A submission on the ERA's Revised Draft Decision on the WACC method for Brookfield Rail

A REPORT PREPARED FOR CBH

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Executive summary

Frontier Economics (Frontier) has been engaged by CBH, a major user of Brookfield's rail network in Western Australia (WA), to comment on the Economic Regulation Authority of WA's (ERA) Revised Draft Decision on the *Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Railway Networks* dated 28 November 2014 ('the rail decision').

Frontier's submission to the ERA consists of three parts.

In the first part, we note that the ERA is required by the Railways (Access) Code to determine a long term WACC. We argue that the ERA should determine "long term" to mean 10 years, and then adopt the approach used by the Australian Energy Regulator (AER) to estimate a 10 year WACC. Some elements of the ERA's WACC (such as the risk-free rate) already have a 10 year term assumption. This approach would achieve consistency between all elements of the WACC by ensuring that all the elements (including the Market Risk Premium) are defined and estimated on the basis of a 10 year term assumption.

In the second part we show that the ERA's estimate of the Market Risk Premium (MRP) in the rail decision is not appropriate for four reasons:

1. The ERA has simply assumed that it is possible to estimate separate short-term and long-term MRPs (i.e. that the MRP has a term structure). There is no persuasive evidence that this is the case.
2. Even if the ERA's assumption of a term structure is correct, the term premium implied by the ERA's two determinations is implausibly large. This is evidenced by a number of sense checks, which the ERA has not to applied.
3. When choosing its approach to estimating a 'long-term' MRP, the ERA has conflated two distinct concepts: the term to maturity; and the periodicity of data used to estimate the MRP. The ERA's decision to rely on long-run data simply does not follow from the requirement to estimate a long-term WACC.
4. In its recent Draft Decision in relation to the Mid-West and South-West Gas Distribution System ('the gas decision'), the ERA relied on a range of different methods to estimate the MRP. This is sensible because none of these approaches is perfect, all are subject to estimation error and, in a statistical sense, it is generally possible to improve the accuracy of any individual estimate by combining it with additional independent estimates. However, in striving to estimate a long-term MRP, the ERA has abandoned the range of evidence used in the gas decision and relied on a single method (the 'Wright method'). In relying on a single method, the risk of estimation error increases significantly.

In the third part of the submission, we consider the ERA's approach to setting asset and equity betas for Brookfield. Our overall conclusion, supported by an

analysis of comparators and cross-checked with other regulatory decisions, is that the ERA has set beta values for Brookfield that are likely to be too high. This reflects both that it has unduly limited the comparator set, and because its judgement on WACC does not reflect similar judgements made by other regulatory authorities on similar rail networks in Australia. We conclude that the broader range of comparables would support an asset beta no higher than that of Aurizon (0.67) with an associated equity beta of 0.89.

1 Introduction

1.1 Background and instructions

On 28 November 2014 the Economic Regulation Authority ('ERA') of Western Australia published its Revised Draft Decision ('the rail decision') in relation to its *Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Railway Networks* in Western Australia.

The rail decision followed a process of consultation by the ERA on a previous Draft Decision (5 June 2014) in relation to the same matter.

The rail decision makes findings in relation to the Weighted Average Cost of Capital (WACC) to be applied in the determination of capital costs. These costs are then used in the calculation of price floors and ceilings under the 'light handed' approach to the determination of access prices in the WA rail access regime.

CBH is a significant user of Brookfield's network. Consequently, it has a material interest in ensuring that the capital costs calculated under the rail access regime are not inflated to include any monopoly profit. Annual capital costs are very sensitive to the WACC, and given the potentially material effect of the WACC, it is essential that the ERA takes care when determining an appropriate WACC allowance.

CBH has engaged Frontier to review the reasonableness of the ERA's reasoning and conclusions in the rail decision, in light of the *Railway Access Act's (1998)* objective (section 2A) of:

- encouraging the efficient use of, and investment in, railway facilities; by
- facilitating a contestable market for rail operations.

1.2 This submission

The ERA's decision is a lengthy one, covering all components of the WACC. We do not propose to address all elements of the rail decision; rather, we focus on three material elements of the rail decision where we consider that the ERA's decision needs further attention.

- The **first** issue deals with how the ERA should determine the term of the WACC it is required to estimate.
- The **second** issue is how the ERA has calculated the market risk premium (MRP) for the rail providers.
- The **third** issue is the equity beta (and underlying asset beta) for Brookfield rail.

In sections 2, 3 and 4 of this report, we address each of these issues sequentially.

2 Determination of the term of the WACC

2.1 The requirements of the Code

Clause 3 of Schedule 4 of the *Railways (Access) Code 2004* (WA) ('Code') requires the ERA to make an annual determination of a WACC to be applied in the determination of capital costs for each of the PTA, Brookfield and TPI networks. Clause 3 states that the WACC is to be determined for the purpose of using it as the interest rate in the calculation of the equivalent annual cost or annuity for the determination of capital costs.

The capital costs are then used in the calculation of price floors and ceilings.

Section 2 of Schedule 4 of the Code sets out the key requirements for the determination of capital costs, including the WACC. This Section states that:

> … WACC is the target long term weighted average cost of capital appropriate to the railway infrastructure.

2.2 The ERA's approach in the rail decision

In the rail decision, the ERA interprets the Code requirement relating to the 'long term' component of WACC as follows:

> 52. Importantly, the Authority is required to determine the long term rail WACC, consistent with clause 2 of Schedule 4 of the Code. A long term WACC is consistent with the need to estimate incremental and total costs derived from an annuity over the economic life of the rail assets (see paragraph 22).
>
> ...
>
> 81. The Authority considers that a WACC with a term that is consistent with the long economic lives of the assets will best meet the requirements of the *Railways (Access) Act 1998* and the Code. Accordingly, the Authority will utilise the longest term reliable data to inform the rail WACC. Generally, this will be a 10 year term. However, where appropriate, longer term data may be used to inform the estimates (for example, the use of long term averages of the real return on equity).

The practical impact of the ERA's finding is that it takes a different approach to WACC estimation than in its other decisions (for gas pipelines and for gas and electricity distribution networks) and, indeed, the decisions of other regulators such as the Australian Energy Regulator ('AER') and the Australian Competition and Consumer Commission ('ACCC'). The key distinction is that the ERA's WACC estimate for rail is not considered in the context of a regulatory period that is shorter than the economic lives of the assets.

Most regulatory decisions are made in the context of fixed regulatory periods of approximately five years. In this context, the regulator's objective is usually to

ensure that the regulated firm's expected return on equity and debt capital is sufficient to attract investor capital *over that regulatory period*.

We further note that this is the approach that the ERA took in its *ATCO* gas decision. It explains that:

> In the case of the WACC for gas access arrangements, the Authority considers that the correct term is five years, as this accords with the five year time horizon which is the term of the regulatory period (for more detail on why five years is the correct term for five yearly regulatory resets, see Lally M., *The risk free rate and the present value principle*, 2012, www.aer.gov.au, p. 8). In that case, the NPV=0 principle requires that the term be aligned with the term of the regulatory period, which is five years.

We note that not all regulators interpret the requirement to estimate WACC parameters in this rigid formulation – for example, the AER prefers to use 10 year estimates of the return on equity even in the context of five year regulatory determinations.[1]

In any event, it appears that a key consideration for the ERA is that there are no fixed regulatory periods specified in the Code or the Act. Rather, the approach of the Code is to allow for negotiations to determine the terms and conditions of access, including, for example, the term of the access agreement.

As a practical matter, access negotiations are likely to involve much shorter periods than the economic lives of the assets. Even in cases where very long term arrangements have been made, it is not the case that parameters are locked in for the life of the agreement. Examples include NBN Co's access arrangements, which apply for 30 years but which provide for the rate of return to be periodically updated,[2] and long-term take-or-pay arrangements in the electricity and mining industries where key pricing parameters are periodically updated.

