

We do not offer any views on this matter.

We do not offer any views on this matter.

Provided that allowances are set using benchmark parameters rather than actual costs, the use of multiple benchmarks will still be consistent with the objectives of incentive-based regulation. For example, the benchmark return on debt under the trailing average and hybrid portfolio approaches will display different levels of variation over time. Provided the underlying parameters such as the base interest rate and credit margin are estimated based on benchmark costs, service providers operating under either approach will still have an incentive to manage their borrowings in a way that maximises the likelihood of outperforming the benchmark allowance.

The first approach (use of a single model) is inconsistent with the requirement in the Rules for the regulator to have regard to relevant estimation methods, financial models, market data and other evidence. It is highly unlikely that a single model can be consistently relied upon to produce the best possible estimate of the return on equity. This approach also lacks the flexibility to take other relevant information into account.

The second approach (use of a primary model with reasonableness checks) still implies that a dominant model exists and that other models and information are only useful as a cross check. This approach seems to only be a small step away from the previous approach, which was considered by the AEMC to be inadequate to produce a best estimate of the return on equity.

The third approach (multiple models with fixed weights) is a formulaic approach that requires the weights to be specified in the Guidelines and locked in until the next review. Although the relative weights would not be expected to change significantly over time, provided each

model's parameters are consistently estimated, the use of fixed weights will make it difficult for new information to be incorporated into the estimation process.

The fourth approach (multiple models with other information) is consistent with the requirements in the Rules and the guidance provided by the AEMC, however QTC does not support the suggestion that explicit weights should not be provided such that the final estimate cannot be 'reverse engineered'[23].

The new Rules provide a broad discretion to determine the return on equity, which should be accompanied by an open, transparent and objective decision making process. QTC considers quantitative weights to be an essential part of such a process, especially when a wider range of financial models and information sources are being used to determine the return on equity. The reasons behind the choice of weights are also important.

A combination of increased discretion and opaque decision making that is difficult to replicate, and therefore scrutinise, is likely to undermine stakeholder confidence in the return on equity estimate. Not providing explicit weights also seems to be inconsistent with the AEMC's intended role for the Guidelines:

> *'The Commission anticipates that the guidelines would allow a service provider or other stakeholder to make a reasonably good estimate of the rate of return that would be determined by the regulator if the guidelines were applied.* **In other words, the methodologies to be adopted and the information sources to be used should be sufficiently well explained such that they could be applied with a reasonable degree of certainty and accuracy.'** [24]
> *[emphasis added]*

Providing explicit weights should not result in a fixed quantitative weighting scheme such as the one associated with the third approach. Without knowledge of the weights it is unclear how stakeholders are expected to reconcile the final return on equity estimate with the model outputs and other information that was used to determine it.

> **Question 5.2 - How can the various information sources relevant to estimating the return on equity be brought together transparently?**

We do not offer any views on this matter.

> **Question 5.3 - Do stakeholders agree with our preliminary position that it is not feasible to change the weights placed on different return on equity models (over time) based on differing market conditions, industry segments or firms?**

The Consultation Paper states that models such as the Sharpe-Lintner CAPM are designed to perform during periods of high, low and average interest rates[25]. In QTC's view, this statement can only be made if the parameter values used within such a model are estimated consistently and reflect the same market conditions.

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[23] AER Consultation Paper, p. 43
[24] AEMC Final Rule Determination, p. 71
[25] AER Consultation Paper, p. 45

For example, the Sharpe-Lintner CAPM will not produce an accurate estimate of the required return on equity if the values for the risk-free rate and the expected return on the market portfolio reflect different levels of investor risk aversion[26]. A similar problem will arise if the risk-free rate is being affected by factors that cannot be expected to affect the return on the market portfolio by the same amount or in the same direction, such as a heightened liquidity premium.

In QTC's view, the relative weights assigned to different models should be relatively stable over time provided the parameters used within each model are estimated consistently and reflect the same market conditions.

> **Question 5.4 - What are the benefits of using financial models to estimate the return on equity for an average firm before estimating it for the benchmark firm?**

The expected return on the market portfolio (ie, for the average firm) is an important input into asset pricing models such as the Sharpe-Lintner CAPM. It is therefore necessary for the best estimate of the expected return on the market portfolio to be made before such a model is used to estimate the return on equity for the benchmark firm.

With the exception of the dividend growth model, it is unclear how other financial models such as the Sharpe-Lintner CAPM can be used to estimate the expected return on the market portfolio, given that this estimate is an input into the model.

> **Question 6.1 - Do you support our proposal of having a single approach for estimating the return on debt should be used for the definition of the benchmark efficient entity (or for each definition, if more than one benchmark is used)?**

QTC supports the use of a common return on debt approach for each definition of the benchmark entity provided this does not require the same return on debt to apply to all service providers that match a particular benchmark definition.

For example, although multiple service providers may have their return on debt calculated using the trailing average portfolio approach, there are valid reasons why a different return on debt may apply to each service provider at various points in time:

- Service providers should be able to nominate the specific averaging periods used to calculate the base interest rate component of the return on debt.

- The size and timing of new borrowings is likely to differ for each service provider. Providing correct compensation for these borrowings requires a weighted trailing average to be applied, and this will produce a different return on debt estimate for each service provider.

These differences will not affect the long-term average return on debt for each service provider. Furthermore, all return on debt calculations will still be based on benchmark

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[26] This is equivalent to incorrectly estimating the prevailing market price of risk, which is the extra return required by investors to invest in risky market portfolio rather than a risk-free asset (ie, the market risk premium).

parameters and values rather than actual costs, which is consistent with the principles of incentive based regulation.

> **Question 6.2 - How do the "on the day" approach, trailing average portfolio approach, and hybrid approach to estimating the return on debt compare in terms of promoting efficiency?**

QTC agrees with the conclusion in the Consultation Paper that a portfolio approach is 'productively, allocatively and dynamically efficient under reasonable scenarios'[27].

QTC considers that financial risk management principles can also be used to assess the efficiency of the different return on debt approaches. These principles allow the broader objectives of debt management to be considered, such as managing various risks to reduce the probability of financial distress. The principles can also capture the risks faced by consumers under different return on debt approaches.

