# Draft Determination

# 2008 Weighted Average Cost of Capital for the Freight (WestNet Rail) and Urban (Public Transport Authority) Railway Networks

4 April 2008

Economic Regulation Authority
WESTERN AUSTRALIA

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For further information, contact:

Economic Regulation Authority
Perth, Western Australia
Phone: (08) 9213 1900

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# 1 DRAFT DETERMINATION

1. Clause 3 of schedule 4 of the *Railways (Access) Code 2000* (**"Code"**) requires the Economic Regulation Authority (**"Authority"**) to make an annual determination of a weighted average cost of capital (**"WACC"**) to be applied in determination of floor and ceiling prices (**"WACC determination"**) for each of:

   - the railway infrastructure that forms the railway network described in other items of Schedule 1 of the Access Code and comprising most of the remainder of the railway network in the south west of Western Australia (hereafter referred to as the "freight network"); and
   - the railway infrastructure that forms the urban railway network described in items 49, 50 and 51 of Schedule 1 of the Code (hereafter referred to as the "urban network").

2. The freight network is operated by WestNet Rail, a subsidiary of Babcock and Brown Infrastructure, and the urban network is operated by the Public Transport Authority, an agency of the Western Australian Government.

3. Clause 3 of schedule 4 of the Code further requires that in every fifth year subsequent to 2003, the Authority undertake a public consultation program prior to determining the WACC values for that year. Consequently, the Authority is required to undertake a public consultation program prior to making its WACC determination by 30 June 2008.

4. The process followed by the Authority in undertaking consultation and making this draft determination is as follows.

   - The Authority commissioned a study by the Allen Consulting Group that provided recommendations for determination of the WACC for each of the urban and freight networks.[1]
   - On 30 October 2007, the Authority published the report of the Allen Consulting Group and invited submissions from interested parties, with a closing date for submissions of 14 December 2007.
   - Following consideration of submissions received on the Allen Consulting Group's report, the Authority has prepared this draft determination.

5. After consideration of submissions on this draft determination, and by 30 June 2008, the Authority will publish a final determination.

6. The draft determination of the Authority is that the real pre-tax WACC values to be applied in determining floor and ceiling costs in 2008 are:

   - 9.30 per cent for the freight network;
   - 7.17 per cent for the urban network.

7. The Authority calculated these values by the method of the Officer CAPM and WACC, applying values of parameters as indicated in Table 1.

[1] Allen Consulting Group, October 2007, Railways (Access) Code 2000: Weighted Average Cost of Capital, report to the Economic Regulation Authority (received by the Authority on 17 October 2007).

8. The WACC values have been calculated on the basis of a nominal risk free rate determined as at 29 February 2008 and estimates of debt margins determined in December 2007. The Authority will update the values of the nominal risk free rate and debt margins at the time of its final determination.

**Table 1 WACC values for the 2008 WACC draft determination**

| CAPM or WACC parameter | Freight network<br>2008 value | Urban network<br>2008 value |
|---|---|---|
| Nominal risk free rate of return (%) | 6.30 | 6.30 |
| Inflation rate (%) | 2.5 | 2.5 |
| Real risk free rate of return (%) | 3.71 | 3.71 |
| Debt proportion (%) | 35 | 35 |
| Equity proportion (%) | 65 | 65 |
| Market risk premium | 6.0 | 6.0 |
| Asset beta | 0.60 | 0.30 |
| Equity beta | 0.92 | 0.46 |
| Debt margin (%) | 2.10 | 1.90 |
| Debt issuance costs (%) | 0.125 | 0.125 |
| Taxation rate (%) | 30 | 30 |
| Franking credit value (gamma) | 0.5 | 0.5 |
| Nominal pre-tax cost of debt | 8.53 | 8.33 |
| Nominal post-tax cost of equity | 11.84 | 9.07 |
| Real post-tax cost of equity | 9.11 | 6.41 |
| Nominal pre-tax cost of equity | 13.93 | 10.67 |
| Real pre-tax cost of equity | 11.15 | 7.97 |
| Nominal pre-tax ("Officer") WACC | 12.04 | 9.85 |
| **Real pre-tax ("Officer") WACC** | **9.30** | **7.17** |
| Nominal post-tax ("vanilla") WACC | 10.68 | 8.81 |
| Real post-tax ("vanilla") WACC | 7.98 | 6.15 |

# 2 REASONS FOR THE DRAFT DETERMINATION

## 2.1 Background

### *2.1.1 Requirements of the Code*

9. The requirement on the Authority to determine WACC values is established by section 3 of schedule 4 of the Code:

> 3. Regulator to determine weighted average cost of capital
>
> (1) For the purposes of clause 2(4)(b), the Regulator is to —
>
> (a) determine, as at 30 June in each year, the weighted average cost of capital for each of —
>
> (i) the railway infrastructure associated with the urban network described in items 49, 50 and 51 in Schedule 1; and
>
> (ii) the railway infrastructure associated with the railways network described in the other items in that Schedule;
>
> and
>
> (b) publish notice of each such determination in the Gazette as soon as is practicable after it is made.
>
> (2) Subclauses (3), (4) and (5) apply to the determinations under subclause (1) that are required to be made as at 30 June —
>
> (a) in the year 2003; and
>
> (b) in every 5th year after that year.
>
> (3) Before the Regulator makes a determination mentioned in subclause (2) he or she is to —
>
> (a) cause a notice describing the requirements of subclause (1) to be published in an issue of —
>
> (i) a daily newspaper circulating throughout the Commonwealth; and
>
> (ii) a daily newspaper circulating throughout the State;
>
> and
>
> (b) include in the notice the following information —
>
> (i) a statement that written submissions relating to the determination may be made to the Regulator by any person within a specified period;
>
> (ii) the address to which the submissions may be delivered or posted.
>
> (4) The period specified under subclause (3)(b)(i) is to be not less than 30 days after both of the notices under subclause (3)(a) have been published.
>
> (5) In making a determination under this clause the Regulator must have regard to any submission relating to the determination made in accordance with the notice.

10. Clause 3 of schedule 4 of the Code further requires that in every fifth year subsequent to 2003, the Authority undertake a public consultation program prior to determining the WACC values for that year. Consequently, the Authority is required to undertake a public consultation program prior to making its WACC determination for 2008.

### 2.1.2 Report of the Allen Consulting Group

11. As part of the process of this WACC determination, the Authority commissioned a study by the Allen Consulting Group that provided recommendations for determination of the 2008 WACC for each of the freight and urban networks.[2]

12. The Allen Consulting Group recommended that the Authority continue to apply the same method as the Authority has done previously in its WACC determinations, with the exception of the methods applied for determination of the inflation rate and the real risk-free rate of return.

