BABCOCK & BROWN
INFRASTRUCTURE

Babcock & Brown Infrastructure Limited · ABN 61 100 364 234
Level 23 The Chifley Tower · 2 Chifley Square · Sydney NSW 2000 Australia
T +61 2 9229 1800 · F +61 2 9235 3496 · www.bbinfrastructure.com

2 May 2008

Lyndon Rowe
Chairman
Economic Regulation Authority
PO Box 8469
Perth Business Centre 6849
Western Australia

Dear Mr Rowe

WestNet Rail – 2008 Weighted Average Cost of Capital

Babcock & Brown Infrastructure (BBI) is an infrastructure investment company listed on the Australian Securities Exchange. BBI invests in Energy and Transport infrastructure globally. In Australia, our transport assets comprise the Dalrymple Bay Coal Terminal and around 76% of WestNet Rail (WNR).

We have set out in this letter and the attached report our response to the ERA's draft determination on the Weighted Average Cost of Capital for WestNet Rail, released on 4 April 2008.

Our response addresses two specific aspects of the draft determination namely the treatment and estimation of:

a) the equity beta for WestNet Rail (i.e. the systematic risk of WestNet Rail relative to the average firm); and

b) the costs associated with raising capital.

In doing so, we have drawn on the advice of Dr Tom Hird and Prof Bruce Grundy who have provided the report attached to this letter.

Our response deals specifically with these two aspects only. We also endorse the submission from WNR, which deals with a wider range of issues.

The relative risk of WestNet Rail

The asset beta for WNR proposed in the ERA's draft decision implies that the risk attached to WNR is 33% less than the risk attached to the average firm. This reasoning behind this assertion is as follows:

The average gearing on the ASX was estimated at 20% by the Reserve Bank of Australia (RBA) in August 2007.[1] At this level of gearing, the average asset beta is equal to 0.8, using the same de-levering formula used by the Allen Consulting Group (ACG), which is 33% higher than the 0.6 asset beta proposed for WestNet.

In the absence of any evidence on the relative risk of WestNet, an asset beta of 0.8 would be the default assumption (i.e. the same underlying risk as the average firm). However, the ERA accepted specific evidence that the asset beta for WestNet was below this default level – in a range of 0.65 to 0.75. The ERA then performed a further downward adjustment to this range based the belief, the basis for which is not fully explained, that WestNet would have lower risk still.

"The Authority must determine asset beta values for the freight and rail networks on the basis of limited capital market evidence.

For the freight network, the Authority considers that current capital market evidence points to an asset beta value of 0.65 to 0.75. The Authority accepts that a downward adjustment of the asset beta values by an amount of 0.1 (resulting in a range of asset beta values of 0.55 to 0.65) is appropriate to reflect a suspected low systematic risk of the freight network's bulk minerals and grain business and the significance of this business in the total business of the freight network." (Paragraphs 84 and 85.)

BBI does not believe that a proper basis has been established for the downward adjustment to proxy asset betas performed by the ERA. Such an adjustment must be made by having reference to evidence. However, when proper regard is had to the empirical evidence any adjustment should be in the opposite direction.

In its draft determination the ERA has used the Capital Asset Pricing Model (CAPM), as first propounded by Sharpe in 1964, to set the required return on equity for WestNet. In this early version of the CAPM all variations in return are explained by a single factor – the equity beta.

Since 1964 the Sharpe CAPM has been refined at both a theoretical level and at an empirical level. The main conclusions of the finance literature are as follows:

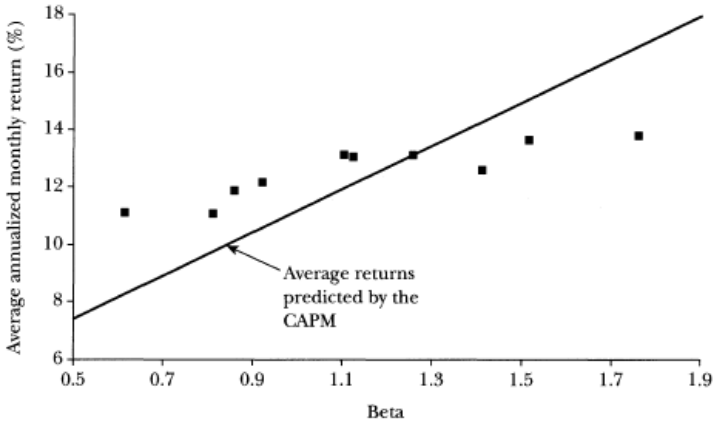
- the empirical literature unambiguously shows that the Sharpe CAPM underestimates the required returns for firms with lower than average risk (and *vice versa*); and

[1] http://www.rba.gov.au/PublicationsAndResearch/StatementsOnMonetaryPolicy/Aug2007/box_d.html Note that debt gearing is measured relative to ASX listed businesses value of capital (ie, market value of equity plus book value of debt – where the later is a good proxy for market value).

- the theoretical literature has developed more realistic versions of the CAPM (eg, the Merton CAPM (named after Nobel Laureate Robert Merton), the Black CAPM (named after the developer of the Black-Scholes theory of option valuation), and the Consumption CAPM (a version of the Merton CAPM).