As stated in previous QTC submissions, an efficient debt financing strategy is one that results in a business's equity providers being exposed to an acceptable level of refinancing and interest rate risk, taking into account the business's size, asset life, capital structure and the characteristics of the firm's cash flows.

Assessing efficiency using risk management principles

When using risk as the criteria to assess efficiency, the 'on the day' approach is clearly inefficient because the implied debt funding strategy would expose a stand-alone service provider to an unacceptably high level of refinancing risk. In practice, it would not be possible for the majority of businesses to implement this strategy.

For a given benchmark debt term, the trailing average and hybrid portfolio approaches have exactly the same level of refinancing risk because the same percentage of the existing debt balance is refinanced each year. In this regard, both approaches are efficient provided the benchmark debt term is long enough to allow a relatively small percentage of the total debt to mature each year. Based on the observed debt financing practices of regulated and non-regulated infrastructure businesses, a benchmark debt tenor of at least 10 years would be required in order for the trailing average and hybrid portfolio approaches to be efficient.

Interest rate risk for a service provider is measured by the potential for a difference between the annual interest payments and the return on debt allowance. As a consequence, a service provider operating under a trailing average approach will face the same level of interest rate risk as a service provider operating under the hybrid portfolio approach (provided they both follow the implied debt strategy).

Risks borne by consumers

Consumers will always be exposed to some level of interest rate risk regardless of the approaches used to calculate the benchmark return on debt allowance.

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[27] AER Consultation Paper, p. 55

The 'on the day' approach involves a full reset of the total return on debt during a short averaging period once every 5 years. This approach will expose consumers to significant interest rate risk with potentially large step changes in the return on debt allowance occurring at the start of each regulatory period.

Under the hybrid approach, consumers will also be exposed to significant interest rate risk as the base interest rate is fully reset just prior to the start of each regulatory period. This will also produce large step changes in the return on debt allowance at the start of each regulatory period.

In contrast, the return on debt produced under a trailing average approach is less exposed to interest rate volatility during each averaging period, and will produce a much smoother return on debt allowance over time provided that annual updates are made.

In the final rule determination the AEMC reconfirmed its view that:

> *'…the long-term interests of consumers would be best served by ensuring that the methodology used to estimate the return on debt reflects, to the extent possible, the efficient financing and risk management practices that might be expected in the absence of regulation.'* [28]

Fully resetting the total return on debt or the base interest rate once every 5-years is a result of the regulatory framework, rather than being reflective of efficient interest rate risk management practices of unregulated infrastructure businesses.

Taking into account the risks faced by consumers and service providers, the trailing average approach is the most efficient debt management strategy. The hybrid approach may be efficient for some service providers, but it may expose consumers to a higher level of interest rate risk compared to the trailing average approach. The 'on the day' approach is clearly inefficient as it exposes consumers and service providers to very high levels of risk, and cannot be implemented in practice by the majority of businesses.

> **Question 8.1 - Do you support our preliminary position of not setting a specific allowance for debt and equity raising costs, and instead, remunerating them elsewhere in the revenue building blocks?**

QTC considers that an explicit allowance for all debt raising costs should be reflected in the yield on the debt benchmark used to calculate the benchmark return on debt. This allowance should reflect the costs incurred to manage liquidity and refinancing risk that have previously not been compensated by the AER.

Liquidity and refinancing risk management costs

Regarding the costs incurred to adopt efficient liquidity and refinancing risk management practices, the Consultation Paper notes:

> *'…. there is no consensus on what represents efficient liquidity and risk management practice, and that risk management is a function of a company's shareholders' preferences. Furthermore, estimating these costs would require the AER to define what activities form part of efficient liquidity and risk*

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[28] AEMC Final Rule Determination, p. 76

management, and what the costs of each activity are. The data corresponding to these costs is unlikely to be readily available or comprehensive. We consider that including these costs in the benchmark would further increase complexity and contentiousness of these estimates, while only having a marginal impact on allowances' [29]

The allowed rate of return objective requires the AER to provide compensation for benchmark efficient financing costs. Meeting this objective requires a set of efficient financing practices and an estimate the costs associated with those practices.

QTC's submission to the Issues Paper provided evidence of the early issuance of new debt being used to reduce refinancing risk by regulated utilities and infrastructure businesses such as Sydney Airport Corporation and Transurban. Details of QTC's liquidity policy and the approach taken to ensure a maturing bond is repaid in full, and on time, were also provided[30].

The fact that a range of businesses and a central borrowing authority use the same approach as part of their strategy to manage refinancing risk provides some evidence as to the prudence and efficiency of this practice.

The costs associated with this practice are straightforward to calculate once an appropriate pre-issue period has been determined[31]. The difference between the yield on the debt benchmark and the short-term investment rate would be calculated and amortised over the 10-year debt term. The yield on the debt benchmark to be used to calculate the return on debt will equal the 10-year benchmark yield plus the amortised pre-issue costs.

Figure 1 displays the amortised costs since March 2006 based on a 10-year BBB+ debt benchmark with a 6-month pre-issue period[32]:

FIGURE 1: AMORTISED PRE-ISSUANCE COSTS (PER ANNUM)

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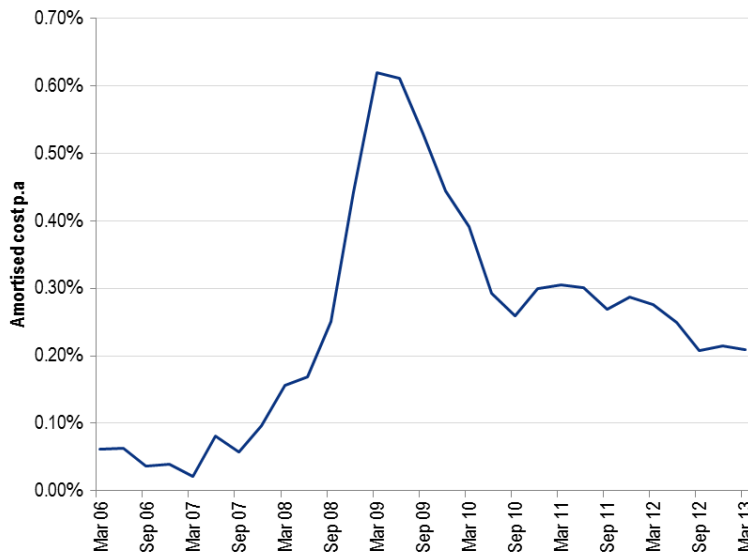
[29] AER Consultation Paper, p. 64
[30] QTC Issues Paper submission, Appendix B
[31] The information in Appendix A of QTC's submission on the AER's Issues Paper shows pre-issue periods of between 4 and 12 months.
[32] The underlying yield data is based on the average indicative credit margin data provided by various members of QTC's Fixed Interest Distribution Group (FIDG). The 6 month bank bill swap rates (BBSW) have been used for the short-term investment rate.