- The Allen Consulting Group recommended that the Authority continue with estimation of WACC values by use of the capital asset pricing model (**"CAPM"**) to estimate the cost of equity.
- The Allen Consulting Group indicated that the determination of WACC values on a pre-tax or post-tax basis is ultimately a matter for decision by the Authority, but stated that there are peculiarities of the Western Australian rail access regime that would favour continued use of pre-tax WACC values, consistent with past determinations of the Authority.
- The Allen Consulting Group recommended that the Authority apply a different method for determination of the inflation rate and real risk-free rate of return than in previous WACC determinations. Previously, the Authority has estimated the real risk free rate of return from implied rates of return on long-term inflation-indexed government bonds and estimated a rate of inflation from the difference in implied returns on the inflation indexed and nominal government bonds. The Allen Consulting Group recommended that the Authority make an assumption about the rate of inflation and determine the real-risk free rate of return by inflation adjustment of implied returns on nominal government bonds.

The Allen Consulting Group's recommended values of individual parameters of the WACC calculation and the resultant WACC values are indicated in Table 2 together with parameter values determined by the former Rail Access Regulator in 2003 (and maintained in subsequent WACC determinations by the former Rail Access Regulator and the Authority, with the exception of revisions to values of the risk free rate and rate of inflation).

[2] Allen Consulting Group, October 2007, Railways (Access) Code 2000: Weighted Average Cost of Capital, report to the Economic Regulation Authority (received by the Authority on 17 October 2007).

**Table 2 Recommendations of the Allen Consulting Group (October 2007) for the 2008 WACC determination**

| CAPM or WACC parameter | Freight network | | Urban network | |
|---|---|---|---|---|
| | Rail Access Regulator 2003 | Allen Consulting Group 2007 | Rail Access Regulator 2003 | Allen Consulting Group 2007 |
| Nominal risk free rate of return (%) | 4.80 | **5.99** | 4.80 | **5.99** |
| Inflation rate (%) | 2.01 | **3.00** | 2.01 | **3.00** |
| Real risk free rate of return (%) | 2.74 | **2.90** | 2.74 | **2.90** |
| Debt proportion (%) | 55 | **35** | 55 | **35** |
| Equity proportion (%) | 45 | **65** | 45 | **65** |
| Market risk premium | 6.0 | **6.0** | 6.0 | **6.0** |
| Asset beta | 0.45 | **0.60** | 0.30 | **0.25** |
| Equity beta | 1.00 | **0.92** | 0.66 | **0.38** |
| Debt margin (%) | 1.11 | **1.55** | 1.11 | **1.40** |
| Debt issuance costs (%) | 0.125 | **0.125** | 0.125 | **0.125** |
| Taxation rate (%) | 30 | **30** | 30 | **30** |
| Franking credit value (gamma) | 0.5 | **0.5** | 0.5 | **0.5** |
| Nominal pre-tax cost of debt | 6.04 | **7.67** | 6.04 | **7.52** |
| Nominal post-tax cost of equity | 10.80 | **11.53** | 8.76 | **8.30** |
| Real post-tax cost of equity | 8.62 | **8.28** | 6.62 | **5.14** |
| Nominal pre-tax cost of equity | 12.71 | **13.56** | 10.31 | **9.76** |
| Real pre-tax cost of equity | 10.49 | **10.26** | 8.13 | **6.57** |
| Nominal pre-tax ("Officer") WACC | 9.04 | **11.50** | 7.96 | **8.98** |
| **Real pre-tax ("Officer") WACC** | 6.87 | **8.25** | 5.83 | **5.80** |
| Nominal post-tax ("vanilla") WACC | 8.18 | **10.18** | 7.26 | **8.02** |
| Real post-tax ("vanilla") WACC | 6.05 | **6.97** | 5.15 | **4.88** |

### *2.1.3 Submissions on the Report from the Allen Consulting Group*

13. On 30 October 2007, the Authority published the report of the Allen Consulting Group and invited submissions from interested parties, with a closing date for submissions of 14 December 2007.

14. The Authority received submissions from four parties. The content of each of these submissions is summarised as follows.

15. The Chamber of Commerce and Industry (**"CCI"**) submits that the Authority should continue to apply the same principles and method in its WACC Determination as

the Authority has done to date. CCI further addresses two matters arising from the report of the Allen Consulting Group:

- the Authority should closely examine recommendations of the Allen Consulting Group on assumptions of financial gearing that differ from the assumptions previously adopted by the Authority; and
- the Authority should reject the recommendations of the Allen Consulting Group on assumptions of the systematic risk (beta) in favour of maintaining assumptions previously adopted by the Authority.

16. Alcoa World Alumina Australia (**"Alcoa"**) (a user of the freight network) submits that it has particular concerns with the recommendations of the Allen Consulting Group for the higher value of the asset beta than applied in previous WACC determinations and submitted that the Authority should apply a lower value.

17. The Australian Pipeline Industry Association Ltd (**"APIA"**) submits that it has an interest in the Authority's WACC determination as the determination may establish precedents for the Authority's consideration of rates of return under the National Third Party Access Code for Natural Gas Pipeline Systems.

18. On general matters relating to the WACC determination, APIA submits that the Authority should:

- give attention to a "reasonable range" of WACC values and exercise regulatory judgement to select a point in this range rather than determining a point estimate directly from theoretical models without consideration of the "reasonableness" of the outcome;
- in exercising regulatory judgement, consider the uncertainty involved in determining the WACC and adverse consequences of underestimating the rate of return; and
- exercise caution before applying outcomes of a review of the WACC for railway businesses to other industries.

19. APIA also makes submissions on particular parameters of the WACC calculation.

- APIA offers qualified support for the method recommended by the Allen Consulting Group for determination of the rate of inflation and the real risk-free rate, but submits that there are additional matters that should be taken into account such as a potential "absolute bias" in implied yields of nominal government bonds and evidence pointing to a lower assumed value of inflation than has been applied in recent regulatory decisions.
- Assumptions on the debt margin should take into account recent instability in the market for corporate bonds that has reduced the predictive power of estimates of debt margins derived from historical data.
- The Allen Consulting Group's recommended value for the market risk premium lies at the lower bound of a reasonable range of values, rather than at the upper bound as claimed.
- Many of the CAPM and WACC parameters rely on capital market data for "comparator" firms. Care should be exercised in selecting comparator firms taking into account the limited number of true comparator firms in the Australian economy and the appropriateness of using international firms as comparators.

- There are significant differences of view on appropriate beta values to apply in a regulatory determination and the Authority should consider a broader range of evidence than that provided by the Allen Consulting Group.