For a discussion of this finance literature BBI draws the ERA's attention to a recent report to the ESCV written by Dr. Hird and Prof. Grundy.[2] The key empirical finding of the literature is summarised in the below figure from Fama and French (2004)[3] which demonstrates graphically the accepted empirical fact that low beta stocks earn more than predicted by the Sharpe CAPM (and *vice versa* for high beta stock).

Figure 2
Average Annualized Monthly Return versus Beta for Value Weight Portfolios Formed on Prior Beta, 1928–2003



BBI does not contend that the ERA should necessarily respond to this empirical and theoretical evidence by adopting a different version of the CAPM. However, BBI does believe that the ERA must have regard to this evidence when considering making an adjustment to estimates of equity beta derived from capital markets. Proper regard to this evidence would imply adjusting upwards below average estimates of asset/equity beta (and *vice versa*).

Without adjustment the range for WestNet's asset beta would be 0.65 to 0.75. BBI considers that the ERA has no reasonable basis for choosing a value below this range.

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[2] *Estimating Relative Risk in the Market for Funds*, CEG, October 2007. http://www.multinetgas.com.au/regulatoryIssues/downloads/RegulatoryEnviroment/essentialServicesCommission/appendices/CECG_Estimating%20Relative%20Risk%20in%20the%20Market.pdf

[3] *Fama, Eugene F. and Kenneth R. French, 2004, "The capital asset pricing model: Theory and evidence," The Journal of Economic Perspectives 18, pp. 25-46.*

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The cost of raising capital

BBI wishes to highlight an important omission by regulators when assessing the cost of raising debt and equity. Regulators have failed to recognise that the cost of raising capital involves both direct costs (eg, payments to under-writers) and indirect costs (eg, under-pricing the issue of new debt and equity). Both of these costs are economically identical and are commonly traded off against each other in a particular capital raising.

Under-writing fees are paid to ensure that the under-writer will buy any under-subscribed issue. Under-pricing costs are associated with lowering the issue price to ensure that the issue is fully subscribed. Clearly, the greater the under-pricing the lower the under-writing fee – as the risk to the under-writer is reduced the lower is the issue price. This relationship is well understood by BBI from its direct experience of raising capital and is also manifest in the finance literature.

Attached is a report from CEG that surveys the finance literature and past regulatory precedent in Australia. It finds that Australian regulators have failed to recognise the important role of under-pricing in establishing the cost of equity and debt raising. This failure to capture the indirect costs of equity raising has led to a manifest underestimate of the cost of raising equity and debt. Taking indirect costs into account CEG recommends that:

- the cost of raising equity be set at 7.6% of the incremental amount of equity to be raised; and

- the cost of raising debt be set at least equal to 15.5bppa of the amount of debt to be raised.

BBI endorses these recommendations to the ERA.

We would be pleased to discuss and elaborate on any aspect of our submission. Please contact Adriaan van Jaarsveldt, GM Regulation on 02 9229 1956 or adriaan.vanjaarsveldt@babcockbrown.com

Yours faithfully

Jeff Kendrew
Chief Executive Officer
Babcock & Brown Infrastructure

Debt and equity raising costs

A report for Babcock & Brown Infrastructure

DRAFT - 2 May 2008

Dr. Tom Hird
Prof. Bruce Grundy

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Executive Summary

This report sets out a methodology for establishing the cost of raising debt and equity.

We propose a significant departure from the past regulatory precedent for setting the cost of raising debt and equity. Specifically, we recommend that:

- the cost of raising equity be set at 7.6% of the amount of equity to be raised (compared, for example, with 3.0% most recently adopted by the Australian Energy Regulator (AER) in its final revenue determination for SP AusNet on 31 January 2008); and

- the cost of raising debt be set at a minimum of 15.5bppa of the amount of debt to be raised (compared to 12.5bppa adopted by the ERA in its draft decision for WestNet Rail).

The basis for this recommendation is a comprehensive survey of the empirical literature and the inclusion of an omitted cost of raising capital – namely indirect capital raising costs (or 'underpricing').

Specifically, regulators' estimates of capital raising costs have only captured direct costs of raising equity and debt (such as underwriting fees to ensure that the underwriter will buy any under-subscribed issue). However the finance literature is clear: indirect costs of raising capital (such as underpricing the issue to ensure it is fully subscribed) is an important cost of raising capital and is no different in an economic sense to paying an underwriter to do the same thing.

In fact, underwriting fees and underpricing costs are clearly substitutes and inversely related (ie, the greater the underpricing the smaller the underwriting fee demanded by an underwriter to take on the risk of under-subscription). Correcting for these omissions leads to the above recommendations.

1. Direct and indirect costs

1. Australian regulators have accepted the need to compensate businesses for the cost of refinancing existing debt and raising incremental equity. However, the approach taken to date has incorporated a serious flaw that has led to an underestimate of the cost of raising capital. Specifically, regulators have only recognised transaction costs associated with a direct payment to a third party. They have failed to recognise the, often higher, costs associated with underpricing the issue in order to ensure its success.