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The average amortised cost over a 10-year debt tenor is 0.25 per cent per annum. To put this figure into perspective, it is of similar magnitude as the average margin between the 7 and 10-year debt risk premium used to extrapolate the Bloomberg fair value curve out to 10-years[33].

In QTC's view, issuing new debt early to ensure that funds are available to repay a soon-to-mature debt is a prudent and efficient strategy to manage refinancing risk, especially for firms with above market-average gearing. It follows that the costs associated with this practice are an efficient financing cost. Providing compensation for these costs would be consistent with the allowed rate of return objective and the AEMC's conclusion that the return on debt should create an incentive for service providers to adopt efficient financing practices[34].

> **Question 9.1 - Should we continue to use our current approach to forecast inflation or move back to using the Fisher equation? Alternatively, should the AER use inflation swaps? Are there other approaches not identified in this paper that we should consider?**

QTC considers the current approach of combining short-term inflation forecasts and the 2.5 per cent mid-point of the Reserve Bank of Australia's (RBA) inflation target band to be appropriate.

Market-based estimates such as zero coupon inflation swap rates and the margin between real and nominal bond yields reflect expected inflation plus an inflation risk premium. As the inflation risk premium is unobservable and likely to vary over time, it is difficult to isolate the expected inflation component implicit in these market-based estimates.

However, even in the presence of an inflation risk premium, there may be times when a market-based estimate is more appropriate than the current approach. For example, if the market-based estimates are significantly lower than the estimate produced by the current approach, it would be reasonable to conclude that expected inflation is also lower based on the assumption that the inflation risk premium will always be positive.

> **Question G.1 - How should we address the issues regarding annual updating of the return on debt estimate?**

Mismatch between efficiently incurred costs and the return on debt

The analysis presented in Appendix A does not support the claim that a self-correcting mechanism removes the need to make annual updates to the return on debt[35].

Additional complexity in the annual tariff computation

The Consultation Paper suggests that the CPI-X profile would need to be re-calculated annually if the return on debt is updated annually.

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[33] Over this period the average margin between the 7 and 10-year BBB+ debt risk premiums was 0.30 per cent.
[34] AEMC Final Rule Determination, p. 73
[35] AER Consultation Paper, p. 114

An alternative approach would be to calculate the expected revenues for each year in the regulatory period based on the benchmark return on debt for year one, which is known at the time of a service provider's determination[36]. Thereafter, a revenue adjustment would be made each year based on the difference between the annually updated return on debt and the return on debt for year one. The dollar value of the difference would be determined based on the PTRM debt balance for the relevant year. As the annual change relates to around 10 per cent of the return on debt, which is itself around one-third of revenues, the change in revenue due to annual updating is likely to be relatively small and therefore re-smoothing is not required.

Resource constraints

Developing a spreadsheet will allow the return on debt and the adjustments to the allowed revenues to be automatically calculated on an annual basis. Development of the model will require an upfront investment of time and resources, but ongoing resourcing requirements would be small.

Possible loss of data source

QTC considers that the best way to address this potential issue is by using the extrapolated Bloomberg fair value curve in conjunction with CEG's Nelson-Siegel yield curve fitting method. This will ensure that estimates of the yield on the debt benchmark will be available if Bloomberg decides to no longer produce fair value curves.

Even if sole reliance was placed on the Bloomberg fair value curve and these estimates became unavailable during the regulatory period, the likely impact under a portfolio approach would be small. The most recent estimate could be carried over until an alternative data provider or estimation method is found. Assuming this takes no longer than 12 months, the 'stale' data will only carry a 10 per cent weight in the overall return on debt estimate.

Issues with an AER created method

The Consultation Paper identifies a number of further issues that may arise should the AER develop its own approach for estimating the yield on the debt benchmark:

> *'Should the AER develop its own dataset, it would be required to make numerous decisions on which debt instruments to include and what estimation techniques to use. These decisions will be set out in detail in the Guideline. However, new types of debt instruments are introduced on a regular basis, and even the most detailed mechanistic approach may require the AER to exercise its judgement at times regarding the inclusion or exclusion of certain debt instruments. The greater number of decisions that the AER would need to make when using its own dataset would provide more opportunities to challenge. Annual updating may compound this risk. There is a risk that frequent appeals may undermine investor confidence in the sector, as well as placing a significant burden on AER and stakeholder resources. Therefore, an AER-created dataset might be better used with no annual adjustments.'* [37]

Developing a robust methodology for estimating the yield on the debt benchmark in consultation with stakeholders is the best way of increasing confidence in the accuracy of the AER's estimates, and thereby reducing the likelihood of a review being sought. QTC does not

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[36] The return on debt in year one would be used as an estimate of the return on debt for each year in the regulatory period.
[37] AER Consultation Paper, p. 115

consider it appropriate to use regulatory design (eg, not introducing annual updates) to restrict a service provider's ability to seek a review of the AER's decisions.

Small bond samples such as the one proposed by the AER in the draft decisions for Aurora and Powerlink are likely to be contentious as the final estimate will be sensitive to the particular debt issues included in the sample. Furthermore, small samples will necessarily exclude a large amount of relevant information that could be used to produce the best estimate of the 10-year benchmark yield.

These problems can be avoided by using the extrapolated Bloomberg fair value curve in conjunction with CEG's Nelson-Siegel yield curve fitting method to estimate the yield on the debt benchmark.

The Nelson-Siegel method allows a much larger sample of debt issues with a wider range of tenors and credit ratings to be used in a robust and coherent way to estimate the 10-year benchmark debt yield. The criteria used to determine the sample can be quite broad and should be stable over time. This will remove the need for the AER to continually exercise judgement regarding the specific debt issues to be included in the sample. By way of example, the following selection criteria could be listed in the Guidelines:

- Fixed rate Australian dollar corporate bonds
- Floating rate Australian dollar corporate bonds swapped to a fixed interest rate
- Minimum remaining term to maturity of 12 months
- Credit ratings of A to BBB- inclusive.