2.3 How should the 'long term' be determined?

On the face of it, this may mean that there may be some tension between:

- the requirement within the Code for the ERA to estimate a long-term WACC; and
- the practical reality that access arrangements are unlikely to have parameters fixed for very long terms.

One way to resolve this tension would be for the ERA to consider 10 years to represent the "long term" and then proceed to estimate required returns assuming a 10 year horizon.

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1 AER, *Better Regulation Explanatory Statement Rate of Return Guideline*, December 2013, p. 48.

2 See NBN Co's accepted Special Access Undertaking (2013), available at www.accc.gov.au.

This is precisely the AER's approach when regulating gas and electricity distribution networks, and the AER's approach to estimating what it describes as the "10-year MRP" is much closer to the approach used by the ERA to estimate the MRP in the gas decision than its approach to estimating the MRP in the rail decision.

We note that the ERA uses a 10-year risk-free rate, but does not specify the term for the MRP. Under the approach outlined above, it would clarify the MRP term to be 10 years (which would be an internally-consistent interpretation, given the ERA's use of a 10-year term for the risk-free rate). If the term of the MRP is specified to be 10 years, the ERA could adopt the AER's approach to estimating the MRP. As noted above, this would not involve a major departure for the ERA as the AER's methodology is similar to the approach taken by the ERA in the gas decision.

In summary, the ERA should determine the requirement for the 'long term' to mean 10 years. In other words, it would effectively be estimating a 10 year WACC, and the ERA could follow the AER's approach to estimating the 10 year WACC. That methodology is quite consistent with the methodology employed by the ERA in the gas decision. As such, such an approach would have the benefit of harmonising, and making more consistent, the gas and rail decisions.

This approach would have a number of advantages:

- Firstly, interpreting 'long term' to mean 10 years would seem a reasonable and pragmatic approach given the data limitations in Australia that the ERA identifies in the rail decision.
- Secondly, a 10 year term assumption may also align reasonably well with the term of negotiated access agreements. We understand that the term of the agreement currently being sought by CBH under the Code is 10 years.
- Thirdly, defining all elements within the WACC (including the Market Risk Premium) as relating to a 10 year term would ensure consistency between all the WACC parameters.
- Finally, as the AER's approach to estimating a 10 year WACC is fairly consistent with the ERA's approach to WACC in the gas decision, the approach described above would have the benefit of harmonising, and making more consistent, the rail and gas decisions.

3 The ERA's approach to the MRP is not reasonable

3.1 Summary

The ERA has determined in the rail decision an indicative MRP of 7.9%. However, in its very recent draft decision on proposed revisions to the access arrangement for the Mid-West and South-West Gas Distribution System ('the gas decision') the ERA determined a MRP value that was significantly lower, being 5.5%.[3] The difference between these determinations, 2.4%, is very large and on the face of it the two determinations seem inconsistent.

The source of this difference appears to be the ERA's interpretation that it must determine a 'long-term' WACC for rail. There is no such obligation on the ERA when reaching a determination in relation to regulated gas networks. As a result:

- In the gas decision the ERA aimed for a 5-year WACC, in order to match to the term of the allowed WACC to the length of the regulatory period.
- In the rail decision the ERA considered that it had to aim for a long-term WACC, and it interpreted this to mean that it should use long-run data.

In arriving at the rail decision (and in departing from the approach taken in the gas decision), the ERA appears to have made four errors, which have given rise to the large difference between the MRP values in the two decisions:

1. The ERA has simply assumed that the MRP has a term structure. There is no persuasive evidence that this is the case. The finance literature generally refers to 'the' MRP, not a series of MRPs for different horizons. There is no prima facie reason to presume that the requirement on the ERA to estimate a long-term WACC in the rail decision should lead it to a different MRP estimate than in the gas decision.
2. Even if the ERA's assumption of a term structure is correct, the term premium implied by the ERA's two determinations is implausibly large.
3. When choosing its approach to estimating a 'long-term' MRP, the ERA has conflated two distinct concepts: the term to maturity; and the periodicity of data used to estimate the MRP. The ERA's decision to rely on long-run data simply does not follow from the requirement to estimate a long-term WACC. This should be apparent from the fact that the ERA has material regard to the same long-run historical data when estimating the MRP in the gas decision.

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3 ERA, Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, 14 October 2014.

4. In the gas decision, the ERA relied on a range of different methods to estimate the MRP. This is sensible because none of these approaches is perfect, all are subject to estimation error and, in a statistical sense, it is generally possible to improve the accuracy of any individual estimate by combining it with additional independent estimates. However, in striving to estimate a long-term MRP, the ERA has discarded the range of evidence used in the gas decision and relied on a single method (the 'Wright method'). In relying on a single method, the risk of estimation error is increased significantly. The only circumstance in which complete reliance should be placed on a single estimation approach is if the estimates generated by that approach are very unlikely to be subject to error. In our view, given the widely-recognised difficulties associated with estimating the MRP, the ERA's confidence in the use of single approach is misplaced. We do not say that estimates derived by the Wright method should not be used at all to inform the ERA's MRP estimate; we simply say that the Wright method should not be the sole basis for determining the MRP.

3.2 Differences between the ERA's determination on MRP in the gas and rail decisions

In the rail decision, the ERA has determined an indicative MRP of 7.9%. In deriving this estimate, the ERA has relied exclusively on the so-called 'Wright method'. The Wright method involves subtracting from a long-run estimate of the return on equity for the market as a whole (11.2%) an 'on the day' estimate of the (10-year) risk-free rate (3.3%). When deriving its MRP estimate in the rail decision, the ERA did not first estimate a MRP range and then select a point estimate.

By contrast, in the gas decision the ERA followed a very different approach to estimating the MRP. In the gas decision, the ERA estimated that the MRP falls within the range 5.0% to 7.5%, and chose a point estimate from this range of 5.5% by considering four separate indicators (see Table 1).

Table 1: Conditioning variables used by the ERA to select a value from the MRP range in the gas decision

Forward Looking Indicator	MRP mode (%)	MRP as at 9 September 2014 (%)	Weight
ASX 200 Volatility Index (VIX)	5.2	5.0	0.10
ASX 200 Dividend Yields	5.8	6.0	0.30
5 Year Interest Rate Swap Spread	5.8	5.2	0.30
Corporate Default Spread	5.3	5.5	0.30
Weighted MRP Result	5.6	5.5	

Source: Bloomberg and ERA Analysis

Source: Table 42, the gas decision

In the gas decision, the ERA derived its MRP range by examining:

- several estimates of the forward-looking MRP, obtained by reference to observed, historical equity risk premiums (some of which were measured over very long horizons, e.g. using data from 1883); and
- several estimates of the forward-looking MRP derived using the dividend growth model.

The ERA's MRP estimate in the gas decision was derived by combining estimates from a range of methodologies, and using different data. By contrast, the ERA's MRP estimate in the rail decision was derived using a single approach – the Wright method.

The difference in the ERA's MRP determinations in the two decisions is surprising for three reasons:

- The difference in the values determined in the two decisions is very material (i.e. 7.9% – 5.5% = 2.4%).
- The two decisions were issued just weeks apart. The gas decision was published on 14 October 2014 and the rail decision was published on 28 November 2014.
- The MRP is an economy-wide parameter. It should not vary depending on the asset or industry in question (unlike other WACC parameters, such as beta or the debt premium).

The difference between estimates of the MRP by the ERA in these two decisions appears to be driven by the ERA's interpretation of the appropriate term for the MRP. In the gas decision, the ERA appears to be aiming for a WACC term that

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matches the length of the regulatory period, i.e. five years.[4] In doing so, the ERA estimates a MRP in the gas decision that it considers is forward-looking and consistent with a five year term:[5]

> The Authority considers that any estimated MRP must be a 5 year forward looking MRP, commensurate with the prevailing conditions expected in the regulatory control period.

and:[6]

> The Authority considers that an estimate of 5.5 per cent provides the best indication of the 5 year forward looking MRP given prevailing conditions, and should be adopted as the value of the MRP for this draft decision.