2. As noted by Saunders, Palia, and Kim [1] when discussing the transaction costs of raising capital.

   "*These transaction costs can be broken into two broad categories, "direct costs" to the issuer (or the gross fees charged by an investment or commercial bank), and "indirect costs" to the issuer (any underpricing that might have occurred on the first day of issue).*" (Page 2)

3. Both direct and indirect capital raising costs are identical economic costs. The only difference between them is that the first involves a direct payment to a third party (eg, the underwriter) while the second involves an indirect payment to a third party in the form of underpricing (in this case to the provider of capital).

4. The equivalence of these costs can be easily demonstrated. Let us start by examining underwriting fees. These are a direct cost of raising capital and involve the payment to a third party (generally an investment bank) in return for a guarantee from that third party that they will buy any under-subscribed debt/equity at the agreed price.

5. For example, a company may need to raise $100m in equity. It must then decide the price at which it will issue that equity.[2] However, there is no guarantee that the issue will be fully subscribed (raise the whole $100m) at that price. The company can purchase this guarantee from an investment bank. For example, an investment bank may guarantee that it will supply any shortfall in capital for a fee. This fee is known as an underwriting fee and is often expressed as a percentage of the total capital raising. The underwriting fee compensates the investment bank for the risk that it will end up buying shares at a price that nobody else wants to pay plus the direct costs it incurs in marketing those shares to investors.

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[1] Saunders, Anthony , Palia, Darius and Kim, Dongcheol, "The Long-Run Behavior of Debt and Equity Underwriting Spreads" (January 2003). NYU, Stern School of Business, Finance Working Paper No. FIN-03-004.

[2] And the process through which it will raise the equity (eg, such as a 'book build' auction process).

6. Clearly, the magnitude of the underwriting fee will depend on the price that is set for the equity. The lower the price set for the equity the lower will be the underwriting fee the company has to pay. In the extreme, if the business sets a low enough price for the equity it would not need to pay any underwriting fee as, at a low enough price, there would be no risk to the investment bank of under-subscription (and a probable profit to the investment bank of getting hold of any under-subscribed shares) and little or no need to market the shares.

7. Put simply, there are two ways to guarantee that a capital raising is fully subscribed:

   - direct payments to an investment bank to underwrite the issue; and
   - under-pricing of the issue.

8. Underwriting fees can be thought of as paying an investment bank to guarantee the success of an issue while under-pricing can be thought of as paying new capital subscribers (giving them a discount) to ensure the success of the issue.

9. Both involve identical costs to existing shareholders. Existing shareholders would need to expect to recover both types of costs in order to justify raising new capital. That is, the returns from investments made from the new capital would have to be high enough to recover both sets of costs.

10. It is an empirical fact, consistent with finance theory, that capital raisings in the market use both methods simultaneously. That is, the optimal capital raising techniques involve elements of both under-writing and under-pricing.

11. As a matter of empirical observation, the magnitude of under-pricing relative to underwriting costs depends on whether equity or debt is being raised and on whether equity is being raised in an initial public float or incrementally in new equity issues (seasoned equity offerings or 'SEOs'). Relativities between direct and indirect costs of capital raising are summarised by Saunders, Palia, and Kim[3]:

    "Over the 30-year period, we find average IPO [underwriting] *spreads of 7.06%, with average underpricing on day of issue of 31.37%. Thus the long-term average ratio of direct to indirect costs for IPO issuers has been of the order of 25%. For SEOs we find average underwriting spreads of 5.01%, compared to average underpricing of 2.63% (a ratio of direct to indirect costs of 190%). This supports the widely held view that the direct costs of issuance are higher for SEOs than are the indirect costs. For corporate debt, we find average spreads*

[3] It should be noted that the database used byf Saunders, Palia, and Kim does not include utilities.

of 1.15%. Given the difficulty of generating one-day returns for a sufficient number of debt IPOs, we did not directly calculate one-day returns. Nevertheless, for a very small sample of 50 firms, Datta, Datta, and Patel (1997) estimate first day returns on corporate debt to be close to zero (0.15%)."

12. Jiao and Chemmanur summarise the empirical literature on SEOs as follows. [4]

"The discounting and underpricing of Seasoned Equity offerings (SEOs) have been extensively documented by the empirical literature (see, e.g., Corwin (2003); or Chemmanur, He, and Hu (2005)). The SEO discount is defined as the difference between the issuing firm's closing market price on the last trading day prior to the offer day and its SEO offer price; SEO underpricing, on the other hand, is defined as the difference between the issuing firm's SEO offer price and its closing price on the first trading day after the SEO is priced (both are usually expressed as a percentage of the offer price). Altinkilic and Hansen (2003) report that, in the 1990s the average SEO discount was 3.2%, which often exceeds half the underwriting syndicate's fee, and the aggregate discounts of SEOs in this period amounted to $2.6 billion. Chemmanur, He, and Hu (2005) document an average 4% underpricing for SEOs in their sample period from 1999 to 2001."

[4] Jiao, Yawen and Chemmanur, Thomas J., "Institutional Trading, Information Production, and the SEO Discount: a Model of Seasoned Equity Offerings" (March 2007). EFA 2007 Ljubljana Meetings Paper Available at SSRN: http://ssrn.com/abstract=891193.