Further criteria relating to the use of offshore debt issues by Australian corporates and debt issues with embedded options could also be included.

Once the criteria have been determined, there is no need for ongoing decision making or exercises of judgement by the AER, beyond reviewing the criteria as part of the regular review of the Guidelines.

> **Question G.2 - What should be our considerations when deciding whether transition between benchmarks is required? How should we apply transition while retaining the properties of incentive-based regulation?**

QTC considers that the economic merits of the portfolio approach relative to the 'on the day' approach should be considered separately to the management of short-term transitional impacts for consumers and service providers, which should be assessed relative to the requirements in clause 6.5.2(k)(4) of the Rules and the allowed rate of return objective.

QTC has previously outlined a methodology that would allow a service provider to transition from a strategy that aimed to minimise interest rate risk under the 'on the day' approach to transition to the portfolio approach. Under this approach, the starting rate for the portfolio approach would be based on prevailing 10-year rates, which is the same as the current 'on the day' approach, and if this approach was used for a service provider, there would be no short term impact on consumers. There may be other transitional approaches that achieve the same or a similar outcome, and these should be considered by the AER. As the short-term impacts

will depend on the transitional approach, these are not relevant to the assessment of whether the portfolio approach is more reflective of the efficient benchmark cost of debt.

> **Question G.3 - To what extent does the estimation method need to incorporate the different types of debt available to a business in order to be consistent with the Rate of Return Objective?**

The types of debt used to estimate the yield on the debt benchmark should reflect the observed issuance practices of service providers and other infrastructure businesses. For example, it is common practice for these businesses to issue debt in a range of offshore markets and swap the principal and interest payments back into Australian dollars. Businesses also issue debt instruments with embedded options such as make-whole call provisions.

To make the best estimate of benchmark efficient debt financing costs, QTC considers that these types of debt issues should be incorporated into the estimation process, provided this is done in a robust and coherent way.

> **Question G.4 - Should we develop our own dataset for estimating the return on debt or use a third-party source such as Bloomberg? What would be the key considerations in developing our own dataset and how should they be addressed?**

QTC considers that the AER should use the Bloomberg fair value curve and the CEG's Nelson-Siegel yield curve method to estimate the yield on the debt benchmark, rather than relying on a single method. This will allow a wider range of domestic and offshore debt issues to be considered, and provides an automatic replacement if Bloomberg stops producing fair value curves. In addition, the Nelson-Siegel method will allow the yields on debt issues that are not used in constructing the Bloomberg fair value curve to be used in the estimation process.

The relevant considerations regarding the implementation of this approach have been considered in Section 1 of this submission and in our response to Question G.1.

> **Question G.5 - When selecting bonds for use in the estimation—either in an AER-developed dataset or a third-party dataset—what should be our selection considerations in terms of maturity, credit rating, industry sector and country of issuance?**

Provided a formal yield curve model, as opposed to a simple or weighted average sample approach, is used, a wide range of tenors should be considered, with the maximum tenor ideally being longer than the benchmark tenor.

CEG's particular application of the Nelson-Siegel model assumes that the shape of the fitted yield curves is the same for different credit ratings, although the absolute level of the curves differs based on the credit rating. This is a very important feature of the CEG approach because it means the average credit rating of the sample does not have to match the benchmark credit rating.

The assumption of a common yield curve shape is reasonable provided the range of credit ratings is not too wide. Based on the current benchmark credit rating of BBB+, it would be reasonable to consider domestic and offshore debt issues with credit ratings of A to BBB- (inclusive).

QTC considers that differences in risk across different sectors should be largely captured by the credit ratings for individual issuers. Therefore, no industry constraints should be required. The currency-swapped yields on offshore debt issues made by Australian corporates should be considered subject to the credit rating criteria outlined above. The CEG report provides an explanation of how a foreign currency yield can be swapped back into an equivalent domestic fixed yield[38].

Regardless of the particular method used, it is important for the overall objective of the estimation process to be kept in mind; that is, to produce the best estimate of yield on the 10-year debt benchmark. Expanding the sample to include debt issues with shorter tenors does not mean that the benchmark debt tenor should also be shortened. Similarly, the benchmark credit rating should not be determined by the average credit rating of the debt issues used in the estimation process.

> **Question G.6**
>
> **Do you support our proposed methodology for determining the gearing level?**

We do not offer any views on this matter.

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[38] CEG report, Appendix B, pp. 65-68

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Appendix A – Simulation analysis and response to arguments against annual updating

This appendix sets out the results of simulation analysis that quantifies the potential mismatch between a portfolio cost of debt that changes annually and a benchmark return on debt without annual updates or a true-up at the end of each 5-year regulatory period.

RDB's proposed approach

The RDB propose that the benchmark return on debt could be determined using a portfolio approach without annual updates[39]. The return on debt would be determined at the start of each regulatory period based on a simple average of the benchmark interest rates during the previous *n*-years where *n* equals the benchmark debt tenor. This rate would remain fixed for the term of the regulatory period.

Perceived self –correcting mechanism

The RDB acknowledge that the proposed approach will create a mismatch between the portfolio cost of debt, which changes each year as a percentage of existing debt is refinanced at the prevailing cost of debt, and the benchmark return on debt. These mismatches are not considered to be a problem because the portfolio approach contains a perceived 'self-correcting' mechanism as the rates that are under-weighted in the current regulatory period will be over-weighted in subsequent regulatory periods[40]. As such, a true-up would not be performed at the end of each 5-year regulatory period to account for mismatches within the regulatory period.

Simulation analysis

A lack of long-term historical data on Australian corporate interest rates prevents an empirical analysis of the mismatch risk from being performed across a sufficiently large number of non-overlapping 5-year periods.

To address this issue QTC has used a simple interest rate model to generate 5,000 random interest rate scenarios, each spanning a 200-year period. This allows the level of mismatch risk to be quantified across 200 annual periods and 40 non-overlapping 5-year periods for each interest rate scenario.