In the rail decision, the ERA notes that it must determine a long-term WACC. The ERA infers from this requirement that it must determine a long-term MRP:[7]

> The WACC must remunerate the efficient financing costs of the rail service provider over the (long term) economic life of the assets. This contributes to maintaining the financial value of an investment in present value terms over its life. With this financial capital maintenance, investors can expect to recover the opportunity cost of employing their capital, given the associated risks, as well as the real value of their initial investment, over time.
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> …
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> Importantly, the Authority is required to determine the long term rail WACC, consistent with clause 2 of Schedule 4 of the Code. A long term WACC is consistent with the need to estimate incremental and total costs derived from an annuity over the economic life of the rail assets (see paragraph 22). Therefore, the Authority considers that it needs to incorporate a term for the WACC which accounts for the long term return on equity and the long term cost of debt.
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> For the return on equity, a term of 10 years is commonly accepted as a means to estimate the long term return in Australia. The 10 year term allows components of models of the return on equity to be estimated from reliable data. So for example, in the case of the risk free rate, the component may be estimated from the observed yield on 10 year Commonwealth Government Securities (CGS). In addition, the Authority considers that the long economic life of rail assets means that the long term average real return on equity may be used to inform the market risk premium (see chapter 11).

and:[8]

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4 ERA, Explanatory Statement for the Rate of Return Guidelines: Meeting the requirements of the National Gas Rules, 16 December 2013, pp.17-18.

5 ERA, Explanatory Statement for the Rate of Return Guidelines: Meeting the requirements of the National Gas Rules, 16 December 2013, para. 698.

6 ERA, Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, 14 October 2014, para. 733.

7 ERA, Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Railway Networks: Revised Draft Decision, 28 November 2014, para. 50-53.

> The Authority considers that it is appropriate to determine the long term market risk premium (MRP) – consistent with the economic life of the rail assets as required under the Code – as the difference between the forward looking long term estimate of the real return on equity for the overall market and the 'on the day' estimate of the 10 year real risk free rate. This long term real return on equity will be consistent with that expected to be earned over the economic life of rail infrastructure assets.

The relationship between the ERA's gas and rail decisions is explained in a footnote to the rail decision:[9]

> The Authority notes that the longer term estimates developed for the rail WACC are not directly comparable to the 5 year forward looking estimate of the rate of return used for its gas decisions. The term of the gas rate of return is conditioned by the 5 year term of the regulatory period, which requires a 5 year term for the rate of return estimate in order to maintain the present value ("NPV=0") condition. In contrast, the term of the rail WACC is conditioned by the economic lives of the rail assets, which as noted above, are long.

In our view, there are four main problems with the ERA's MRP estimate in the rail decision, which make that MRP unreasonably high. We discuss each of these concerns in turn in the sections that follow.

3.3 The ERA has assumed that the MRP has a term structure

In the rail decision, the ERA has assumed that the MRP has a term structure. The 'term structure' refers to the relationship between required returns to investors over the short-term and the long-term. This relationship may, in principle, take three forms:

- **Upward-sloping.** Required long-term returns exceed required short-term returns (e.g. the return expected by investors for committing funds for a 10-year period is greater than the return expected by investors for committing funds for a 5-year period). The term premium (i.e. the difference between required long-term and short-term returns) will be positive (all else remaining equal).
- **Flat.** Required long-term returns equal required short-term returns (e.g. the return expected by investors for committing funds for a 10-year period is equal to the return expected by investors for committing funds for a 5-year period). The term premium will be zero (all else remaining equal).

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8 ERA, Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Railway Networks: Revised Draft Decision, 28 November 2014, pp. xi-xii.

9 ERA, Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Railway Networks: Revised Draft Decision, 28 November 2014, footnote 22.

- **Downward sloping.** Required short-term returns exceed required long-term returns (e.g. the return expected by investors for committing funds for a 5-year period is less than the return expected by investors for committing funds for a 10-year period). The term premium will be negative (all else remaining equal).

The term structure may be upward-sloping or downward-sloping if, for instance, investors:[10]

- believe that future short-term interest rates will be higher or lower than current short-term interest rates;
- consider that the returns associated with long-term investments are more or less volatile than the returns associated with short-term investments;
- future inflation is expected to be higher or lower than current inflation.

It is fairly well established that there is a term structure for interest rates, such as government bond yields and corporate bond yields. The existence of a term structure in these cases is straightforward because the yields in question can be observed. However, the MRP cannot be observed in the same way; it must be estimated.

There is no consensus that the MRP has a term structure (e.g. that the MRP over the long-term differs from the MRP over the short-term).[11] The finance literature and practitioners typically refer to 'the' MRP, rather than to different MRPs that vary between the short-term and the long-term. The economics and finance professions do not make distinctions between "long-term MRP" and the "short-term MRP".[12] This is, in part, because the MRP cannot be observed directly – it is very difficult to test empirically whether there is, in fact, a term structure to the MRP.

The ERA has assumed (without presenting any evidence that this assumption is appropriate) that there is a term structure to the MRP. This assumption is evident from the fact that the ERA felt that the MRP it had determined in the gas decision was unsuitable for rail decision (because the Rail Access Code requires the ERA to determine a long-term WACC). Such an assumption is unsupported in the ERA's decision. The divergence in the ERA's MRP

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10 Brealey, R. A., Myers, S. C., Allen, F. (2014), Principles of corporate finance, 11th edition, Chapter 3, McGraw-Hill: New York.

11 Note, as we explain in section 3.5, saying that there may be no term structure to the MRP is not to say that the MRP does change over time.

12 If the term "long-term MRP" is used in the literature, it is usually due to loose terminology that refers to historical excess returns (i.e. between observed equity returns and a measure of the risk-free rate), observed and averaged over a long period of time. This is not the same as a 'long term premium'.

estimates, in the gas and rail decisions, is due to the ERA's unsupported presumption that the MRP varies by term.

Further, we note that the main estimation methods that the ERA uses in its gas decision actually produce estimates of a single, long-run MRP. For instance, the method that uses long-run historical average excess returns produces a single estimate based on long-run evidence. There is no way to use these data to produce different short-term and long-term MRP estimates. Similarly, the Dividend Growth Model that the ERA considers in its gas decision finds a single discount rate that equates the current stock price to forecast dividends in perpetuity. These are **current** estimates of the MRP over the **long-term**.

That is, even if the ERA is correct that it needs to obtain a long-term MRP, the historical excess return approach and the Dividend Growth Model approach both produce estimates of the long-term MRP. In the gas decision, it is only the conditioning variables used by the ERA in Table 42 that could be said to provide a shorter-term perspective of the MRP.

3.4 The term premium implied by the ERA's two determinations is implausibly large

Even if we assume that the ERA's assumption of a term structure for the MRP is correct, the ERA has not "sense-checked" the plausibility of the term premium implied by its MRP estimate in the rail decision. There are a number of sense-checks that could be applied to the ERA's MRP estimate in the rail decision, which all suggest that estimate is too high.

Estimation of the term premium

As noted in section 3.2, in the gas decision the ERA sought to estimate a "5 year forward looking MRP", and estimated the MRP to be 5.5%. In the rail decision, the ERA sought to estimate a long-term MRP, which may be interpreted as being consistent with a 10 year term, and estimated the MRP to be 7.9%.[13] As the only difference between these two determinations is the assumed term, the 5 year term premium implied by these two decisions is 7.9% – 5.5% = 2.4%.[14] In other words, implicit in the ERA's decision is the assumption that, on average, investors would demand a 2.4% p.a. return premium for holding the market

13 The ERA suggests at paragraph 53 of the rail decision that it is aiming for a return on equity estimate with a 10 year term. Further, the ERA employs a 10 year CGS yields when estimating the risk-free rate. Whilst the ERA does not say explicitly that it is seeking to estimate a MRP with a 10 year term, internal consistency would require that the MRP in a 10 year return on equity, which also uses a 10 year risk-free rate, be interpreted as a MRP with a 10 year term.