2. Regulatory precedent only captures direct costs

13. The Allen Consulting Group's (ACG) report to the ACCC in 2004[5] has formed the basis of ACCC and AER decisions to date and has heavily influenced other regulators. However, ACG's report deals only with the direct costs of raising debt and equity. On the other hand, the literature relied on in the development of ACG's report discusses and provides evidence for both direct and indirect costs. We set out below some extracts from the literature relied on by ACG, which discusses the indirect cost of capital raising.

14. Lee, Lochead and Ritter (1996)[6] is heavily referenced in the ACG report. For example, ACG state:

> *"In 1996 a comprehensive review of the cost of raising capital in the US was undertaken by Lee, Lochhead, Ritter and Zhou, and was published in The Journal of Financial Research. "Gross spread" (GS) was defined as the "commissions paid to investment bankers when securities are issued" and "other direct costs" or "expenses" (E) were said to include the "legal, auditing, and printing costs associated with putting together a prospectus." Total Direct Cost (TDC) was the sum of gross spread and expenses. The results for IPOs, expressed as a percentage of the gross proceeds, are summarised in Table 3.1 below."*
>
> *"In the table, the average Total Cost of 11% is weighted by the fact that the average size of IPO was only $24.4 million. For IPOs in the USD200–499.99 million category, for example, the average Total Cost was 6.53%. On the basis of this evidence, it was concluded that "substantial economies of scale exist in both the gross spreads and other expenses." It was also concluded, like Bhagat and Frost had previously, that "spreads and direct costs are lower for utilities than for non–utilities", possibly due to their "relative non complexity."*

15. This quote summarises Lee, Lochead and Ritter's (1996) results as they relate to "Total **Direct** Costs" of capital raising. However, Lee, Lochead and Ritter also report underpricing. For example, Lee Lochead and Ritter state:

> *"In table 4 we report not only the direct costs for IPOs but also the indirect costs of short run under-pricing. Inspection of the table reveals that, consistent with previous findings, IPOs are underpriced on average. With average direct costs of 11.0 percent and average initial returns of 12.0 percent, a typical issuer with an offer price of $10.00 receives net proceeds of $8.90 on a share that trades at*

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5 Allen Consulting Group, 2004, *Debt and Equity Raising Transaction Costs*

6 I.Lee, S. Lochhead, J. Ritter and Q. Zhao (Spring 1996), "The costs of raising capital", The Journal of Financial Research, Vol. XIX, No. 1, pp. 59–74.

$11.20. Taking the difference between the market price and the amount realized of $8.90, the total direct and indirect costs amount to $2.30, which is 20.5% of the market value of $11.20." (pp. 67-68)

16. The above provides a good illustration of how the total costs of raising capital should be estimated (and how it is estimated in the finance literature).

17. ACG also reference a paper by Altinkilic and Hansen, published in 2000, regarding the estimation of the costs of raising capital for seasoned equity offers (SEOs). Atlinkilic and Hansen have also authored a more recent (2003) paper which examines the cost of underpricing in SEOs – entitled *Discounting and Underpricing in Seasoned Equity Offers*.[7] In that paper Atlinkilic and Hansen conclude:

> *"The discounting of seasoned equity offers has become commonplace and is of a larger order of magnitude in the 1990s than in earlier periods. Discounting is the logarithm of the ratio of the closing market price the day before the offer to the offer price. In the 1990s it averaged 3.2%, which often exceeds half the underwriting syndicate's fee and aggregates to over $2.6 billion."* (Page 286)
>
> *"Discounting of the offer price in firm-underwritten seasoned equity offers is economically large and common, remaining stable around 3.0% throughout the 1990s."* (Page 320)

18. ACG also reference direct cost estimates from Bhagat and Frost (1986). Bhagat and Frost also examined indirect costs and found that, during the 1970s, underpricing was insignificant and even slightly negative. However, this is not a surprise given the findings of Atlinkilic and Hansen (quoted above) that the role of under-pricing has become significant only since the 1990s. [8]

19. ACG also reference and quote from a paper by Chen and Wu.[9]

> *"Chen and Wu found that in Hong Kong, the average cost of SEO issues was 2.85%, which is significantly below the US figure, irrespective of the size of offer.... The UK results for SEOs (all rights issues), with an average 2.8% gross underwriting fee, demonstrate a similarity with the Hong Kong findings.* (Page 10, ACG 2004.)

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7 Altinkilic, O. and Hansen, R., Journal of Financial Economics, 2003, vol. 69, issue 2, pages 285-323.

8 Bhagat and Frost, "Issueing Costs to Existing Shareholders in Competitive and negotiated Underwritten Public Utility Equity Offerings", *Journal of Financial Economics*, Vol 15, (1986).

9 Chen, K.C. and Lifan Wu, (July–December 2002), "Cost of raising capital – initial public offerings (IPOs) and seasoned equity offerings (SEOs) – in Hong Kong", *Journal of Financial Management and Analysis*, Vol. 15, Issue 2, pp. 27–37.