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[39] RDB paper, p. 2
[40] RDB paper, p. 33

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Model specification and parameters

The random interest rates have been generated using the following model:

$$S_t = S_{t-1} + \alpha T(\theta - S_{t-1}) + \sigma S_{t-1} N(0,1)\sqrt{T}$$

where:

S_t	=	the randomly generated interest rate at time t
S_{t-1}	=	the randomly generated interest rate at time $t-1$
T	=	time increment in years (T = 1/12 to produce monthly observations)
α	=	annual mean reversion speed (α = 0.2)
θ	=	long-term average interest rate (θ = 7.0 per cent)
σ	=	annualised yield volatility (σ = 12.0 per cent)
N(0,1)	=	random normal variable with a mean of zero and standard deviation of one

The mean reversion and yield volatility parameters have been estimated using monthly Bloomberg 7-year BBB yields from December 2001 to April 2013. To avoid introducing a directional bias into the analysis, the starting interest rate in each scenario equals the long-term average interest rate of 7.0 per cent.

It should be noted that the statistical evidence of mean reversion in long-term interest rates is weak, and the estimated mean reversion parameter of 0.2 is not statistically significant[41]. As recently noted by the Independent Pricing and Regulatory Tribunal (IPART):

> *'While economic theory assumes nominal interest rates are in the long run mean reverting, empirical evidence is inconclusive. Recent research on long-term bond yields in a range of countries indicates that they can persistently deviate from their average values and statistical evidence of mean reversion is not strong.'* [42]

The mean reversion parameter has only been retained in the model to ensure that the randomly generated interest rates to do not take on unrealistically extreme values.

If the true dynamics of corporate interest rates are not described by a mean reverting process, or if the actual mean reversion parameter is less than 0.2, the random interest rate model can be expected to understate the size of the potential mismatches between the portfolio cost of debt and the return on debt without annual updates.

Approach

Each interest rate scenario has been used to simulate the mismatch between the portfolio cost of debt, which changes annually, and the benchmark return on debt without annual updates. The portfolio cost of debt equals the average simulated interest rate over the last 10 years using annual observations. The return on debt equals the average simulated interest rate over the 10 years up to the start of each 5-year period and is not updated until the start of the following 5-year period.

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[41] A mean reversion test was performed using monthly 10-year swap rates from June 1988 to May 2013. The estimated mean reversion parameter was also statistically insignificant.
[42] IPART, *Review of method for determining the WACC*, December 2012, p. 33

The mismatches have been calculated as follows[43]:

1. Simple difference between the portfolio cost of debt and the return on debt for each year.
2. The average simple difference (per annum) between the portfolio cost of debt and the return on debt for each non-overlapping 5-year period.
3. The percentage difference between the portfolio cost of debt and the return in debt for each year, adjusted for the tax shield on interest.
4. The average percentage difference (per annum) between the portfolio cost of debt and the return on debt for each non-overlapping 5-year period, adjusted for the tax shield on interest.

Calculating the mismatches in percentage terms and adjusting for the tax shield on interest produces estimates that can be used to measure the materiality of the mismatch relative to the allowed revenues.

Each random interest rate scenario produces 200 annual mismatches and 40 average mismatches for each non-overlapping 5-year period. The standard deviation of the mismatches is calculated using the annual and 5-year average mismatches, and the process is repeated 5,000 times. The average standard deviation is then calculated for each mismatch measure.

Results

The long-term average mismatch between the portfolio cost of debt and the return on debt without annual updates is zero. However, the volatility and persistence of the mismatch (ie, its time series properties) are very important as a service provider has no ability to change the size or timing of its interest payments. As a consequence, any shortfall between the portfolio cost of debt and the return on debt allowance must be funded in real time with new borrowings or by reducing operating expenditures.

Annual mismatches

Table 1 displays the average standard deviation based on the simulated annual mismatches:

TABLE 1: SIMULATED ANNUAL MISMATCHES

Average standard deviation	Simple mismatch (basis points)	Mismatch after tax shield (%)
Year 1	0	0.0
Year 2	17	1.7
Year 3	33	3.3
Year 4	47	4.7
Year 5	61	6.0
All years	*38*	*3.8*

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[43] The mismatches do not take into account the time value of money.

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The main observations from the simulated annual mismatches are as follows:

- The mismatch in year 1 is always zero because the benchmark return on debt is updated at the start of each 5-year period.

- The mismatches become progressively larger during the 5-year period as the portfolio cost of debt changes as maturing debts are refinanced annually at prevailing rates.

- On average, the standard deviation of the simple difference between the portfolio cost of debt and the return on debt without annual updates is **38 basis points**. The average standard deviation in year 5 of the regulatory period is significantly higher at **61 basis points**.

- The average correlation between the mismatch in consecutive years is **+0.66**. This occurs because the portfolio cost of debt is effectively a moving average of the interest rates over the last 10 years. As a consequence, there is a large amount of overlapping data when calculating the mismatch in consecutive years.

- The percentage mismatch figures can be used to determine the materiality of the mismatches relative to the allowed revenues. If the return on debt represents about 30 per cent of the allowed revenues[44]:

  – on average, a one standard deviation mismatch is equivalent to about **1.1 per cent** of the allowed revenues (3.8 per cent × 0.3).

  – in year 5, a one standard deviation mismatch is equivalent to about **1.8 per cent** of the allowed revenues (6.0 per cent × 0.3).

Average mismatches for non-overlapping 5-year periods

Table 2 displays the average standard deviation based on the simulated average mismatch (per annum) measured across non-overlapping 5-year periods:

TABLE 2: SIMULATED AVERAGE MISMATCHES ACROSS 5-YEAR PERIODS

	Average mismatch (pa) (basis points)	Average mismatch after tax shield (pa)(%)
Average standard deviation	31	3.1

The main observations from the simulated average mismatches are as follows:

- On average, the standard deviation of the average mismatch (per annum) is **31 basis points**. This is only slightly lower than the 38 basis point standard deviation based on annual mismatches due to the strong positive correlation between the mismatch in consecutive years.

- On average, a one standard deviation mismatch is equivalent to about **0.9 per cent** of the allowed revenues (3.1 per cent × 0.3). This applies to the revenues in each year of the 5-year period.

- The average correlation between the average mismatch in consecutive 5-year periods is **+0.23**, which indicates some persistence in the average mismatch over a 10-year period.