20. WestNet Rail (the operator of the freight network) presented a submission prepared on its behalf by Synergies Economic Consulting (**"Synergies"**). While it is not explicitly stated in the submission, it is assumed that the submission relates solely to the recommendations of the Allen Consulting Group on the WACC for the freight network. Synergies makes submissions on particular elements of the WACC calculation, as follows.

- A bias in implied yields of nominal government bonds as an indicator of the nominal risk free rate should be taken into account in determining a value of the nominal risk free rate, with the resultant assumed value being greater than the implied yield on nominal government bonds.
- A lower rate of inflation should be assumed than applied by the Allen Consulting Group.
- A lower value financial gearing (debt to assets ratio) should be assumed than the value recommended by the Allen Consulting Group (30 per cent rather than 35 per cent applied by the Allen Consulting Group).
- A substantially higher asset beta should be assumed than applied by the Allen Consulting Group (0.8 rather than 0.6 applied by the Allen Consulting Group).
- In deriving a value for the market risk premium, sole reliance should be placed on historical evidence of equity premia, which indicates that there is "only one appropriate [market risk premium] and it has value of 6.76" and there is no basis for the Allen Consulting Group's assertion that a market risk premium of 6 per cent is at the upper bound of the range of reasonable estimates.
- In deriving a value for the debt margin, sole reliance should be placed on reported yields from the Bloomberg financial data service, with the margin calculated from Bloomberg data over the 20 trading days prior to the Authority's determination.
- There should be no value assigned to dividend imputation (franking credits).
- An appropriate cost of raising equity funds is 5.6 per cent of equity funds raised.

21. The submissions from interested parties are addressed in more detail in the following sections of this draft determination.

## 2.2 WACC Method and Parameters

### *2.2.1 General Method for Determining WACC Values*

22. There are three matters of general method in estimating a WACC:

- the choice of method and financial model applied in estimation of costs of equity and debt;
- the treatment of inflation; and
- the treatment of taxation.

23. On the choice of financial model, the Authority has in previous WACC determinations under the Code applied the CAPM in estimating the cost of equity and has determined the cost of debt by adding a debt-risk premium (or "debt margin") to a risk free cost of capital to estimate a cost of debt. The Allen Consulting Group has recommended that the Authority continue to apply this method, for reason that it is uniformly applied by Australian economic regulators and is broadly accepted by regulated businesses.[3]

24. On the treatment of inflation, the Authority has in previous WACC determinations under the Code specified WACC values as real values, consistent with determining floor and ceiling prices in real terms and subsequently indexing these prices for actual inflation. This treatment of inflation is broadly consistent with the practice of the Authority in determinations on regulated prices for other infrastructure services and with the practice of other Australian economic regulators. This treatment of inflation also simplifies financial modelling and is consistent with accepted regulatory practice in Australia that shelters regulated businesses from inflation risk in regulated prices.

25. On the treatment of taxation, the Authority has in previous WACC determinations under the Code determined and applied pre-tax rates of return using the "Officer WACC" model with an assumption of the effective taxation rate of the rail businesses being equal to the statutory rate of corporate income tax. This treatment of taxation is now largely unique to the Authority, with other regulators generally applying post-tax rates of return.

26. The Allen Consulting Group stated that a post-tax rate of return is generally to be preferred in economic regulation for reason that this approach would determine regulated revenues and prices with recognition of an estimated cost of taxation that is closer to the cost of taxation that would be incurred by an efficient provider of an infrastructure service.[4] However, the Allen Consulting Group also stated that there are reasons why a pre-tax rate of return may be preferred for the current WACC determination including:

    - consistency with past practice of the Authority;
    - relative simplicity of financial modelling; and
    - avoiding complications in regulatory accounting that would arise under a post-tax approach as a result of the Western Australian rail access regime taking a peculiar approach to the valuation of assets (with periodic revaluation on a replacement cost basis) and accounting for capital expenditures and depreciation.[5]

27. Parties that made submissions to the Authority either support the general method previously applied by the Authority (CCI and APIA), or are silent on issues of general method (Alcoa and Synergies).

[3] Allen Consulting Group, 2007, p. 6.

[4] Allen Consulting Group, 2007, p. 10.

[5] Under the Railways (Access) Code 2000, the value of the asset base to which the rate of return is applied is determined periodically by estimating of a "gross replacement value" for the assets. If a post-tax WACC were to be used, regulatory taxation accounts would need to be maintained, with different accounting methods applied to asset valuation. The different methods used for maintaining regulatory accounts and taxation accounts would cause the two sets of accounts to be substantially different.

28. Based on the above, the Authority considers that it is appropriate to maintain the same general method for estimation of the WACC. Therefore, the Authority has estimated WACC values using the Officer form of the CAPM and has specified the WACC values in real, pre-tax terms.

29. APIA made an additional submission relating to general method, submitting that the Authority, in making its determination:

- should give attention to a "reasonable range" of WACC values and exercise regulatory judgement to select a point in this range rather than determining a point estimate directly from theoretical models without consideration of the "reasonableness" of the outcome; and
- in exercising regulatory judgement, consider the uncertainty involved in determining the WACC and adverse consequences of underestimating the rate of return.

30. In some past determinations on regulated rates of return for energy infrastructure, the Authority has give consideration to determining a "reasonable range" of rates of return. This has been undertaken in the context of assessing proposals by regulated businesses for the regulated rate of return where the role of the Authority is to determine whether the proposal meets the requirements of the relevant regulatory code rather than for the Authority itself determining a rate of return. This is the general approach taken by the Authority in making determinations on proposed access arrangements for electricity and gas networks under regulatory codes specific to these networks (*Electricity Networks Access Code 2004* and *National Third Party Access Code for Natural Gas Pipeline Systems*). However, in the WACC determination for the rail networks, the role of the Authority is to determine the rate of return rather than assess proposals from the network operators. As such, there is no particular need for the Authority to consider a reasonable range as opposed to exercising judgement to make point estimates of WACC values from consideration of the values of individual parameters of the CAPM and the WACC formula.

31. Based on the above, the Authority considers that the requirements of the Code are best met by making point estimates of the WACC values for the rail networks.

### *2.2.2 The Risk Free Rate of Return and Inflation*

32. Australian regulators have typically derived values of real and nominal risk free rates from capital-market observations of implied yields on long-term inflation-indexed (real) and non-indexed (nominal) Commonwealth Government securities (government bonds). A forecast of inflation has been derived from the difference in implied yields of the two types of bonds. The former Rail Access Regulator and the Authority have adopted this approach in WACC determinations to date, and both the Authority and other Australian regulators have, until very recently, adopted this approach in determinations of rates of return for other regulated infrastructure.