20. However, in the first page of their paper (page 27 of the journal) Chen and Wu state:

> *"...the costs of equity offerings consist of both direct costs and indirect costs."*
>
> *"...indirect costs include the underpricing of the new issues and the foregone time that the senior management spent working on the IPO rather than managing the business. The former can be measured by the difference between the offering price and the first day closing price divided by the offering price whereas the latter certainly carries a cost even if it cannot be easily measured."*

21. On the next page they go on to say:

> *"In this study, we will investigate the magnitude of issuing costs, both direct and indirect costs, associated with IPOs and SEOs in Hong Kong..."*

22. Critically, Chen and Wu find higher indirect costs than direct costs for SEO's. In the first full paragraph on page 2 of their paper in the sentence after they report their 2.85% estimate for direct costs they state:

> *"The average indirect cost, measured by post-issue on-day initial returns, is 15.14 per cent for IPOs and 6.26% for SEOs, respectively."*

23. Chen and Wu go on to conclude that the reason the measured direct costs were so low in Hong Kong was because they were balanced by higher indirect costs. That is, underpricing was being used as a substitute to underwriting (as theory and common sense suggests is the case). On page 31 they state:

> *"The finding in Table 2 showing that HK SEOs experienced lower direct costs but higher indirect costs than their US counterparts may indirectly explain why the underwriters in HK would have accepted lower underwriting commission."*

24. Rather than estimating a total cost of raising equity through SEOs of 2.85% Chen and Wu estimated a total cost of 9.12%. This result is clearly reported in Table 2 of their report which reports 'Direct Costs', 'Indirect Costs' and 'Total Costs' (being the sum of the other two) side-by-side.

3. Debt raising costs

25. There is a strong regulatory precedent for allowing 12.5bppa (12.5 basis points per annum) in direct transaction costs for debt raising. This precedent has been followed by the ERA in its draft decision for WestNet.

26. This approach involves starting with a market estimate of gross underwriting fees (which is assumed to be a constant proportion of the issue size) and then adding other smaller costs to this amount (costs that are assumed to be invariant with the issue size). Adopting this approach the AER finds that gross underwriting fees account for 6bppa for five year debt issues (see its 31 January 2008 SP AusNet decision). The AER then adds around 2bppa to this to cover other direct costs (such as legal fees, etc).

27. Based on the AER methodology the ERA may reach the conclusion that its estimate of 12.5bppa is conservative (ie, favourable to WestNet). In our opinion such a conclusion would not be justified.

28. The AER derives its sole estimate of underwriting fees from Bloomberg estimates of underwriting fees for Australian companies issuing debt privately in international markets. [10] This is despite the fact that the AER, like the ERA, uses observed interest rates on publicly issued debt (with its higher information disclosure requirements) to determine the cost of debt for regulated businesses.

29. We have two problems with this approach. First, little effort is made to justify the reliance on this subset of privately issued debt. Observed underwriting costs across a range of debt issuance activities are materially higher. As noted above, Saunders, Palia, and Kim estimate average underwriting fees of 1.15% (or 29bppa amortised over five years at an 8% discount rate) based on the average underwriting fees in the US over the period 1970 to 2000. It is true that Saunders, Palia, and Kim find that underwriting fees have been falling over this period and in 2000 were 56bp on average. However, this still equates to 14bppa over five years (at an 8% discount rate) – more than double the AER's 6bppa estimate.

[10] Consistent with the original advice of ACG (2004) who stated: "*We found two objective sources of data for fees applied by investment banks in bond issues made by Australian companies, including regulated utilities: Bloomberg, and the benchmarking survey undertaken by Osborne Associates. The Bloomberg data are only available for Australian companies accessing the Euro–dollar, Japanese Yen and US* ***private placement markets*** *or for Australian MTN issues jointly sold in Australia and these international markets. These data are limited to the gross underwriting fees charged. The Osborne benchmarking data are for domestic bond issues, and are derived from an on–line survey that is contributed to on a voluntary basis by the bond issuing companies. Given the extent of international competition in bond markets and the fact that these markets should equilibrate over time, ACG considers that the Bloomberg data for international bond issues by Australian firms are a reasonable proxy for underwriting fees in the Australian bond market."* [Emphasis added.]

30. Second, there is no attempt to question whether the lower underwriting fees for this subset are offset by higher other costs – such as higher indirect costs of underpricing. Precisely this point was made previously by NECG[11]

> *"US data suggest that a premium for debt issuance equivalent to up to 50 basis points on the cost of debt may be appropriate. Debt can be issued either directly by private placement or through a public issue. The issuance costs of a direct placement are considerably lower than a public issue (as considered by the ACCC).* ***However, the interest rates paid on private placements are usually higher than those on a public issue. So there is a trade–off when issuing debt by private placement – issuance costs are lower but interest rates are higher…****Hays, Joenk and Melicher conducted an empirical study of the difference in rates between public and private debt issues and found that the yield to maturity on private placements was 0.46% higher than on similar public issues… Even if issuance costs of private placements were nil, which of course they are not, it would indicate issuance costs for private debt issues of about 0.50%."* (Emphasis added.)