14 In this context, the '5 year term premium' refers to the premium that an investor would require in order to invest for 10 years rather than 5 years, all else being equal.

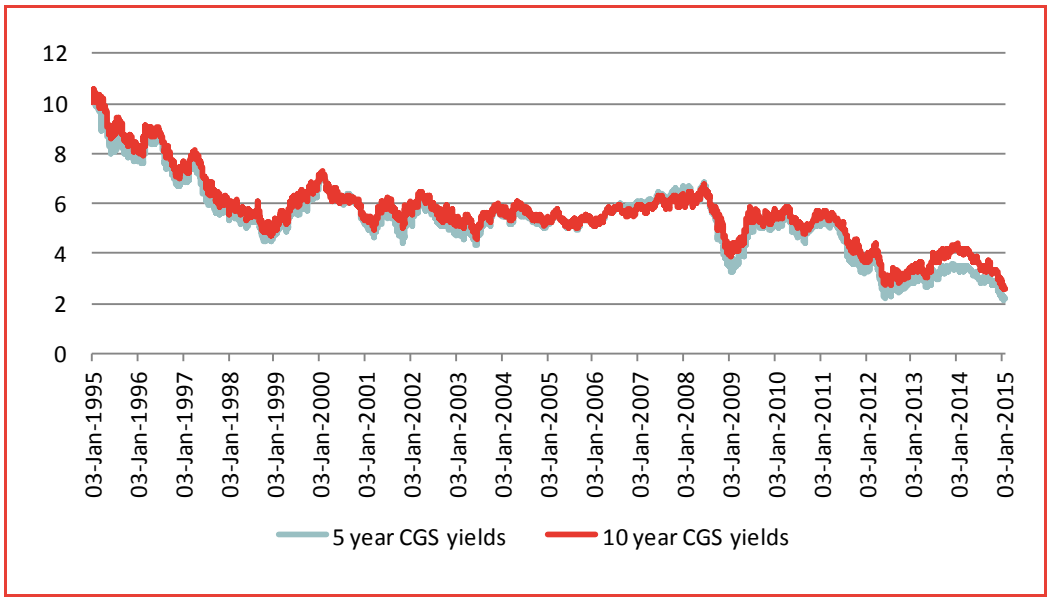
portfolio for 10 years rather than 5 years. In our view, this implied term premium is implausibly large.

One fairly simple way to obtain an estimate of the 5 year term premium would be to examine the (average historical) difference in yields on 10 year and 5 year government bonds. If the yields on Commonwealth Government Securities (CGSs) are a good proxy for the risk-free rate, the difference between 10 year and 5 year CGS yield should provide a reasonably close estimate of the 5 year term premium. This is because the difference in 10 year and 5 year yields should not be influenced (much, or at all) by differences in:

- default risk (because CGSs are close to being default-free);
- liquidity risk (because 5 year and 10 year CGSs are fairly deeply traded); and
- currency risk (because the CGSs are denominated in the same currency).

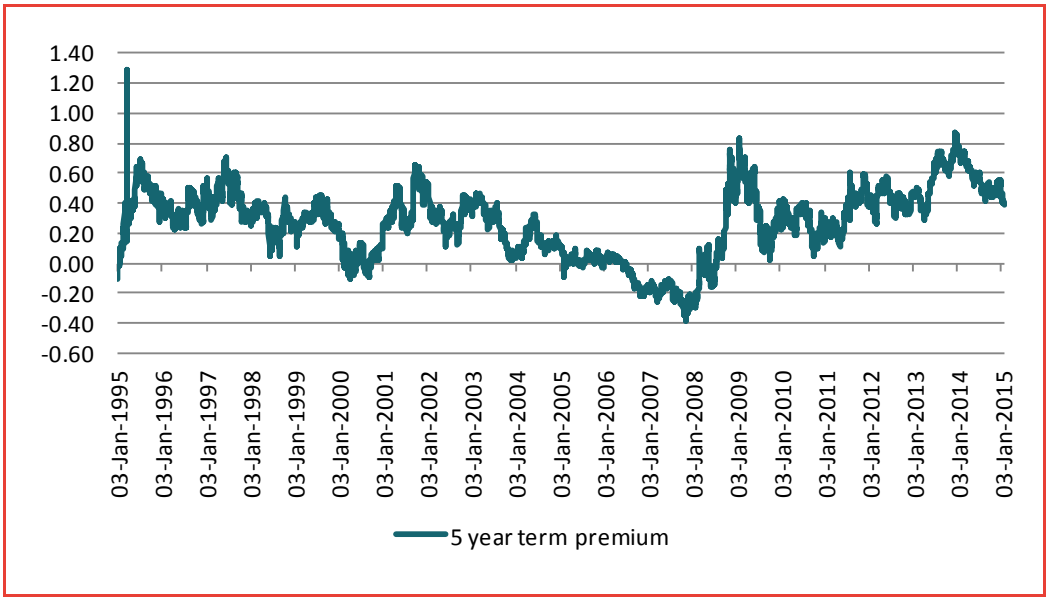
Figure 1 below plots 5 year and 10 year GGS yields since 1995. As this chart shows, the historical 'gap' between the two yields has been very small. This is shown clearly in Figure 2, which plots the historical term premium over the full period.

Figure 1: Historical yields on 5 year and 10 year CGS (% p.a.)



Source: Reserve Bank of Australia

Figure 2: Historical 5 year term premium (% p.a.)



Source: Frontier analysis of Reserve Bank of Australia data

Table 2 shows that the median historical 5 year term premium over the whole period is just 0.3%. The measured 5 year term premium over the past 20 years has never exceeded 1.29%. On only two occasions (i.e. trading days) over the past 20 years has the premium equalled or exceeded a value of 1%. Analysis of the term premium over a number of other historical periods (i.e. the past 12 months, 5 years and 10 years) supports an estimate of the 5 year term premium of no more than 0.55%.

Table 2: Summary statistics – Historical 5 year term premium

Period	Mean	Median	Min	Max	Occasions ≥ 1%
20 years to end of 2014	0.27%	0.30%	-0.39%	1.29%	2
10 years to end of 2014	0.24%	0.27%	-0.39%	0.87%	0
5 years to end of 2014	0.43%	0.44%	0.04%	0.87%	0
2014	0.58%	0.55%	0.42%	0.86%	0

Source: Frontier calculations using Reserve Bank of Australia data

This very simple sense check suggests strongly that, even if the ERA is correct that a term structure for the MRP exists (a claim that we say is unsupported), its estimate of a long-term MRP would be too high.

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Implications for the five year MRP over a 10 year future horizon

Another sense check would be to consider what the implied five year MRPs over a 10 year horizon would be if the ERA's estimate of the long term MRP in the rail decision is appropriate.

The implication of the ERA's MRP estimate in the rail decision is that an investor who buys the market portfolio and holds it for a 10 year term would expect a return premium of 7.9% per annum. The expected compounded return premium to this investor over the 10 year horizon would be $(1 + 7.9\%)^{10} - 1 = 114\%$.

Analogously, the implication of the ERA's MRP estimate in the gas decision is that an investor who buys the market portfolio and holds it for a five year term would expect a return premium of 5.5% per annum. The expected compounded return premium to this investor over the initial five year horizon would be $(1 + 5.5\%)^{5} - 1 = 31\%$.