33. The Allen Consulting Group examined problems that have emerged with this approach and a change in practice of other Australian regulators.

34. The problem with the conventional method for determining risk free rates of return and a forecast of inflation has arisen from claims by (or on behalf of) regulated businesses that features of the market for government bonds – in particular an excess demand for government bonds – result in the implied returns being

"downward biased" and under-representing the value of the risk free rate that should be applied in estimation of WACC values.

35. Acting on advice from the Commonwealth Treasury, the Reserve Bank of Australia and consultants, The Australian Energy Regulator ("AER") and the Essential Services Commission of Victoria ("ESC") have both accepted the existence of bias in observations of implied yields on real government bonds, but rejected claims of the existence of bias in observations of implied yields on nominal government bonds. Both of these regulators have adopted an approach for estimating the real risk free rate of:

- estimating a nominal risk free rate from observations of implied yields on nominal government bonds (consistent with past practice);
- making a forecast of the rate of inflation; and
- estimating a value of the real risk free rate by de-escalation of the estimated nominal risk free rate by the forecast rate of inflation (using the Fisher equation).[6]

36. The Allen Consulting Group has recommended that the Authority adopt this approach in its WACC Determination.

37. Parties that made submissions to the Authority either support the recommendations of the Allen Consulting Group in the approach to estimating the real risk free rate and deriving a forecast of inflation (APIA and Synergies) or are silent on this matter (Alcoa and CCI).

38. Notwithstanding general support for the approach recommended by the Allen Consulting Group, APIA and Synergies submit that the Authority should also recognise bias in implied yields on nominal government bonds. Both of these parties refer to submissions and supporting studies from regulated businesses in relation to other regulatory price determinations that have claimed a bias also exists in deriving an estimate of a nominal risk free rate from observations on implied yields on nominal government bonds. Synergies presents further analysis of its own than examines differences (spreads) in implied yields between government bonds and high-rated (AA and A) corporate bonds. The claimed bias is in the order of 40 to 55 basis points, which, if recognised by the Authority, would result in increases in the estimated WACC values by about 80 to 100 basis points. The Allen Consulting Group recognised that there have been these claims of bias in implied yields on nominal government bonds, but it was beyond the scope of the Allen Consulting Group's brief to examine these claims other than to review work undertaken for other price determinations.[7]

39. No Australian regulator has examined in any detail the claims of bias in yields on nominal government bonds. Rather, other regulators (the AER and ESC) have accepted the views of the Commonwealth Treasury and Reserve Bank that there is no such bias. In a recent draft decision on proposed revisions to access arrangements for the Victorian Gas Distribution Systems, the ESC indicated that it

[6] Australian Energy Regulator, January 2008, Final Decision: SP AusNet Transmission Determination 2008-09 to 2013-14, p 105. Essential Services Commission, 6 March 2008, Gas Access Arrangement Review 2008-2012 Final Decision, p 460.

[7] Synergies incorrectly asserts that the Allen Consulting Group identifies a bias for nominal bonds to the extent of 42 to 44 basis points; p. 8 citing Allen Consulting Group p. 12)

would further examine the claims of this bias prior to making a final decision.[8] In its Final Decision, however, the ESC maintained reliance on advice from the Commonwealth Treasury and Reserve Bank, supplemented by an expert submission that there is no in-principal reason to consider that such a bias exists.[9]

40. Consistent with the determinations of the AER and ESC, the Authority considers that:

- there is sound evidence for bias in estimates of real risk free rates derived from implied returns on inflation-indexed government bonds; but
- there has not been a sustainable case put to Australian regulators for the existence of bias in estimates of nominal risk free rates derived from implied yields on nominal government bonds.

41. Based on the above, the Authority accepts the recommendation of the Allen Consulting Group that the real risk free rate should be calculated by:

- determining a nominal risk free rate as the average of implied returns on nominal government bonds over a 20 day trading period;
- determining a forecast value of inflation; and
- calculating the real risk free rate by use of the Fisher equation.

42. The Allen Consulting Group did not make a recommendation on the forecast of the inflation rate that should be applied, but rather indicated that the AER and ESC have previously applied a rate of three per cent and calculated the indicative WACC values on this basis.

43. Synergies submits that the Authority should adopt a forecast inflation rate of 2.5 per cent rather than 3.0 per cent. APIA submits that the Authority should adopt a forecast inflation rate of 2.5 to 2.6 per cent.

44. Synergies submits that a forecast of inflation of 2.5 per cent is substantiated by:

- inflation expectations of the Commonwealth Treasury as indicated in the *Mid Year Economic and Fiscal Outlook 2007-08* and *Pre-Election Economic and Fiscal Outlook 2007*, indicating an expected easing of inflation pressures in the "medium term" beyond 2008 and a forecast inflation rate in 2009-10 and 2010-11 of 2.5 per cent;
- the Reserve Bank maintaining a target range for the inflation rate of two to three per cent, and published expectations in its *Statement on Monetary Policy 2007* of easing inflation pressures;
- published expectations of the Commonwealth Bank (in *Economic Perspective*) and ANZ Bank (in *ANZ Australian Economics Weekly*) of a decrease in the inflation rate to 2.6 per cent in 2008-09; and
- a long-term historical average rate of inflation of just over 2.6 per cent.

45. APIA cites expert statements by NERA and Competition Economics Consulting Group that have been included as part of submissions made to the ESC in relation to the ESC's Draft Decision on proposed revisions to the access arrangements for

[8] Essential Services Commission, August 2007, Gas Access Arrangement review 2008 – 2012 Draft Decision, footnote at page 380.

[9] Essential Services Commission, March 2008, Gas Access Arrangement Review 2008-2012 Final Decision, p 456.

the Victorian gas distribution networks.[10] APIA claims that these statements indicate:

- that in applying a forecast rate of inflation of 3.0 percent, the ESC gave undue weight to short term forecasts of inflation and to the upper bound of the Reserve Bank's target range for inflation; and
- that medium to long term forecasts of inflation and the views of the Reserve Bank and Commonwealth Treasury support a forecast inflate rate of 2.5 to 2.6 per cent.

46. The Authority observes that, subsequent to the Allen Consulting Group's report, both the AER and ESC have applied lower forecasts of inflation in determinations of rates of return. The AER has applied a ten-year inflation forecast of 2.59 per cent, calculated as an average over ten years of short-term (two year) inflation forecasts of three per cent and a longer term forecast of 2.5 per cent.[11] The ESC has applied a ten year inflation forecast of 2.7 percent, based on a range of considerations including market practice in making assumptions on long-term inflation, levels of historical inflation, and the Reserve Bank's target range for the rate of inflation.[12]

47. Based on the above, the Authority considers that the best estimate of the long-term forecast rate of inflation is 2.5 per cent. Implied yields on nominal government bonds over the 20 trading days to 29 February 2008 indicate a nominal risk free rate of 6.30 per cent. Together with the assumed inflation rate, this nominal risk free rate implies a real risk free rate of 3.71 per cent.