31. In this quote NECG make the correct point that it is wrong to look solely at direct costs. Businesses attempt to minimise the sum of direct and indirect costs. In this case, debt issued through private placement results in higher interest rates being paid than through public issue of corporate bonds. Hays, Joenk and Melicher estimate this to result in 46bppa higher costs. It is a form of cherry-picking to set the cost of debt based on observed yields for corporate bonds that have gone through a public issue but to set the cost of raising debt based on private placements that must be underpriced relative to corporate debt.

32. ACG addressed this quote from NECG in their 2004 paper but, in our opinion, did not do so adequately. ACG argued that the issues raised by NECG were not relevant because:

> *"It is difficult to see why a single US empirical study by Hays, Joenk and Melicher published in 1979 would be relied upon as evidence."*[12] *In the last chapter we reviewed a number of international studies of debt issuance costs. A comprehensive recent study conducted by Livingston and Zhou was quite clear in its conclusion that:*
>
> '*Underwriter fees for Rule 144A [private placement] issues are not significantly different from fees for publicly issued bonds*.'"

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11 NECG (November, 2003) *2003 Review of the Draft Statement of Principles for the Regulation of Transmission Revenues*, Submission to the ACCC for the electricity TNSPs from Network Economics Consulting Group. Pages 64 to 65. Quoted in ACG's 2004 report.

12 Page 19 of the ACG report.

33. However, the main findings of Hays, Joenk and Melicher (1979) were confirmed in Livingston and Zhou (2002). Specifically, while it is true that Livingston and Zhou (2002) find underwriter fees for private placement are not significantly different to public placement, they also agree with Hays, Joenk and Melicher (1979) that interest rates paid on private placement are significantly higher.

34. Livingston and Zhou report that the average debt margin (spread to Government bonds) at the time that private placement bonds are issued is over 200bppa higher than for publicly issued bonds.[13] Livingston and Zhou note that this is likely explained by a greater proportion of riskier bonds being privately placed than publicly issued. However, even after accounting for this a significant difference remains. Specifically for BBB rated bonds, privately placed debt has a yield to maturity at the time of issue that is, on average, 42bppa more than then publicly issued bonds.[14]

35. Livingston and Zhou also perform regression analysis across their whole data set where they include dummies for, amongst other things, credit ratings and whether the debt is privately issued. On the basis of these results they conclude:

> *"...rule 144A issues [private placement] have on average a yield premium of 19 basis points over public debt, everything else equal."* (Page 19)

36. Given the inverse relationship between price of issue and yield to maturity, higher yield to maturity at the time of issue is just another way of saying that bonds placed privately get sold at a lower price than bonds issued publicly. **In other words, the indirect costs of private placement are higher than for public placement.**

37. It would be internally inconsistent for regulators to base their cost of debt calculations on:

    - interest rates paid on publicly issued debt (capturing the upside of public issuance in lower interest rates); but

    - issuance costs for privately placed debt that excludes the higher indirect costs of private placement (ignoring the downside associated with private issuance – namely higher interest rates).

38. If private placement markets are to be used to set the cost of debt then internal consistency demands that they be used to set all the costs of debt – debt

[13] See Table 1 on page 12.

[14] See Table II, page 15, of M. Livingston and L Zhou (2002), "The impact of rule 144A debt offerings upon bond yields and underwriter fees," Financial Management, Vol. 31, Iss. 4, pp.5–28.

issuance *and* interest rates. Based on the work of Livingston and Zhou this would be associated with at least 19bppa (and up to 42bppa) higher interest rate. This is at least three (and up to seven) times higher than the AER's 6bppa estimate of underwriting costs in the private placement market (as used in its SP AusNet decision).

39. Based solely on this evidence, the appropriate debt raising costs, based on private placement markets for BBB rated debt is at least 25bppa (being the sum of 6bppa for underwriting of private placement debt and19bppa to reflect the lower price received for private placement debt relative to public debt).

40. However, even this is an underestimate as the 19bppa figure above only reflects the *difference* between indirect costs of private placement and public placement. It does not capture the indirect costs associated with issuing public debt itself. This form of indirect cost is difficult to measure because it requires not only knowing what price debt was issued at (all that is required in the Livingston and Zhou analysis) but also what price it trades at immediately after it is issued.

41. This information is not easy to obtain because corporate bonds are not exchange traded so it is difficult to measure the change in price of these bonds on the day they first trade. For example, Saunders, Palia, and Kim state:

> "*For corporate debt, we find average* [underwriting] *spreads of 1.15%. Given the difficulty of generating one-day returns for a sufficient number of debt IPOs, we did not directly calculate one-day returns. Nevertheless, for a very small sample of 50 firms, Datta, Datta, and Patel (1997) estimate first day returns on corporate debt to be close to zero (0.15%)"* (Page 5.)

42. Saunders, Palia, and Kim go on to state that the general assumption in the literature is that one-day returns on corporate debt issues are 'extremely small'. However, more recently underpricing of corporate bond issues has been examined in an article entitled "*Underpricing of Corporate Bonds*" by Cai, Helwege, Warga (2006). [15]

> *"We find that underpricing occurs with both IPOs and seasoned offering and is highest among riskier, unknown firms."* (Abstract)

43. They find that average underpricing of corporate bonds (not issued in an IPO[16]) that are not investment grade is 14.9bp.[17] By contrast the average for bonds

[15] Cai, Nianyun, Helwege, Jean and Warga, Arthur, "Underpricing in the Corporate Bond Market" . Review of Financial Studies, Forthcoming Available at SSRN: http://ssrn.com/abstract=1004072

[16] Debt issued in an IPO has a significantly higher underpricing cost at an average o .37bp.