If both these implications from the ERA's analysis were true, what would be the implied per annum expected return premium to the investor in the market portfolio over the second five year period? This implied expected return premium may be calculated as:

$$\left(\frac{(1 + 7.9\%)^{10}}{(1 + 5.5\%)^{5}}\right)^{\frac{1}{5}} - 1 = 10.4\%.$$

In other words, if the ERA's estimates in the gas decision and in the rail decision are correct, that would imply that the MRP for the first five year period is 5.5% per annum, and that the MRP for the subsequent five year period is nearly double this figure, i.e. 10.4%. This does not seem plausible.

ERA's own estimates of the "longer term" MRP in the gas decision

Further, the ERA's own analysis in the gas decision suggests that its view of the "longer term" average MRP, in that decision, is less than 6%. Specifically, the ERA states:[15]

> The corresponding 1993 – 2014 average of the normalised MRP values, using the Authority's weighting is 5.8 per cent (Table 44).
>
> The Authority considers these 'longer term' average figures are relevant for conducting cross checks, where the reference estimates on the return on equity –

[15] ERA, Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, 14 October 2014, paras. 776-777.

> such as those of independent analysts – are considering the returns to perpetuity, rather than the 5 year term that is being considered by the Authority.

Commenting on its "longer term" MRP estimate of 5.8%, the ERA states in the gas decision:[16]

> The resulting 'longer term' average MRP results sit slightly lower than the long run historic MRP of 6 per cent often cited by independent analysts and previously used in regulatory decisions.

Given these statements, it is unclear to us why the ERA believes in the rail decision that 7.9% (a number considerably higher than 5.8%) is an appropriate estimate of what it describes as the long term MRP.

Recent MRP estimates from the AER

Finally, we note that the AER also takes a "long term" view of the MRP, where "long term" is defined to be 10-years. For instance, the AER says in its Rate of Return Guideline that:[17]

> We estimate a 10 year forward looking return on equity using an estimate of the 10 year forward looking MRP.

Yet, the AER's approach to estimating the MRP is much more akin to the methodology adopted by the ERA in the gas decision than in the rail decision. Specifically, like the ERA in the gas decision, the AER makes use of evidence on historical excess returns and dividend growth model estimates, and 'conditioning variables' such as dividend yields, credit spreads and implied volatility.[18, 19] The AER does make use of the Wright approach, but only as a cross-check for the overall return on equity. That is, the Wright approach is not used to estimate, or even cross check, the MRP estimate. So, conceptually, the AER seems to consider that an appropriate way to estimate a 10 year MRP is similar to the approach used by the ERA to estimate a five year MRP.

In its recent Draft Decisions for NSW/ACT networks, the AER determined a MRP estimate of 6.5%.[20] This estimate is much closer to the ERA's MRP estimate in the gas decision (5.5%) than its MRP estimate in the rail decision (7.9%). This sense-check, using very recent estimates from the AER, which are

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16 ERA, Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System, 14 October 2014, footnote 372.

17 AER, Rate of return guideline: Explanatory statement, December 2013, p.82.

18 The AER also takes into account survey evidence on the MRP and recent decisions on the MRP by Australian regulators.

19 AER, Rate of return guideline: Explanatory statement, December 2013, pp.90-91.

20 See, for example: AER, Draft Decision Ausgrid Fact Sheet - Rate of return - November 2014.

The ERA's approach to the MRP is not reasonable

contemporaneous to those by the ERA, lends further weight to our view that the ERA's MRP estimate in the rail decision is inflated.

3.5 The ERA has conflated the unrelated concepts of the WACC term and averaging periods

When seeking to estimate a "long term WACC", the ERA has conflated two separate concepts: the term of the WACC; and the averaging periods used to assess historical data. These two concepts are universally treated as separate by regulators and other practitioners in Australia.

The ERA's confusion between these two concepts is evidenced by the following quote from the rail decision:[21]

> For the foregoing reasons, the Authority has determined that it will adopt a rail WACC, with a term that is consistent with the long economic lives of the assets. Accordingly, the Authority will utilise the longest term reliable data to inform the rail WACC. Generally, this will be a 10 year term. However, where appropriate, longer term data may be used to inform the estimates (for example, the use of the long term averages of the real return on equity, as noted in paragraph 53).

The first sentence of this quote refers to the term of the WACC. Standard finance theory says that the term of the rate used to discount (or compound) cash flows should match the term of those cash flows. It is clearly in this context that ERA says that the term of the WACC estimated should match the long economic lives of the rail assets in question. This is consistent with accepted finance theory.

However, the remaining sentences of the quote above — in particular, the last sentence, which refers to "the use of the long term averages of the real return on equity" — relate to the separate notion of the period of historical data (i.e. the short-run vs. the long-run) that should be used when estimating particular WACC parameters. The ERA's conclusion that it should use long-run data to estimate a long-term WACC is a non-sequitur. This is made apparent by the fact that the ERA itself uses a very long-run average of historical excess returns as one of the primary estimates of its short-run MRP in its recent gas decision.

To highlight the problem with this approach, consider the following: The Australian government issues securities known as Treasury Notes are a means of raising short-term debt. The shortest term Treasury Note available is a 1 month instrument. Since 1 month Treasury Notes represent very short-term borrowing, the term premium within those Notes is very small. Suppose a very long-run, e.g. 100 years, of historical data on Treasury Note yields were available. Taking a 100

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21 ERA, Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Railway Networks: Revised Draft Decision, 28 November 2014, para. 58.

year average of these historical yields provides no sound basis for estimating the WACC that may be applied to a long-lived asset. That is, the taking of a long-run average, of itself, does not produce an estimate of a long-term return. The corollary of this point is that very short-term data *can* produce an estimate of a long-term return. For example, estimates from the dividend discount model require only current inputs, but that model produces an estimate of the required return into perpetuity. In summary, the averaging period and the horizon of the estimated return are separate concepts that the ERA appears to have confused.

It appears that this confusion between the term of the WACC and the averaging period that ought to be applied to historical data that forms the basis of the ERA's justification for discarding the MRP methodology used in the gas decision and adopting in its place the Wright method. This is demonstrated by the following quote from the rail decision.[22]

> The Authority considers that the so-called 'Wright approach' provides the best estimate of the return on equity for the benchmark firm over the long term…
>
> …
>
> The starting point for estimating the MRP for the long term rail WACC is the Authority's estimate of the expected return on equity for the longer term, of 11.2 per cent. For the indicative estimate of the rail WACC (see Appendix 7), the 'on the day' estimate of the 10 year risk free rate is 3.3 per cent. It follows that the current estimate of the *long term* nominal MRP at the current time is (11.2 – 3.3 per cent=) 7.9 per cent. [Original emphasis]

3.6 The ERA has placed sole reliance on a single estimation approach in the rail decision

In the gas decision, the ERA relied on two different methods (i.e. examination of historical excess market returns and DGM estimation) to estimate the MRP. Furthermore, when arriving at its final estimate, it combined several different estimates derived using these two different approaches to develop a MRP range, and then used a range of indicators to select a value from within this range.

Conceptually, the approach of combining several estimates, from a variety of approaches, is sensible. This is because no single approach is perfect, and all are subject to estimation error. From a statistical perspective, a standard way of minimising estimation errors is to combine estimates from a range of independent sources and methodologies. The less correlated the errors, the more the errors will cancel out through the process of combination. Hence, the

[22] ERA, Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Railway Networks: Revised Draft Decision, 28 November 2014, para. 491-492.

combined estimator is likely to be more accurate and reliable, from a statistical perspective, than reliance on any single estimate or estimation procedure.

However, in striving to estimate a long-term MRP, the ERA has discarded all of the different estimation approaches used in the gas decision and relied on a single method (the 'Wright method'). By placing exclusive weight on a single approach, the ERA has significantly increased the risk of estimation error.

