Final Report

Western Australia Rail Access Regime
Independent Assessment of Maximum Rate of
Return on Rail Infrastructure

Macquarie Bank Limited
Project and Structured Finance

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MACQUARIE

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Important Notice

This report has been prepared by Macquarie on behalf of the Department of Transport, following discussion with stakeholders and consideration of submissions lodged with Macquarie following publication of the Draft Report dated 9 July 1999. Macquarie has also utilised various information sources in its calculations.

Macquarie has not independently verified the accuracy of this information and has relied upon it in its judgement and calculations undertaken in the report.

No representation or warranty is made that the information relied upon is without fault.

Glossary of Terms

ACCC	Australian Competition and Consumer Commission
AWB	Australian Wheat Board
CAPM	Capital Asset Pricing Model
CBH	Co-Operative Bulk Handling
CSO	Community Service Obligation
GLC	Grain Logistics Committee
GRV	Gross Replacement Value
IPART	Independent Pricing and Regulatory Tribunal (NSW)
NCC	National Competition Council
NRC	National Rail Corporation
ORG	Office of the Regulator General (Victoria)
PGA	Pastoralists and Graziers Association
RAC	Rail Access Corporation (NSW)
the Code	Government Railways Access Code 1999 (WA)
the Department	Department of Transport (WA)
the Regulator	Rail Access Regulator (WA)
WACC	Weighted Average Cost of Capital
WAFF	Western Australian Farmers Federation

Submissions Received

Submissions were received from the following organisations in response to the Draft Report on 9 July 1999:

- Toll Holdings
- Mr Neville Smith
- Western Mining Corporation
- The Department of Transport
- Westrail Network Group
- The WA Treasury Department
- National Rail Corporation
- Meyrick & Associates (on behalf of National Rail Corporation)
- National Competition Council

Each of these submissions has been considered in preparation of this Final Report.

1. Executive Summary

This report has been prepared as part of an independent assessment process to determine the maximum rate of return on Westrail's rail infrastructure (the "Infrastructure"). The report has finalised the appropriate maximum value for the rate of return following review and consideration of submissions received in relation to the Draft Report dated 9 July 1999.

This report discusses the assessment task, Macquarie's role, methodology and the assessment process undertaken to date. Results are presented as a range of values, from which a maximum value for the rate of return has been determined.

Macquarie has determined a range for the maximum rate of return by using capital asset pricing model ("CAPM") theory to calculate the rate of return, and this is expressed as a real pre tax weighted average cost of capital ("WACC"). Macquarie has researched the Infrastructure's market environment to assess its key operating risks, and in turn, has calculated an appropriate maximum rate of return considering market expectations of returns for investments of similar risk.

Through this process, Macquarie has determined that it is appropriate to provide separate maximum rates of return for the Urban infrastructure ("Urban") and the Freight infrastructure ("Freight"). Macquarie has concluded that these two components of the Infrastructure are sufficiently independent, both geographically and in terms of operating environment and risk. The Freight infrastructure is defined to include all rail infrastructure assets excluding the Urban infrastructure. Both networks are defined in Appendix 1 to this report.

The two components of the Infrastructure - Urban and Freight - are not publicly listed and have therefore been compared with a range of Australian and international rail, transport and infrastructure assets in relation to which data on the volatility of returns is available. This comparison relies upon evidence suggested by the CAPM that there is a linear positive relationship between risk and return, represented as the security market line. This process adequately accounts for these systematic risks, such as changes in the business cycle, that are faced by all investments.

Non systematic risks, or "specific risks", are risks specific to individual investments. CAPM theory assumes that investors manage these risks through diversification. Risks specific to the Infrastructure have been assessed by Macquarie independently of the CAPM calculations, and careful judgment has been made as to their impact on the total set of risks faced by the Infrastructure. It is imperative that these risks be assessed only when they prevail on the Infrastructure and not on some other part of the Westrail business, namely the "above rail" business. This issue is discussed as part of the specific issues in Section 2.6.