[17] See table III on at the end of the document.

issues that are investment grade is -0.01bp. However, the average for investment grade is skewed by the high number of highly rated bonds in the sample (1,085 bonds are rated at A or better while only 861 are rated at BBB).

44. We note that BBB rated bonds are on edge of investment grade and, based on the comparison between investment and non-investment grade, one can reasonably assume that BBB rated bonds will have higher underpricing than the average for investment grade. Cai, Helwege, Warga do not separately report the figure for BBB rated bonds, however, one can reasonably assume that it is between -0.01 and 14.9bp. This is broadly consistent with the findings of Datta, Datta, and Patel (referred to by Saunders et al) of first day returns on corporate debt averaging around 15bp.

3.1. Conclusion: debt raising costs

45. Regulators must take account of indirect costs when establishing the cost of raising debt. Raising debt through private placement has higher indirect costs than raising debt through public debt issuance. The costs of raising debt on the private placement market are at least 25bppa based on:

- the AER's 6bppa estimate of underwriting costs in the private placement market; plus
- Livingston and Zhou's lowest estimate of 19bppa higher cost of underpricing associated with private placement relative to public debt issue.

46. This 25bppa estimate does not include any compensation for other direct costs (eg, internal and external legal costs, road shows etc). Neither does it include the costs of underpricing associated with public debt issue (ie, it only includes the cost of underpricing in private placement *relative* to public issue). Finally, the 19bppa figure is based on the results of Livingston and Zhou's regression analysis across all debt categories – while 42bppa is the estimate if we rely solely on Livingston and Zhou's sample of BBB rated debt

47. If private placement markets are to be used to set the cost of raising debt then at least 25bppa of compensation is required. By contrast, if public debt issues are used to benchmark capital raising costs then we can expect the cost of underpricing to be lower. Based on the work of *Datta, Datta, and Patel (1997)* and Cai, Helwege and Warga (2006). [18] Underpricing of BBB+ rated public debt issues is likely to be between 0.00% and 0.15% (or 0 and 4bppa amortised over 5 years at a discount rate of 8%).

[18] Cai, Nianyun, Helwege, Jean and Warga, Arthur, "Underpricing in the Corporate Bond Market" . Review of Financial Studies, Forthcoming Available at SSRN: http://ssrn.com/abstract=1004072

48. However, based on the work of Saunders, Palia, and Kim (quoted at paragraph 41 above) the average direct underwriting costs of debt issues over their entire sample was 1.15% or around 29bppa amortised over 5 years at 8%. In the same work Saunders, Palia, and Kim find average underwriting spreads were 0.56% in 2000 (or 14bppa amortised over 5 years at 8%) – where 2000 is the most recent year in their study. This does not include any compensation for other direct costs (eg. prospectus lodgement, etc) or the costs of underpricing.

49. The lower of these figures (14bppa) is still above the standard regulatory precedent of 12.5bppa for direct debt raising costs (even though it does not include all direct costs). Consistent with AER estimates, a further 2bppa can be added to this to reflect other direct costs (such as legal costs). This arrives at an estimate of 16bppa for direct costs. If we also add 3bppa to reflect the costs of underpricing in public debt issues we arrive at an estimate of 19bppa. This is still less than the estimate of the costs of raising debt through private placement (at least 25bppa).

50. The most conservative approach would be to maintain regulatory precedent in setting direct costs at 12.5bppa plus an 3bppa allowance for indirect costs. (Despite the evidence described above that direct costs alone account for 16bppa.) This gives a total cost of raising debt of 15.5bppa.

4. Equity raising costs

51. Precisely the same issues arise in relation to estimating the costs of raising equity. We will not repeat the same arguments here except to reiterate that any attempt to measure equity raising costs must capture both direct and indirect costs of equity raising.

52. The AER has previously set the costs of equity raising at 3% based on the advice of the ACG. The ACG advice is based on estimates of the direct costs associated with a small sample of firms who ACG considered comparable with regulated utilities.

> *"ACG selected five companies from the group, three of which are infrastructure providers (Australian Infrastructure Fund, Macquarie Airports and Macquarie Infrastructure Fund), and two property trusts that exhibit stable cash flow characteristics (Bunnings Warehouse Property Trust and Macquarie Office Trust). The median (average) SEO transaction cost for this group was 2.97% (2.92%). This indicates that an SEO cost of 3% may be an appropriate benchmark."* (Page 65 of ACG's 2004 report.)