The only circumstance in which complete reliance should be placed on a single estimation approach is if the estimates generated by that approach are very unlikely to be subject to error. In our view, given the widely-recognised difficulties associated with estimating the MRP, the ERA's confidence in a single approach is misplaced.

For the avoidance of doubt, we do not argue that estimates derived by the Wright method should not be used at all to inform the ERA's MRP estimate. In our view, the analysis presented by Wright is persuasive. However, given the inherent difficulties in estimating the MRP, we say that it is unwise to rely exclusively on the Wright method alone.

4 The ERA should re-consider its proposed approach to the estimate of Brookfield's beta

4.1 Summary

The systematic risk faced by Brookfield's below-rail operations is measured by its asset or equity beta. The asset beta is an estimate of the systematic risk a business would incur if there was no debt in its capital structure. The equity beta is an estimate of the systematic risk that includes the incremental risk associated with fixed financing costs, and so increases as the level of gearing increases.

For Brookfield, the ERA estimates an indicative equity beta of 0.93, based on an asset beta of 0.70. This is based on an estimate of efficient gearing of 25 per cent. This means that Brookfield's systematic risk is (forecast to be) only slightly less than that of the average firm.

In summary, our view is that the ERA's approach to the selection of comparators has led it to set an asset beta that is too high for the market risks likely to be faced by Brookfield. While we agree with the ERA that Aurizon is the best comparator for Brookfield, the ERA's choice of other comparators excludes many other businesses that are equally or more comparable to Brookfield. When such businesses are brought into the sample, we are confident that the relevant asset beta would be lower than – and certainly no higher than – that of Aurizon (0.67).

We first outline the ERA's estimation approach and its findings, our preferred conceptual and practical approach, and then assess the differences between the two approaches.

4.2 The ERA's estimation approach

We summarise the ERA's approach and outcomes of its equity beta estimation as follows:

- The equity beta should be determined by using quantitative estimates of betas of comparable firms. This will inevitably involve a degree of imprecision, which should be addressed via the use of multiple comparators, models and statistical techniques to inform a possible range for any beta estimate.[23]
- Comparator firms should be:

[23] The following summary is drawn from the ERA's Rail Decision, Section 4.2.4.6 and Section 12..

- primarily involved in the transportation of goods across comparable distances;
- located in Australia or a similar developed economy;
- involved in the transportation of similar commodities to those transported on the Brookfield Rail network.

- There is a lack of comparator companies in Australia for rail. Only Aurizon is ASX-listed and sufficiently close in functions to be comparable.
- The ERA therefore relies on overseas railway network operators to form the benchmark comparators. The ERA also includes non-rail operators "...given they have been included in previous WACC determinations."
- In making its decision on the quantum of beta, the ERA notes that Aurizon is the best comparator to the Brookfield Rail network, but that it employs significant regulatory discretion when determining an appropriate asset beta.
- The average asset beta across comparators using its regression analysis is 0.83, and for Aurizon is 0.67. A judgement is then made, based on the considerations above, that 0.7 is the appropriate asset beta to use, which converts to 0.93 at the benchmark gearing assumption.

4.3 Our views on the appropriate beta estimation method

The asset beta is conventionally estimated as the coefficient of the regression of company returns against market wide returns. In order to perform this calculation, it is necessary to have share price data on the company of interest. However, where no share price data exists (i.e. for unlisted companies) the estimates of beta can be obtained using a comparator analysis approach.

The comparator analysis approach necessarily involves identifying a suitable sample of listed comparators**.** The most ideal comparators will be those that:

- are listed and actively traded on a stock exchange;
- are engaged in a similar business activity to Brookfield; and
- operate a similar business model with a similar cost structure and demand profile.

The relevant business activity of Brookfield is the operation of a below rail network for the transportation of freight and commodities within Western Australia.

As the ERA has noted, there are no listed 'pure play' comparators to Brookfield. Therefore, it will be necessary to expand the set of comparators to other kinds of firms that differ from Brookfield in possibly significant dimensions. The exact

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mix of activities will vary from company to company, and some comparators will be better matches than others.

In these circumstances, our view is that the best approach to beta estimation is to consider a broad set of comparators, and to weight these comparators according to the closeness of their fit with Brookfield's activities. The objective should be that by developing a weighted set of comparators, the comparator set will be a representative sample of the market risks faced by Brookfield.

We now give further consideration to the choice and then weighting of imperfect comparators in deriving asset and equity betas.

4.4 Choice of comparables

4.4.1 The ERA should clarify how it derived its comparables

The ERA's criteria for the choice of comparables are said to be as follows:

> Comparator firms should be:
>
> - primarily involved in the transportation of goods across comparable distances;
> - located in Australia or a similar developed economy;
> - involved in the transportation of similar commodities to those transported on the Brookfield Rail network.[24]

The ERA then proceeds to apply a filter to Bloomberg's firm listings based on these criteria. In particular, it says it applies the following filters (see paragraph 160 and Table 2):

- operates in an OECD country that has similar political, economic and geographical similarities to Australia;
- belongs to the ICB Subsector: Railroads; and
- provides sufficient pricing data to allow calculation of its equity beta and gearing.

We have identified three issues with this list of firms given in the Table (and said to be derived from Bloomberg).

- The first issue is that there are a number of firms in this list whose inclusion appears odd. For example, it includes a number of ports and airports that would not seem to form part of a "Railroads" sector.

24 ERA, Rail Decision, p. 28.

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- The second issue is that one of the firms is called "Tolls Holdings Limited" from Australia, but the company description refers entirely to "Toll NZ" and that "Toll NZ conducts its business in New Zealand and internationally".
- The third issue is that there may be some relevant comparators missing from this list. For example, Sydney Airport would appear to meet similar criteria to Auckland Airport and is ASX-listed.

The Authority also states (at paragraph 161) that it has included comparator companies that were included in its previous WACC determinations for the Brookfield rail network. However, the ERA document from 2008 that is cited in footnote 59 does not provide a list of what these companies are or why they were included.

We request that the ERA clarify its current list of comparables and identify where these have been derived from, and confirm that it has used appropriate data in performing its beta analysis.

We further note that the ERA has not provided an explanation of why firms that do not meet the ERA's comparator criteria, but were used in previous WACC determinations, should be included in the beta assessment. Similarly, it has excluded other firms which might otherwise be similar to Brookfield within any reasoning provided.

4.4.2 The choice of comparables should be based on the assessment of business risks

We have reviewed the ERA's methodology for choosing comparables (as described above), and consider that its approach could be improved in certain respects. In our view, it is important to set out the basis for the choice of comparables. In contrast, the ERA does not justify its set of comparables in any detail.

We now set out our assessment of the systematic risks faced by Brookfield, and the comparability of different kinds of firms facing similar risks.

Systematic or market risk will be a function of cash flow risk, and so of the revenue and cost risks facing a business. In other words, how certain is demand for the business's services going forward, and how exposed is the business to changing input costs?

The **revenue risk** faced by a business will be primarily affected by the market power held by the business (assuming that it is able to exercise this). This will be a function of:

- the level of competition faced (reflected in the elasticity of demand); and
- the extent to which customers have countervailing power.

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Rail infrastructure providers that operate bottleneck infrastructure and face limited competition from alternative transportation modes could be considered to hold a high degree of market power. This suggests that there is likely to be similarities in the level of systematic risk faced by Brookfield and other businesses with a degree of ***market power*** such as those operating monopoly bottleneck infrastructure such as:

- Airports and ports (which commonly face limited competition from alternative transportation modes)
- Water and energy distribution networks (natural monopolies with a high degree of market power)
- Toll roads (with a lower degree of market power that is often dependent on possibility of commuters bypassing particular roads)

Demand for rail services is a derived demand, meaning demand for rail infrastructure will be affected by demand for the products being transported. This suggests that there are likely to be some common risk drivers between Brookfield and businesses **transporting freight.** This will apply particularly to businesses transporting freight of a similar type – commodities such as grain and minerals and, to a lesser extent, other types of freight. However, the risks faced by Brookfield are likely to be mitigated compared to end customers as the proportion of the final end prices of commodities made up by track charges is likely to be relatively low. This usually allows below rail operators greater flexibility to mitigate demand falls by increasing charges than above-rail operators.