### 2.2.3 Financial Structure

48. In the 2003 Determination, the former Rail Access Regulator determined a benchmark financial structure of 55 per cent debt to assets for both the freight and urban networks. The value was based on the mid point of a range of assumptions of financial structures in other Australian regulatory decisions for rail access.

49. The Allen Consulting Group considered capital market evidence for gearing assumptions, with this evidence comprising observed capital structures of a set of "comparable" listed businesses comprising:

- listed rail infrastructure businesses in the USA and Canada;
- listed transport infrastructure and services firms in Australia and New Zealand; and
- listed global toll-road operators.

50. With only a couple of exceptions, the financial structures of the comparable firms indicated gearing levels of 20 to 40 per cent. On the basis of this evidence, and with particular consideration of the observed gearing levels of rail infrastructure businesses, the Allen Consulting Group recommended an assumed financial structure of 35 per cent gearing. This value is less than the values assumed in regulatory decisions for rail infrastructure services by the ACCC, ESC and

[10] These submissions and statements have not yet been published by the ESC.

[11] Australian Energy Regulator, January 2008, Final Decision: SP AusNet Transmission Determination 2008-09 to 2013-14, pp 105, 106.

[12] Essential Services Commission, March 2008, Gas Access Arrangement Review 2008-2012 Final Decision, p 460.

Queensland Competition Authority, which have assumed values in the range of 50 to 60 per cent, largely on the basis of regulatory precedent for energy networks.

51. Submissions on assumed financial structures were made by CCI, APIA and Synergies.

- CCI submits that the Authority should closely examine recommendations of the Allen Consulting Group on assumptions of financial gearing that differ from the assumptions previously adopted by the Authority, but does not submit that any different level of gearing should be preferred.
- APIA makes no submission directly on the assumed financial structure, but indicates that great care should be exercised in selecting comparator firms taking into account the limited number of true comparator firms in the Australian economy and the appropriateness of using international firms as comparators.
- Synergies expresses a number of concerns about the Allen Consulting Group's determination of an assumed financial gearing (debt to assets ratio), and submits that a slightly lower gearing assumption should be applied (30 per cent rather than 35 per cent applied by the Allen Consulting Group).

52. Synergies submits that the Allen Consulting Group has used an inappropriate set of comparable businesses and the set of comparable firms should be limited solely to listed rail businesses, which are necessarily businesses in the United States and Canada. Examining a set of comparable rail businesses, Synergies indicates levels of financial gearing of 18 to 43 percent (average of 26 per cent), and a five-year average level of gearing for the set of firms of 35 per cent. Synergies further submits that the freight rail network would appropriately be assumed to have a low level of gearing relative to the comparable firms due to:

- the relatively very small size of the WestNet Rail's freight network business relative to the comparable businesses;
- a lack of diversification in the major customer base of the freight network;
- a high systematic risk of the businesses that form the major customer base of the freight network;
- a generally low credit rating of the businesses that form the major customer base of the freight network; and
- greater growth opportunities of WestNet Rail than the comparable businesses.

53. The Authority does not accept Synergies' submission that consideration should be given only to a set of comparable firms made up only of listed rail businesses from the USA and Canada. Rather, the Authority considers that capital market data should be sought for a best set of comparable Australian businesses, even if these businesses are engaged in the provision of transport infrastructure other than railways. Capital market data on International firms is an important, but secondary, source of relevant information. Accordingly, the Authority has taken into account the evidence for Australian businesses provided by the Allen Consulting Group.

54. Notwithstanding the differences between the analyses undertaken by the Allen Consulting Group and Synergies, the Authority considers that the different analysis of comparable businesses submitted by Synergies (with a recommendation of a financial structure of 30 per cent debt to assets) broadly confirms the capital market evidence presented by the Allen Consulting Group in support of a recommendation of a financial structure of 35 per cent debt to assets.

55. The Authority has previously rejected the notion expressed in Synergies' submission that the level of financial risk faced by the customers of a regulated business has any direct bearing on the financial risk of the regulated business itself, citing a lack of evidence for any such relationship.[13] The level of risk faced by the regulated infrastructure business is affected by the nature of contracts with customers and volatility in the customers' use of the infrastructure, with the latter not being necessarily linked to volatility in the financial results of the customer businesses. As such, the Authority does not accept Synergies' submission that the freight network faces a higher level of risk that for Synergies' nominated set of comparable businesses, and hence does not consider that this provides a basis for assuming a lower level of gearing for the freight business than comparable businesses.

56. Based on the above, the Authority considers that an appropriate assumption for the financial structure of both the urban and freight networks is a financial gearing of 35 per cent debt to assets.

57. The financial structure of 35 per cent debt to assets is substantially different to the financial structure assumed in the 2003 WACC determination (55 per cent debt to assets) and to that previously applied by the Authority in assessing rates of return for gas pipelines and electricity networks (60 per cent debt to assets). The Authority notes that the financial structure of 35 per cent debt to assets is specific to the rail infrastructure to which this current WACC determination relates and has no direct bearing on the Authority's consideration of financial structures that may appropriately be assumed for other regulated infrastructure.

### *2.2.4 Cost of Debt*

58. Regulators typically establish a value of the debt premium from capital market data on yields on corporate bonds consistent with benchmarks assumptions for the capital structure and credit rating of the regulated business or activity. In the 2003 WACC Determination, the former Rail Access Regulator determined a benchmark assumption of an "A" credit rating for both the freight and urban networks, based on a "perception" of its advisors that the operators of the networks would be able to raise capital with this debt rating, and assumptions made by other regulators for rail businesses. The cost of debt was determined at 1.11 per cent above the risk free rate, with this debt margin estimated from predictions of fair-value yields on corporate bonds obtained from CBA Spectrum.

59. The Allen Consulting Group considered capital market evidence for credit ratings, with this evidence comprising observed credit ratings for the same set of comparable listed businesses indicated in the above section on financial structure. From limited data on credit ratings of comparable firms, and with consideration of precedent regulatory decisions establishing credit ratings of BBB+ for freight rail networks, the Allen Consulting Group recommended assumed credit ratings of BBB to BBB+ for the freight network and A for the urban network.