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[44] These estimates do not take into account the effect of gamma on the tax allowance.

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The simulated mismatches are based on a constant debt balance. The mismatches would be larger if new borrowings were taken into account, especially if the borrowings are not compensated at the prevailing cost of debt[45].

Examples

Some randomly chosen examples of the simulated average mismatches (per annum) based on non-overlapping 5-year periods are shown in Figures 2-6. A positive mismatch occurs when the average portfolio cost of debt is greater than the return on debt for a given 5-year period:
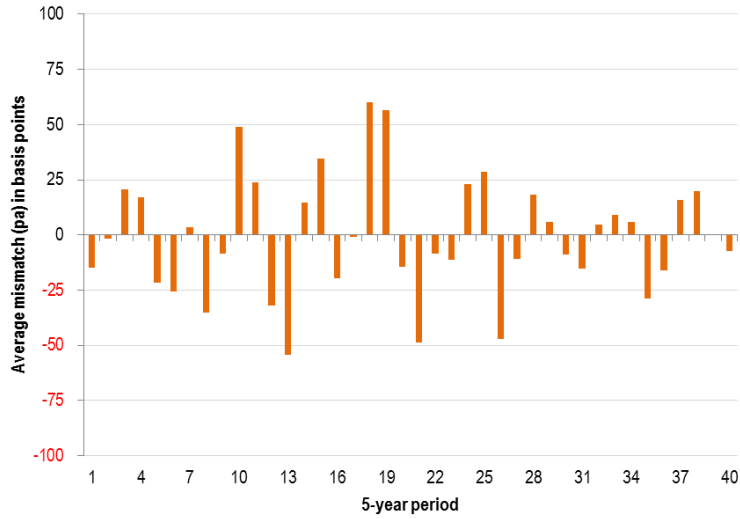
FIGURE 2: SIMULATED SIMPLE MISMATCH (PER ANNUM) FOR NON-OVERLAPPING 5-YEAR PERIODS
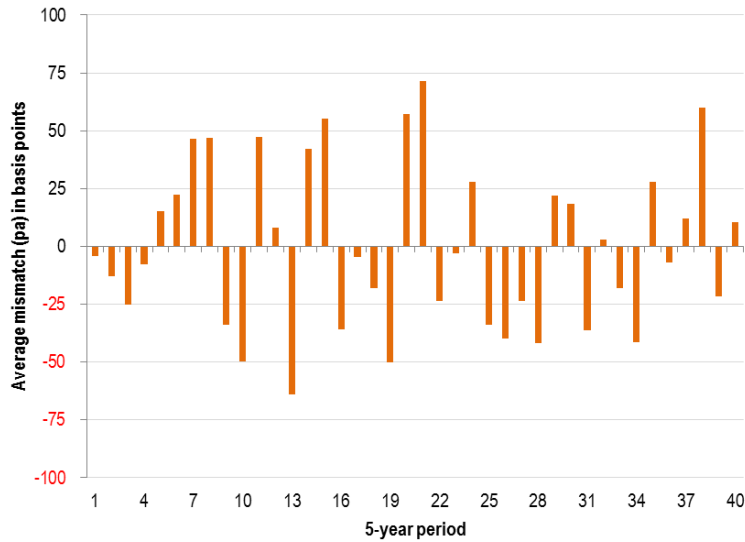
FIGURE 3: SIMULATED SIMPLE MISMATCH (PER ANNUM) FOR NON-OVERLAPPING 5-YEAR PERIODS

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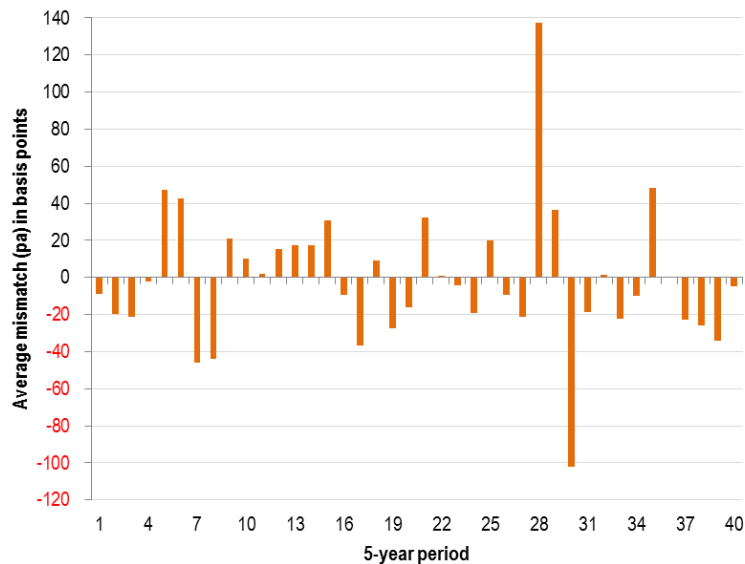
[45] This will occur if a simple (ie, unweighted average) is used to calculated the return on debt.

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FIGURE 4: SIMULATED SIMPLE MISMATCH (PER ANNUM) FOR NON-OVERLAPPING 5-YEAR PERIODS