The systematic risk faced by a business will also be a function of the **services the business provides and the activities it undertakes**. Systematic risks will be higher for businesses where a higher proportion of costs are fixed as in these circumstances a higher proportion of costs will be incurred should volumes reduce. This suggests that there are likely to be some common risk drivers between Brookfield and other businesses operating below rail, or other kinds of basic network infrastructure, as they will face similar costs and therefore similar costs risks. Vertically integrated businesses that also provide above rail services will be relevant, but to a lesser extent.

A further important determinant of systematic risk will be driven by differences in the **jurisdiction** in which a business operates. Different countries will have different exposures to global economic risks. In addition, beta values for international comparators are calculated for a stock market that is of a different composition to the Australian stock market, making betas not directly translatable.

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The **regulatory environment** is another factor that can affect market risk. Indeed, the QCA relied almost exclusively on this criterion in determining that energy networks were appropriate comparators for Aurizon.[25] We recognise that there are in-principle arguments about the form of regulation influencing market risk – for example, that revenue caps impose less risk than price caps if product volumes are correlated with market movements. However, we note that this is not supported by conclusive empirical evidence. That is, the evidence on the relationship between regulation and systematic risk estimates does not demonstrate a relationship between regulations which alter the uncertainty over the revenue stream and estimates of systematic risk.[26]

Finally, we note that there are potentially a number of **other factors** relevant to systematic risks, although in this case we see these as being less important than those identified above. Of those omitted, the most potentially relevant factors include the pricing structure and the existence of long-term contracts with customers. These factors can have an effect on the revenue risk facing a business and could, in principle, be relevant to a firm's beta. However, the impact on systematic risk will depend on the particular form of these arrangements, and these specific arrangements are difficult to compare. Therefore, we do not consider it is helpful to exclude possible comparators on this basis.[27]

4.4.3 Our proposed comparator set is broader

Given the lack of 'pure play' comparators, we consider there are good arguments that the comparator set should be broad, such that as a whole, the set is reasonably representative of the market risks faced by Brookfield. The comparator set should cover all dimensions described in the previous section.

To limit the possibility of introducing comparators with vastly different systemic risks we consider that a practical approach would be to only include businesses that are comparable to Brookfield in relation to at least two of the dimensions described.

What follows is our view on the set of comparators that should be considered in determining Brookfield's asset beta.

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25 QCA, Aurizon Network 2014 Draft Access Undertaking – Maximum Allowable Revenue, September 2014, p. 252.

26 See the discussion in SFG Consulting, *Systematic risk of Aurizon Network: Response to reports and submissions to the Queensland Competition Authority*, 20 January 2014

27 Our *prima facie* view would be that Brookfield's regulatory risk is lower than Aurizon's – as Aurizon faces regular reviews by QCA and the setting of a binding revenue cap. In contrast, there have been no determinations made by an arbitrator under the Code. Whether this is reflected in differences in systematic risk is debatable; however, at the least, our view would be that differences in regulatory risk could not support a higher beta for Brookfield than for Aurizon.

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Aurizon

Aurizon is the only Australian rail freight company that is publicly listed on the Australian Stock Exchange, making it reasonably comparable to Brookfield in terms of the jurisdiction in which it operates.

It provides coal, bulk and general freight haulage services primarily on the Central Queensland Coal Network. Its network business is also responsible for providing, maintaining and managing rail network. As a provider of above- and below-rail services, its activities or functions differ somewhat from Brookfield.

However, given a large proportion of its network and activities relates to moving coal, it can be considered to be primarily a transporter of bulk freight, much like Brookfield.[28] On this basis it is also likely to have a similar degree of market power as bulk freight rail networks typically face less competition from road transportation. This is because they are relatively low value and more able to be integrated with mining operations.[29]

Aurizon is regulated by the QCA, under different regulatory arrangements to Brookfield, however, for the reasons described above it is considered to be the best overall comparator. This view is consistent with that expressed by the ERA in its revised draft decision[30]. We therefore consider its asset beta is deserving of a higher weighting relative to the other comparators discussed below.

Airports and Ports (Australia and NZ)

Ports and Airports in Australia and New Zealand are considered relevant comparators to Brookfield. They operate within a similar jurisdiction, and have a similar degree of market power. Ports, airports and rail networks commonly constitute bottleneck infrastructure and as a result are typically subject to some form of regulatory oversight (albeit lighter-handed regulation in the case of ports and airports). While they are unlikely to face direct competition they may face some competition from alternative transport modes for some of their services. Furthermore, they often have larger commercial customers with some degree of countervailing power.

It is presumably for these reasons that the ERA has included some of these businesses in the asset beta comparator set for its 2008[31] and most recent rail

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28 In our view, the fact that Brookfield transports grain, as well as iron ore and coal, rather than coal and iron ore does not alter this conclusion.

29 BITRE (2009) *Road and rail freight: competitors or complements?*

30 ERA, Rail Decision, p. 30

31 ERA (2008) *Weighted Average Cost of Capital for the Freight (WestNet Rail) and Urban (Public Transport Authority) Railway Network.*

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decision. We consider it appropriate to place some weight on an average beta estimate for businesses of this type.

Energy and water networks (Australia and New Zealand)

Energy and water network businesses in Australia and New Zealand are also considered relevant comparators to Brookfield.

Both Brookfield's rail network and energy and water networks more generally could be considered natural monopolies with high fixed costs. As a result they are both likely to hold a similar degree of market power and hence are both subject to regulatory oversight (albeit more heavy handed regulation in the case of energy and water network businesses). Furthermore, they operate within a similar jurisdiction.

However, there are differences, particularly in relation to what is being transported with energy and water businesses providing a substantially different product and serving a very different customer base.

Energy and Water network businesses were included in the comparator sample used by the QCA for determining Aurizon's Network asset beta[32]. We consider it appropriate to place some weight on an average beta estimate for Australian or New Zealand energy network businesses and Australian water networks.

US and Canadian railways

In our view, it is reasonable to place some weight on the observed betas of US and Canadian railways. We understand that the exact composition of freight carried on US and Canadian railways is not too different to that of Brookfield, although the US railroads are likely to face greater competition and have a more diversified mix of traffic. The activities of these businesses are also slightly different as they provide above and below rail services.

It is worth noting that the US railways have substantially higher equity betas when compared to those in Australia and Canada. McKenzie and Partington suggest "they are different [to other jurisdictional rail providers] in some fundamental respect, rendering a comparison inappropriate".[33] IPART has suggests that this is because a substantial portion of their revenues are subject to competition from other railroads and other forms of transport. This suggests that these businesses do not have the same degree of market power as Brookfield.[34]

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32 QCA (2014) *Aurizon Network 2014 Draft Access Undertaking – Maximum Allowable Revenue*

33 McKenzie & Partington, sub no. 65 to the QCA p.27

34 IPART (2014) *NSW Rail Access Undertaking Review of the rate of return and remaining mine life,* July 2014, p19

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For these reasons we consider it appropriate to place some weight on an average beta estimate for these businesses, but no more weight than the other comparators we describe.

Toll roads

Toll roads have a number of features which suggest the systematic risk faced by their operators could be somewhat comparable to Brookfield. Most notably, toll road operators are essentially infrastructure providers in a similar way to below rail providers with a large proportion of their costs being fixed. They also hold some degree of market power as in many cases bypassing the toll road can be difficult and costly. Available comparators are also available in Australia.