60. The Allen Consulting Group determined debt margins for the benchmark credit ratings using data from the Bloomberg and CBASpectrum financial data services, corrected for average differences between the fair-value yields indicated by these data sources and observations of yields on actual BBB+ and A rated corporate bonds. These corrections were made in view of concerns raised in several studies

[13] Economic Regulation Authority, July 2004, Amended Draft Decision on the Proposed Access Arrangement for the Goldfields Gas Pipeline, paragraphs 283, 284.

during 2007 of potential systematic bias in the predictions of fair value yields. The Allen Consulting Group recommended debt margins of 155 basis points for the freight network and 140 basis points for the urban network (at October 2007).

61. Submissions on debt margins were made by were made by APIA and Synergies.

- APIA submits that assumptions on the debt margin should take into account recent instability in the market for corporate bonds that has reduced the predictive power of methodologies based on historical data.
- Synergies submits that debt margins should be derived from predictions of fair-value yields from only the Bloomberg financial data service, with predictions from the CBASpectrum service ignored due to a downward bias in the predictions from this service, with the margin calculated from Bloomberg data over the 20 trading days prior to the Authority's determination. Synergies further submits that, as at December 2007, a debt margin of 170 basis points is evident from the Bloomberg data.

62. Subsequent to the Allen Consulting Group's 2007 report to the Authority, the Allen Consulting Group provided more recent estimates of debt margins to the ESC in connection with the ESC's assessment of proposed revisions to the access arrangements for the Victorian gas distribution networks.[14]

63. Applying the same estimation methods as in the 2007 report to the Authority, the Allen Consulting Group provided relevant evidence on the margin (not including debt transaction costs) of a 10 year BBB+ rated bond as follows.

- The two 'fair value yield' prediction services – CBASpectrum and Bloomberg – predict a yield of 202 basis points and 195 basis points respectively for 20 days to 30 November and 217 basis points and 197 basis points respectively for 20 days to 21 December.
- In November and December 2007, Bloomberg was not publishing predictions of fair value yields on nine and ten year BBB+ rated corporate bonds in Australia due to a lack of the bonds in the market, limiting the reliance that can be placed on data from this service vis a vis data from the the CBASpectrum.
- Contrary to findings early in 2007, there is no empirical justification (in November and December 2007) for considering that CBASpectrum systematically under estimates yields.

64. Given the current state of global credit markets and potential effects on the cost of corporate debt, the Authority considers that it is appropriate to update the analysis of debt margins closer to the time of the final WACC determination. The Authority expects that a revised analysis will indicate debt margins significantly greater than estimated by the Allen Consulting Group in October 2007. For the purposes of this draft determination, and based on the more recent capital-market evidence on debt margins, the Authority has applied debt margins of 210 basis points for the (assumed BBB+ rated) freight network and 190 basis points for the (assumed A rated) urban network.

[14] Allen Consulting Group, 25 January 2008, Gas Access Arrangement Review 2008: updating estimates of debt margin for 20 trading days to November 2007 and December 2007, Memorandum to the Essential Services Commission.

### 2.2.5 Market Risk Premium

65. The market risk (or equity) premium is the difference between the expected return on a well-diversified portfolio of stocks and the risk free rate. It represents the reward that investors require to accept the risk associated with the diversified portfolio of equity investments. For the purpose of a regulatory determination of the cost of capital, it is the *expected* market risk premium that is to be estimated.

66. In the 2003 Determination, the former Rail Access Regulator adopted a market risk premium of six per cent taking into account capital market observations of historical returns to equity and precedent decisions of Australian regulators. The value of six per cent is consistent with almost all regulatory determinations on infrastructure pricing in Australia.

67. The Allen Consulting Group recommended continued use of a market risk premium of six per cent, with this recommendation based on consideration of capital market evidence that this value is at the upper end of a reasonable range. This evidence included:

- capital market observations of historical returns to equity;
- studies on imputed expectations of the market risk premium;
- surveys of opinions and assumptions of capital-market participants; and
- qualitative consideration of factors that may cause the expected market risk premium to change over time and to vary from historically observed returns.

68. Submissions on the market risk premium were made by APIA and Synergies.

- APIA submits that the Allen Consulting Group's recommended value for the market risk premium lies at the lower bound of a reasonable range of values, rather than at the upper bound as claimed.
- Synergies submits that, in deriving a value for the market risk premium, sole reliance should be placed on historical evidence of equity premia, which indicates that there is "only one appropriate [market risk premium] and it has value of 6.76" and there is no basis for the Allen Consulting Group's assertion that a market risk premium of 6 per cent is at the upper bound of the range of reasonable estimates.

69. The submissions of APIA and Synergies are consistent with a long-standing difference of view on the market risk premium between regulators and regulated businesses.

- Regulators (including the Authority) have previously taken views that the market risk premium should be determined on the basis of both observed historical equity premia achieved in the market and a range of information sources on current and future expectations of equity premia (and adopting values of 6 per cent).
- Regulated businesses have previously taken the view that the market risk premium should be determined solely on the basis of observed historical equity premia, which typically indicate values of between 5 and 8 per cent (and favouring values greater than 6 per cent).

70. The Authority maintains the view, consistent with regulatory precedent, that the market risk premium should be determined taking into account a range of sources of information including evidence on historically realised equity premia and current practice and expectations of market participants. On this basis, the Authority is of the view that a market risk premium of six per cent is appropriate.

### 2.2.6 Systematic Risk (Beta)

71. The systematic risk (beta) of a firm is the measure of how the changes in the returns to the firm's stock are related to the changes in returns to the market as a whole. It reflects the business' exposure to non-diversifiable risk, which is that portion of the variance in the return on an asset that arises from market-wide economic factors that affect returns on all assets, and which cannot be avoided by holding the assets as part of a diversified portfolio of assets.

72. In the 2003 WACC determination, the former Rail Access Regulator applied an equity beta of 1.0 for the freight network and an equity beta of 0.66 for the urban network, with an assumed financial gearing of 55 per cent debt to assets. This equated to asset beta values of 0.45 for the freight network and 0.3 for the urban network. These values were derived from advice provided by NECG to the Office of the former Rail Access Regulator at the time of the 2003 WACC determination (asset beta of 0.45 for the freight network and 0.30 for the urban network), based in turn on capital market evidence on observed beta values for comparable businesses and qualitative considerations of the systematic risk of the customers of the rail services.

73. The Allen Consulting Group has recommended asset beta values of 0.60 for the freight network and 0.30 for the urban network, based on capital market evidence of beta values for a set of comparable Australian and overseas businesses. These asset beta values equate to equity beta values of 0.92 and 0.38 at a financial gearing of 35 per cent debt to assets.