FIGURE 5: SIMULATED SIMPLE MISMATCH (PER ANNUM) FOR NON-OVERLAPPING 5-YEAR PERIODS
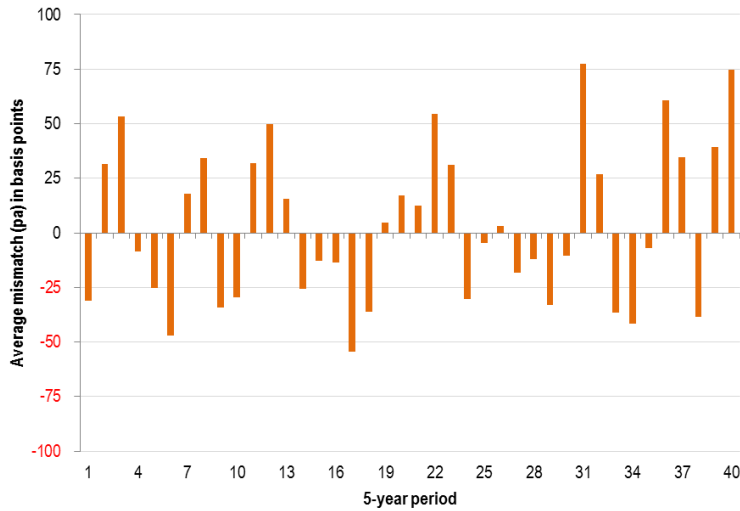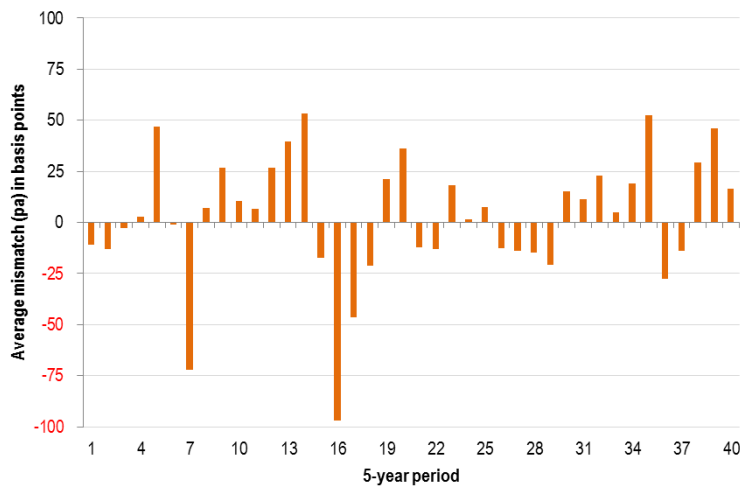

FIGURE 6: SIMULATED SIMPLE MISMATCH (PER ANNUM) FOR NON-OVERLAPPING 5-YEAR PERIODS

These examples show several instances where a service provider is over- or under-compensation across multiple *consecutive* 5-year periods. These outcomes are undesirable for consumers and service providers, can be avoided by making annual updates to the return on debt.

Long-term analysis based on US corporate interest rates

Long-term historical data on the Moody's Seasoned Baa Corporate Bond yield is available from the Federal Reserve Bank of St. Louis. As the data series extends back to 1919 it can be used to measure the actual mismatch across 18 non-overlapping 5-year periods.

The portfolio cost of debt has been calculated annually using the average Baa yield over the previous 10 years. The benchmark return on debt equals the average Baa yield over the 10 years up to the start of each 5-year period and is not updated until the start of the following 5-year period.

Figure 7 displays the average simple mismatch (per annum) for each non-overlapping 5-year period. A starting date of April 1923 has been chosen to allow 18 full 5-year periods to be analysed up to April 2013:

FIGURE 7: AVERAGE SIMPLE MISMATCH (PER ANNUM) FOR NON-OVERLAPPING 5-YEAR PERIODS BASED ON THE MOODY'S SEASONED BAA CORPORATE BOND YIELD
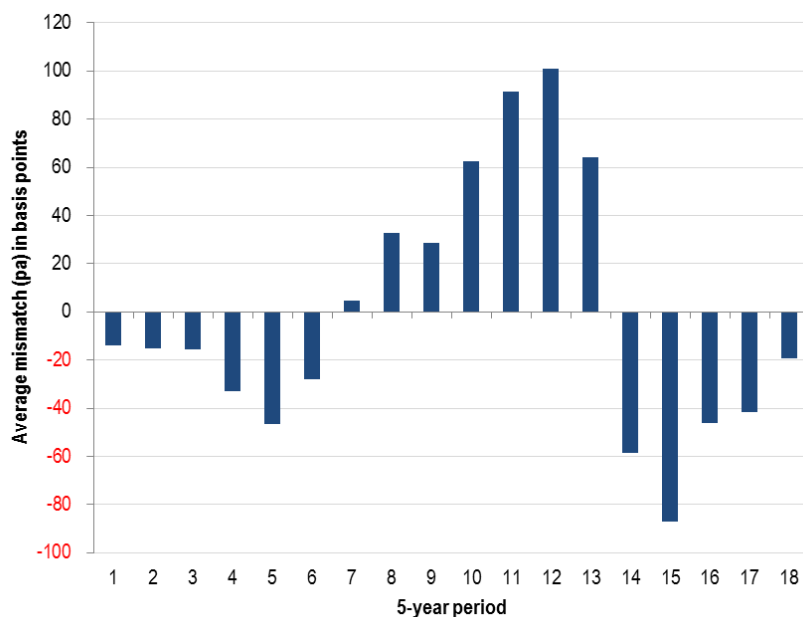
The standard deviation of the annual mismatches is **66 basis points** and the standard deviation of the average mismatch (per annum) for the non-overlapping 5-year periods is **53 basis points**. The correlation between the average mismatch in consecutive 5-year periods is **+0.75**, which indicates a high level of persistence in the average mismatch over a 10-year period.

These figures are higher than the average standard deviations and correlations produced by the random interest rate model. This is mainly due to the large interest rate trends that were experienced in the US market during the analysis period. Scenarios such as these occur infrequently in the random interest rate model due to the mean reversion parameter.

If a regulated business had operated during this time period and received a return on debt allowance that was not updated annually, it would have experienced sustained under- and over-compensation for very long periods of time. For example, the first 6 bars in Figure 7 (ie, 30 years) are negative, which indicates that consumers would have paid too much compensation to an efficiently financed service provider over this period. During the next 7 bars (ie, 35 years) the result is reversed with the return on debt allowance being significantly lower than the service provider's efficiently incurred debt financing costs.

The mismatches presented in Figure 7 do not account for the time value of money. In practice, any shortfall between the portfolio cost of debt and the return on debt would need to be funded at a cost. The mismatches should therefore be viewed as a conservative estimate of the costs that an efficiently financed service provider would have incurred.

Conclusions

Based on the simulation results, a service provider could expect to experience annual mismatches of between ± **76 basis points** if the return on debt is not updated annually[46]. The annual mismatches are positively correlated and there is also a slight positive correlation in the average mismatch across consecutive 5-year periods.

The mismatches based on actual interest rate data are larger than the simulated mismatches and display a much higher level of persistence over time. These results demonstrate that large cumulative mismatches can occur during trending interest rate environments.

Even though the mismatches eventually average out to zero, the size and persistence of the period-by-period mismatches do not support the claim that a 'self-correcting' mechanism removes the need to annually update the return on debt if a portfolio approach is used. A visual inspection of the mismatches based on long-term US data and the simulated mismatches in Figures 2–6 support this conclusion.