There are some differences in risk profiles. Some of the risks faced by toll road investors actually relate to the upfront construction of the road, which may be less relevant. We note that the ERA excludes from its sample selection for PTA companies with high growth rates for this reason.

The QCA included toll roads as the upper bound in its comparator set on the basis of advice from Incenta.[35] The ERA proposes to use toll roads as comparators for the PTA, and even notes that a toll road company is likely to face higher risks than the PTA.[36] However, the ERA does not appear to give consideration to the use of toll roads as a comparator to Brookfield. We consider that it would be appropriate to place some weight on an average beta estimate for Australian Toll Roads.

Broader transportation businesses (Australia and New Zealand)

The ERA did include some broader transportation businesses in its comparator set — namely Asciano Ltd and Toll Holdings.

Asciano is a somewhat relevant comparator. Its similarities with Brookfield relate to its Australian bulk export port facilities, and its subsidiary Pacific National provides (above) rail freight services.

However, we do not consider Toll Holdings sufficiently comparable. Its main similarity with Brookfield, when compared to the dimensions described in section 4.4.2, is that it transports freight. However, it is largely a logistics business that operates a road transport fleet rather than an above or below ground rail operator. It is unlikely to have a similar degree of market power or indeed move a similar type of freight.

For this reason significant care should be taken before adding broader transportation businesses to the comparator set.

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35 QCA (2014), *Aurizon Network 2014 Draft Access Undertaking – Maximum Allowable Revenue,* p250

36 Rail decision, p. 27.

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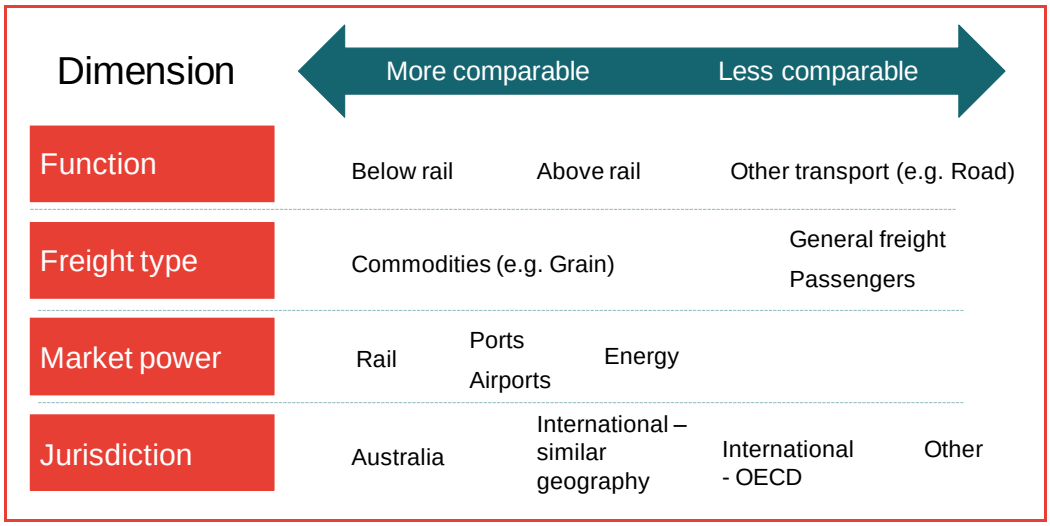
4.5 Dimensions used to weight comparators

Once beta estimates have been obtained for the comparator firms, we need some way to weight the estimates to produce a single point estimate.

In principle, there are a number of ways in which this could be done. Our preference would be to apply a higher weight to closer comparators, where this judgement as to how much higher would be explicitly represented in the weighting.

In Figure 3, we set out the relevant dimensions of comparability for Brookfield, and in the following Table 3 we highlight the degree of comparability of each kind of comparator.

Figure 3: Relevant dimensions of comparability for Brookfield



Source: Frontier Economics

This assessment of comparators suggests that the ERA should place a relatively high weighting on Aurizon, and a relatively lower (but similar) weighting on the other comparators. As a matter of good regulatory practice, we would expect the ERA to explain what regard it has had to the full set of comparators we identify above.

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Table 3: List of comparators and indication of comparability

Comparator	How comparable?
Aurizon	• Function similar (above and below rail) • Freight similar • Market power similar • Australian
Rail (US / Canada)	• Function similar (above and below rail) • Freight similar
Energy	• Market power similar • Australian
Airports and Ports (Australia / NZ)	• Market power similar • Australian
Broader Transportation (Australia / NZ)	• Freight similar • Australian
Toll roads	• Market power similar • Australian

Source: Frontier Economics

4.6 The Brookfield beta estimate is also materially higher than used in comparable regulatory decisions

The QCA's regulatory decisions with respect to Aurizon and the ACCC's decision with respect to ARTC provide a further means of checking the reasonableness of the ERA's approach to Brookfield. We do not argue that these should form primary pieces of evidence. However, the ERA recognises that the beta estimate must involve considerable judgement, and so the judgements of other bodies in a similar position to the ERA can offer some guidance.[37]

[37] We also note that the ERA does address prior regulatory decisions with respect to rail networks and finds that:

"The Authority notes that other Australian regulators have determined equity betas for other Australian railway networks. Recent regulatory decisions for rail are shown below (Table 21). The Authority notes, however, that this information has low relevance for this determination, given the differences in regulatory regime that exist and the differing characteristics of the rail networks."

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We have already noted the similarities between the Aurizon and Brookfield rail networks. The Hunter Valley rail networks is similar to Aurizon in that it is primarily a commodity network, serving coal mines NSW and exporting through downstream ports.

With respect to Aurizon, the QCA's most recent decision was that an appropriate asset beta for Aurizon was 0.45, which at 55 per cent gearing translated into an equity beta of 0.8. At face value the equity beta is not so different from Aurizon's, but there is a substantial difference in gearing that must be accounted for. If we start with Aurizon's equity beta and unlever this to obtain the asset beta (using a method consistent with that used by the ERA), we obtain an estimate of 0.52. In turn, at 25% gearing, this translates back into an equity beta of **0.69**. This is well below the proposed Brookfield equity beta of 0.93.

The ACCC's acceptance of the ARTC's undertaking with respect to the Hunter Valley access network did not include a final decision on WACC parameters. Nonetheless, its earlier expressed position paper (December 2010), the ACCC expressed the view that the appropriate asset beta was 0.45, which translated to an equity beta of 0.94 at gearing of 52.5%. At gearing of 25% (equivalent to Brookfield), the equity beta would only be **0.6** – again considerably less than Brookfield.

4.7 Conclusion

The ERA's overall approach to beta estimation is generally reasonable given the constraints it is under, in particular, that there is only one close comparator to Brookfield in Australia.

However, we find that a material improvement could be made to the ERA's analysis. This improvement relates to the ERA's choice of comparators. The ERA's reasons for its current choice of comparators are unclear in important respects, and this causes it to estimate an appropriate equity beta that is too high. The beta estimate could be materially improved by broadening its set of comparators. This will better promote the objectives of the Act and the Code.

While we have not conducted the empirical analysis of betas on the other firms that we consider should be in the sample, we are confident that the broader range of comparables would support an asset beta no higher than that of Aurizon (0.67) and an equity beta of 0.89.

We further consider that evidence of the ERA's judgement on the appropriate beta values can be found in the decisions of the QCA and ACCC, which have

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We are not clear how the ERA reconciles this position with its view that Aurizon is the best comparator to Brookfield. Nor does the ERA make the case that the nature of regulation means that the asset and equity betas for ARTC would be fundamentally non-comparable.

The ERA should re-consider its proposed approach to the estimate of Brookfield's beta

found much lower betas to be appropriate for similar below rail networks in Queensland and New South Wales.

The ERA should re-consider its proposed approach to the estimate of Brookfield's beta

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