53. However, ACG does not examine underpricing associated with this sample. This makes this source of information less than fully informative of the total costs of

SEOs. Underpricing of SEO issues is an economically important cost. The results from the literature already described above are summarised here:

- Chemmanur, He and Hu (2005)
  - average underwriting costs - not reported.
  - average underpricing costs = 3.50%[19]
- Saunders, Palia, and Kim (2003):
  - average underwriting costs = 5.01%
  - average underpricing costs = 2.63%
- Altinkilic and Hansen (2003):
  - Average underwriting costs – not directly reported but states that underpricing costs "*often exceeds half the underwriting syndicate's fee"*
  - average underpricing costs = 3.2% "*which often exceeds half the underwriting syndicate's fee"*
- Chen and Wu (2002)
  - average direct costs = 2.85%
  - average underpricing costs = 6.26%
- Lee Lochead and Ritter (1996)
  - average direct costs = 7.1% on average (4.9% for utilities);
  - average underpricing costs = not reported for SEOs but 12.0% for IPOs.

54. We also note that the use of underpricing in capital raisings has been increasing over time and especially since the early 1990's (see Altinkilic and Hansen (2003)). This has, as theory predicts, been associated with falling underwriting fees. As a result, it would be inappropriate to take estimates of under-pricing costs from earlier periods and combine it with more recent estimates of under-writing cost.

[19] See Table 2 page 38.

55. Based on the above studies, total underwriting and underpricing costs of raising capital through SEO's is in the range of 7.6% (Saunders, Palia and Kim) and 9.1% (Chen and Wu) – with Altinkilic and Hansen's estimate seeming to fall either within or above this range. The range for underpricing costs is from 2.63% to 6.26% with a simple average of 3.9%.

56. In addition to these studies described earlier in our paper there is a more recent 2007 paper by Bortolotti, Megginson and Smart[20] which examines underwriting and underpricing costs in both the US and Europe. The authors note the trend for increasing underpricing costs and the interrelationship of this with underwriting costs (noting that prior to the 1990's underpricing was much less common in SEOs). They also note that the US tends to have the lowest underpricing costs in the world. Their focus is on the difference between accelerated transactions (ATs) and other types of issues – explaining the reference to AT's in the below quote.

> *"For the whole sample, we report an average underpricing of slightly less than 3 percent for ATs, while it is 4.8 percent for non-AT transactions. Thus accelerated deals leave less money on the table than other types of SEO. As Table 3 shows, as compared with non-ATs, average underpricing is quite similar when mixed or pure ATs are considered, while some interesting regional differences appear. As Tables IV-VI show, average undepricing in the U.S. is markedly lower than any other region of the world, and especially so as far as non-AT offers are concerned. The U.S. also reveals the lowest difference in underpricing between ATs and non-ATs (78 basis points) while ATs become particularly appealing in comparison to fully marketed offering in Europe, boasting a difference of 4.8 and 4.3 percentage points for mixed and pure ATs, respectively."* (Page 24)

57. The tables referred to in the above quote have the following findings based on SEOs

Table 1: Bortolotti, Megginson and Smart results

	Mean underpricing	Mean underwriting	Total
Global	4.48%	4.58	9.06%
US	2.54%	2.53%	5.07%
Europe	7.32%	7.07%	14.39%
Rest of the world	6.48%	6.51%	12.99%

[20] Bortolotti, Bernardo, Smart, Scott B. and Megginson, William L., "The Rise of Accelerated Seasoned Equity Underwritings" (March 14, 2006). AFA 2007 Chicago Meetings Paper Available at SSRN: http://ssrn.com/abstract=890640

58. On this basis, the current 3% estimate by the AER is unsustainable. In terms of its derivation this measure only captures underwriting costs – not underpricing cost. As a consequence, it is methodologically flawed. Adding even the lowest estimate of average underpricing (2.54%) would raise the estimated cost to 5.54%.

59. However, performing such an adjustment would be problematic as it would effectively take underwriting costs from one sample (a small sample of Australian firms) and add underpricing from another sample (a large and comprehensive sample of US SEOs gathered by Saunders, Palai and Kim).

60. Another option would be to adopt an estimate of 5.07% based on the US estimate of Bortolotti, Megginson and Smart. This is the lowest estimate of the sum of underwriting and underpricing that we are aware of in the literature covering the post 1990 time period. However, this approach would be problematic on the basis that the same authors clearly find the US capital market is the lowest cost place to raise equity. Arguably the authors' finding of a total cost of 12.99% in the 'rest of the world' is most relevant for Australia.

61. For the purpose of this report we recommend adopting an estimate of 7.6%. This is approximately the same result as adding Bortolotti, Megginson and Smart's estimate of average global underpricing (4.5%) to the AER's current estimate of direct costs (3%). It is also consistent with the 7.6% estimate of total costs based on the work of Saunders, Palai and Kim (2003). It is also consistent with Lee Lochead and Ritter (1996) estimate of direct SEO costs for utilities (4.9%) plus the lowest available estimate for underpricing in SEOs (2.5% based on US estimates by Bortolotti *et. al*.).

62. We also note that in very large capital raisings relative to the size of the underlying business the cost of under-pricing tends to rise above the average. This reflects the fact that the larger the relative size of the capital raising the more likely the firms overall success will depend on the success of the project for which capital is being raised. This increases the information costs associated with assessing the value of the new capital being issued and therefore increases the costs of raising that capital. This is consistent with the observation above that under-pricing for IPO's averages around 31%.