In QTC's view, not making annual adjustments to the benchmark return on debt will significantly diminish the benefits of a portfolio approach, create unnecessary risks for consumers and service providers, and will produce outcomes that are inconsistent with clause 6.5.2(k)(1) of the Rules.

Other arguments against annual updating

The RDB paper presents other arguments against annual updating. QTC's response to these arguments is presented in the following sections.

Benefits from annual updates reduce as the debt term lengthens

QTC's analysis has been performed using a 10-year averaging period. The simulated and actual mismatches when annual updating is not applied are large and persistent.

QTC agrees that a 5-year averaging period will produce larger mismatches and also notes that consumers will be exposed to larger changes in the return on debt allowance. This provides further support for the use of a 10-year benchmark debt term.

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[46] Measured as ± 2 standard deviation range.

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No certainty in the debt allowance beyond year one

Interest rate risk for a regulated business is a relative concept and is measured by the potential difference between the actual cost of debt and the benchmark return on debt. The fact that the return on debt allowances beyond year one is unknown is irrelevant. Provided the business uses a portfolio approach to manage its debt (ie, it follows the implied benchmark debt strategy), its actual cost of debt will move in line with the annually updated return on debt for each regulatory year.

In contrast, by fixing the return on debt for the term of the regulatory period, the business can almost be certain that its actual cost of debt during the regulatory period will differ from the return on debt allowances beyond year one.

Shifting of risk from businesses to consumers

Interest rate risk for consumers is an absolute concept and is measured by changes in the benchmark return on debt over time. This risk can never be eliminated, although longer averaging periods will produce smaller changes than shorter averaging periods.

Under a portfolio approach, annual updates to the return on debt will expose consumers to the same amount of total risk as a single update of the return on debt at the start of each regulatory period[47]. The only difference between the two approaches is how the change in the return on debt is delivered. As shown in Figure 8, a single update of the historical average rate at the start each regulatory period concentrates the change in year one, while annual updates distribute the change in smaller amounts throughout the regulatory period.

FIGURE 8: HYPOTHETICAL RETURN ON DEBT WITH AND WITHOUT ANNUAL UPDATES

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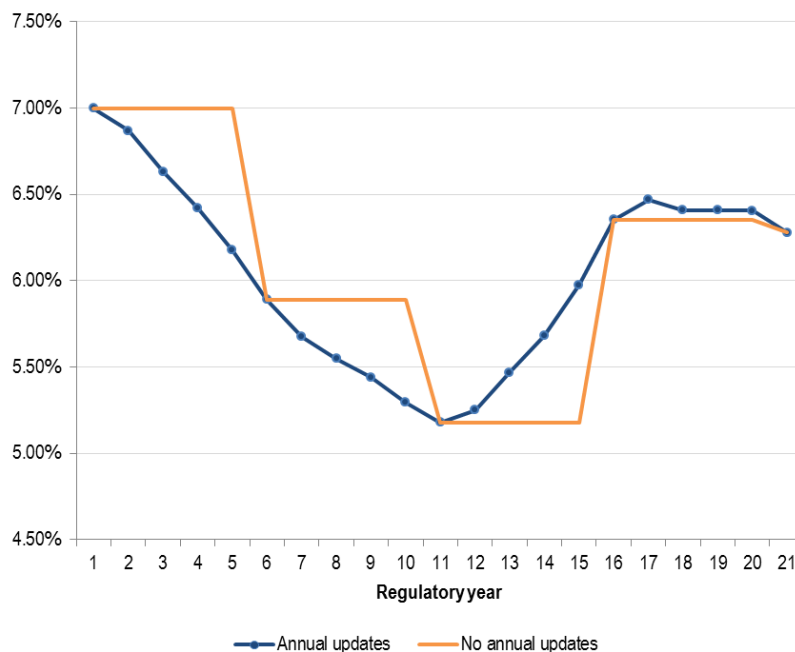
[47] This assumes no true-up at the end of the regulatory period, which is consistent with the approach outlined in the RDB paper.

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Figure 8 shows that both approaches will always produce the same return on debt estimate in the first year of each regulatory period. It follows that the total change in the return on debt from one regulatory period to the next will be the same.

The changes in the return on debt without annual updates in Figure 8 assume that no true-up is made at the end of each 5-year regulatory period to account for the mismatches during the period. Performing a true-up at the end of each regulatory period to compensate the service provider for the mismatches can be expected to increase risk for consumers. This is because an increase in the return on debt will usually be accompanied by a positive true-up (ie, payments to the service provider) and vice-versa.

This suggests that the best outcome for consumers and service providers is to annually update the return on debt rather than apply a true-up at the end of each regulatory period.

Increased volatility of tariffs within each regulatory period

There is a range of adjustments such as CPI indexation, unders-and-overs, STIPS and other schemes that already affect revenues and prices on an annual basis.

Annual updates to the return on debt will lead to additional changes in revenues within the regulatory period, however the year-to-year changes will be relatively small provided a sufficiently long benchmark debt tenor and averaging period is used. Not annually updating the return on debt will provide certainty during the current regulatory period, but will expose consumers to larger step-changes in prices at the start of the following regulatory period. These changes will be even larger if a true-up is performed at the end of each regulatory period.

It should not be assumed that consumers have a preference for a large step change in the return on debt allowance once every 5 years compared to smaller annual changes.

Increased complexity of the annual tariff variation mechanism

Consistent with the response to the previous argument, there is a range of adjustments that already affect revenues and prices on an annual basis. Including an extra step in this process does not necessarily make the overall process more complex, especially if the return on debt for the next regulatory year is automatically calculated using a spreadsheet within the PTRM.

Potential change in data source

This issue is addressed in our response to Question G.1.

Incentives for opportunist reviews

Assuming a quarterly averaging frequency, each estimate of the debt benchmark will have a 2.5 per cent weighting in the return on debt under a trailing average portfolio approach. As such, it is unlikely that a review would be sought based on a single quarter's or year's estimate.

Disagreement over individual estimates will be reduced further if the yield on the debt benchmark is estimated using more than one method or data source. One such approach would be to give equal weighting to the extrapolated Bloomberg fair value yield and the yield produced by the Nelson-Siegel yield curve model.