74. The Authority notes that any comparison of the Allen Consulting Group's recommended beta values with the values adopted for the 2003 WACC determination should be on the basis of the asset beta values as direct comparison of equity beta values is not possible due to different assumptions of financial gearing.

75. Submissions on the systematic risk of the rail networks were made by CCI, Alcoa, APIA and Synergies.

76. CCI submits that the Authority should reject the recommendations of the Allen Consulting Group on assumptions of the systematic risk (beta) in favour of maintaining assumptions previously adopted by the Authority for reasons that:

- there has been no change to the underlying risk profile of the rail business in Western Australia;
- the Allen Consulting Group was unable to identify businesses exactly comparable with the Western Australian rail operations and it is unreasonable to justify variations to the systematic risk values based upon comparisons with non-equivalent businesses.

77. Alcoa submits that the Authority should reject the recommendations of the Allen Consulting Group for an increase in the asset beta value for the freight network because the level of systematic risk faced by the freight network should be

decreasing as the business growth in the freight network is occurring in the lowest-risk part of the business, being the bulk haulage business. Alcoa contends that the asset beta for the freight network should be reduced from the value adopted in the 2003 WACC Determination and should be established as a weighted average of beta values for the various components of the business of the freight network, being an asset beta value of 0.44 based on:

- an asset beta value of between 0.4 for the bulk mineral freight component, being towards the low end of a range of values contemplated determined by the Queensland Competition Authority and the ESC and reflecting a more diversified market of bulk mineral freight in Western Australia;
- an asset beta of 0.45 for the bulk grain freight component, as contemplated by the advisors to the former Rail Access Regulator in the 2003 WACC Determination;
- an asset beta of 0.5 for the intermodal freight component, consistent with the ESC's observation of an asset beta for an above-rail freight company;
- an asset beta of 0.3 for the passenger component on the freight network, derived from an ESC determination of an asset beta of 0.37 for a mixed freight and passenger rail service and the Allen Consulting Groups recommended value of the urban network of 0.25; and
- weights in proportion to revenue from each component of the business of 60 percent bulk mineral freight, 17 per cent bulk grain freight, 19 per cent intermodal freight and 4 per cent passenger services.

78. APIA makes no direct submission on beta values other than to submit that there are significant differences of view on appropriate beta values to apply in a regulatory determination and the Authority should consider a broader range of evidence than that provided by the Allen Consulting Group.

79. Synergies expresses a number of concerns about the Allen Consulting Group's determination of an asset beta value and submits that a substantially higher asset beta should be applied (0.8 rather than 0.6 applied by the Allen Consulting Group). Synergies submits that:

- consideration of beta values for comparable businesses should be restricted to a set of seven of Class 1 United States rail businesses considered to face similar risks to the freight network in Western Australia and with statistically significant estimates of beta values, indicating an average asset beta of 0.76;
- the systematic risk of the freight network "must" be similar to the systematic risk of the major customers of the network (which are high and range between 0.9 and 2.9) and the beta value should be considered to be greater than the average for comparable businesses;
- the freight network has a high volume risk correlated with the state of the world and Australian economies, indicating a higher beta value;
- the freight rail network has a small group of customers with high systematic risk and long-term contracts, meaning that the freight network is exposed to the high systematic risk of these customers for a long period, and may have limited opportunity to pass through cost increases to customers;
- the freight network is not sheltered from systematic risk by the regulatory regime (as it would be if the regulatory regime took the form of a revenue cap);

- the freight network has large growth options, indicating a higher beta value than the average for comparable United States businesses; and
- the costs of the freight network are largely fixed costs which causes the profitability of the network to be sensitive to changes in freight volumes and revenues, suggesting a higher beta value.

80. The matters raised in submissions are addressed as follows.

81. First, there are differences in the asset beta values recommended by the Allen Consulting Group to those determined by the former Rail Access Regulator in 2003. The Allen Consulting Group recommended a similar value for the urban network (0.25, compared with 0.30 in 2003), but there is a significant difference in the values for the freight network (0.60, compared with 0.45 in 2003). The Authority considers that the recommendation of the Allen Consulting Group for a higher asset beta value for the freight network does not necessarily indicate a change in the systematic risk facing the freight network. Rather, the recommendations stem from an assessment of different capital market data. The relevant matter for consideration of the Authority is what beta value is revealed by a current assessment of capital market data, recognising that any empirical estimates of beta values are inherently imprecise.

82. Secondly, the submission from Alcoa raises the issue of the significance of bulk minerals and grain freight in the freight network business. Alcoa submits that this part of the business is likely to have a low systematic risk and is reason for assuming a lower beta value, which accords with the conclusions of the Allen Consulting Group. Alcoa submits that this adjustment should be made on the basis of taking low values in ranges of beta values contemplated by other regulators. The Authority considers that the approach proposed by Alcoa has the problem of there being no direct consideration of recent capital-market evidence and is, in effect, a subjective adjustment of beta values to take into account the characteristics of the business. The Authority agrees that subjective considerations of differences between businesses are appropriate in assessments of beta values. The Authority considers, however, that the method applied by Alcoa to make this subjective adjustment is not appropriate and gives an appearance of technical rigour in what is a subjective adjustment.

83. Thirdly, the analysis presented by Synergies raises issues of principle and analysis that require careful consideration.

- Consideration was given by Synergies only to a set of non-Australian comparable businesses. Evidence from international comparators has the problem that beta values are calculated for a stock market that is of a different composition to the Australian stock market and asset betas are not directly translatable for application to an Australian business in applying the CAPM to the Australian economy. The Authority considers that regard should be had to beta estimates for a set of comparable Australian businesses.
- Synergies has selected comparator businesses on the basis of a high correlation coefficient and statistical significance of beta values. This may not be a valid basis for selection of comparator businesses, as statistical analysis of beta values is characterised by low correlation coefficients and absence of statistical significance due to the limited extent to which systematic risk explains variations in stock returns.
- It is not clear that the systematic risk of an infrastructure provider should resemble the systematic risk of its customers. There is no necessary

connection between the profit risk of the customer firms and the volume of use of the infrastructure service or the payments for the infrastructure service under usage contracts. The Authority has previously rejected this argument on the basis of a lack of evidence for any relationship.[15]

- The existence of growth options for the freight network is not a reason for taking a higher value of the asset beta than evident from comparable businesses. The asset beta should reflect the regulated asset (and risks to cash flows of the asset) as the asset exists at the present time.

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

85. 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.

86. For the urban network, current market data points to an asset beta value of 0.25 to 0.30. The Authority considers that this data supports maintaining the assumption of an asset beta of 0.30 as applied in the 2003 determination.

87. These asset beta values are broadly consistent with asset beta values determined by other regulators for rail services (asset beta values of 0.5 to 0.6 for predominantly freight rail services and 0.37 for a mixed freight and passenger rail service). By comparison, regulatory decisions on access pricing for energy networks have typically determined or approved rates of return calculated on the basis of an asset beta value of about 0.45, implying that the systematic risk of the freight network business is greater than the level of systematic risk that regulators have attributed to energy network business, and the systematic risk of the urban network is less than that attributed by regulators to energy network business. The Authority considers that this relativity is consistent with the characteristics of the urban and freight networks.

88. Based on the above, the Authority considers that the appropriate asset beta values are 0.60 for the freight network (corresponding to an equity beta of 0.92) and an asset beta of 0.30 for the urban network (corresponding to an equity beta value of 0.46).

### *2.2.7 Taxation Imputation*

89. A franking credit is received by Australian resident shareholders for corporate taxation paid at the company level when determining their personal income taxation liabilities under the system of dividend imputation.

90. The actual value of franking credits, represented in the WACC by the parameter 'gamma', depends on the proportion of the franking credits that are created by the firm and that are distributed, and the value that the investor attaches to the credit, which depends on the investor's tax circumstances (that is, their marginal tax rate). As these will differ across investors, the value of franking credits may be between nil and full value (ie. a gamma value between zero and one)

[15] Economic Regulation Authority, July 2004, Amended Draft Decision on the Proposed Access Arrangement for the Goldfields Gas Pipeline, paragraphs 283, 284.

91. In the 2003 Determination, the former Rail Access Regulator applied a gamma value of 0.5 based on regulatory precedent, while recognising that the arguments for establishing any particular value for gamma are inconclusive. This is consistent with decisions of other regulators.

92. The Allen Consulting Group has recommended adoption of a gamma value towards the lower end of a range of 0.4 to 0.8 as recently determined by the ESC for gas distribution networks. The Allen Consulting Group indicated that maintaining the value of 0.5 as applied in the 2003 WACC Determination would be consistent with this range.

93. A submission on the value of taxation imputation was made only by Synergies. Synergies submits that no value should be ascribed to franking credits. Synergies submits that there is substantial disparity in results of studies that seek to determine the value of franking credits and the effect of changes in taxation law on this value, and results may variously be used to support different values of gamma between zero and one. Synergies further submits results of its own analysis to indicate that franking credits are of no value to the marginal investor and hence no value should be ascribed to gamma in the Authority's WACC Determination.

94. Subsequent to the Authority being provided with the report of the Allen Consulting Group, the ESC has received substantive submissions on the value that should be ascribed to franking credits (in relation to its review of access arrangements for gas distribution networks), with these submissions differing in either supporting a zero value of gamma (submissions made by distributors) or some positive value (submissions made on behalf of network users).[16]

95. These submissions have served to better define some of the issues that would need to be resolved to reduce the debate on the appropriate value of gamma to apply in determination of regulated rates of return, which are:

- whether the value of gamma should be determined on the basis of an average value of franking credits to investors or a value to a notional marginal investor; and
- issues of consistency between empirical studies of the value of franking credits (dividend drop-off studies) and the form of the CAPM employed by Australian regulators.

96. Australian regulators are still faced with varying and conflicting theory and evidence on the value of franking credits. The Authority is still left with a need to make a determination on the value of gamma to be applied in the WACC Determination with the major conceptual issues unresolved.

97. In view of the current state of the debate on the value of dividend imputation, the Authority considers that it is appropriate to continue to apply a value of gamma at 0.5.

### 2.2.8 Debt Issuance and Equity Raising Costs

98. In the 2003 Determination, the former Rail Access Regulator provided for an addition to the debt margin of 12.5 basis points as an allowance for the costs of

[16] Essential Services Commission, March 2008, Gas Access Arrangement Review 2008-2012 Final Decision, pp 496 – 498.

raising debt finance. No consideration was given to the costs of raising equity finance.

99. The Allen Consulting Group has recommended that the Authority maintain an allowance of 12.5 basis points for debt raising costs on the basis that this value is likely to be close to (or a slight over-estimate) of these costs. This is consistent with regulatory precedent throughout Australia.

100. There were no submissions to the Authority addressing the allowance for debt raising costs.

101. The Authority maintains the view that an allowance of 12.5 basis points in the cost of debt is an appropriate allowance for these costs.

102. The Allen Consulting Group has indicated that equity raising costs *may* be a legitimate cost to be recovered in regulated prices, but that this cost should be taken into account in the valuation of assets rather than in the regulated rate of return.

103. Synergies submits that an appropriate cost of raising equity funds would be 5.6 per cent of equity raised, but does not submit that this should necessarily be taken into account in the WACC.

104. Consistent with the recommendations of the Allen Consulting Group, the Authority considers that an allowance for equity raising costs, if appropriate, should be considered as a capitalised cost in the regulatory value of assets and not as a component of the WACC.

## 2.3 Conclusions

105. Taking into account the consideration of parameters of the CAPM and the WACC formula, the Authority has determined estimates of the WACC for each of the freight and urban networks, and for the purposes of this draft determination, as indicated in Table 3.

**Table 3 WACC values for the 2008 WACC draft determination**

| CAPM or WACC parameter | Freight network<br>2008 value | Urban network<br>2008 value |
|---|---|---|
| Nominal risk free rate of return (%) | 6.30 | 6.30 |
| Inflation rate (%) | 2.5 | 2.5 |
| Real risk free rate of return (%) | 3.71 | 3.71 |
| Debt proportion (%) | 35 | 35 |
| Equity proportion (%) | 65 | 65 |
| Market risk premium | 6.0 | 6.0 |
| Asset beta | 0.60 | 0.30 |
| Equity beta | 0.92 | 0.46 |
| Debt margin (%) | 2.10 | 1.90 |
| Debt issuance costs (%) | 0.125 | 0.125 |
| Taxation rate (%) | 30 | 30 |
| Franking credit value (gamma) | 0.5 | 0.5 |
| Nominal pre-tax cost of debt | 8.53 | 8.33 |
| Nominal post-tax cost of equity | 11.84 | 9.07 |
| Real post-tax cost of equity | 9.11 | 6.41 |
| Nominal pre-tax cost of equity | 13.93 | 10.67 |
| Real pre-tax cost of equity | 11.15 | 7.97 |
| Nominal pre-tax (“Officer”) WACC | 12.04 | 9.85 |
| **Real pre-tax (“Officer”) WACC** | **9.30** | **7.17** |
| Nominal post-tax (“vanilla”) WACC | 10.68 | 8.81 |
| Real post-tax (“vanilla”) WACC | 7.98 | 6.15 |