The pricing methodology that will be enforced by the WA Government Railways (Access) Code 1999 (the "Code") contains a limit on the revenue any section of the Infrastructure can earn. The maximum rate of return is one variable used to calculate what this maximum level of revenue can be. The limit on revenue is referred to as the ceiling test, or the Combinatorial Test. The Combinatorial Test has been considered by Macquarie in its determination of the appropriate maximum as it will potentially limit returns to the Infrastructure on average by constraining total revenue.

Macquarie received a number of submissions during the public consultation process which it has considered in determining the final values for the appropriate maximum rates of return. The content of those submissions is referred to throughout this report. Macquarie's assessment of both systematic and specific risks facing the Infrastructure and the Combinatorial Test has resulted in the following conclusions:

The Draft Report suggested appropriate maximum values for the Freight infrastructure of 8.9%, and 6.0% for the Urban infrastructure, both real pre tax. These values have been revised downwards after consideration of submissions and review of previous analysis.

The revised range of WACC values for the Freight infrastructure is **6.2% to 8.2% real pre tax**. After assessment of the specific risks facing the Freight infrastructure, and consideration of the range, Macquarie has determined an appropriate maximum rate of return value of **8.2%**.

The revised range of WACC values for the Urban infrastructure is **4.6% to 5.5% real pre tax**. After assessment of the specific risks facing the Urban infrastructure, and consideration of the range, Macquarie has determined an appropriate maximum rate of return value of **5.1%**.

2. Introduction

2.1 Scope of Work

The Report is to:

- Determine an appropriate methodology to calculate the WACC and using the methodology, calculate the maximum WACC value for the Western Australian rail track network, having regard to Westrail's commercial and operating environment.

This should be a risk-adjusted rate of return to Westrail that is consistent with the returns currently being sought by investors in commercial enterprises operating in competitive markets and facing similar business risks to those faced by Westrail in the provision of the network service.

- Recommend a frequency for formal reviews to revise the maximum WACC value and a mechanism to review the WACC annually between formal reviews.

2.2 Specific Issues

Macquarie has been asked to consider the following issues, derived from the WA Rail Access Regime, as part of determining the appropriate risk adjustment for the long term target WACC:

- Whether or not the risk for Westrail's rail infrastructure business can and should be assessed separately to the risk of Westrail's business as a whole, having regard to theoretical arguments supporting one approach over another and the availability of suitable market data. (refer to sections 2.7 and 2.8)
- How risk is assessed, the methodology employed and the sources of data used. (refer to section 2.6)
- How the risk assessment relates to the rate of return to be applied in the ceiling in the Regime, in particular, the appropriateness or otherwise of translating "average" returns observed for particular companies into the "maximum" return to be applied to any one group of operators under the Regime. (refer to section 2.10)

2.3 Role

Macquarie's independence in this process is paramount. In its role, Macquarie has consulted extensively with stakeholders, some of which have competing interests with regard to the maximum rate of return. Macquarie has completed a Draft Report and sought public comment in the form of written submissions. Macquarie has assessed submissions and arguments provided by the stakeholders in view of the objectives of the report. Discussion of these submissions is provided throughout this report.

There are certain inconsistencies between the definition and application of the WACC as described by Draft 9 of the Code and as described by the scope of work supplied to Macquarie for this assignment. In particular, the Code does not provide for the application of a *maximum* WACC as such and also states that the WACC is to be "the WACC to the Commission", which may imply that the Code is seeking an *actual* WACC figure, not an "appropriate" WACC figure. The Code's definition of the WACC is not consistent with the definition contained in the scope of work and applied by Macquarie in this report. Macquarie has been advised that the Code is to be amended to provide for the application of a maximum WACC

Macquarie has completed this final report on the understanding that the Department has made (or will make) various changes to the Code to reflect the specific issues detailed in the scope of work.

A summary of the necessary changes are provided below:

- provision for the application of a maximum WACC;
- clarification that the WACC is a risk adjusted WACC, appropriate to the Infrastructure of Westrail;
- clarification of the Regulator's review process and timing of reviews of the WACC; and
- provision for a management process for breaches of the ceiling test and the floor test.

A discussion of the last two changes is provided in Section 7 of this report.

2.4 Methodology

Macquarie has utilised CAPM theory to determine the Infrastructure's long term target WACC. CAPM theory is the most widely endorsed method for calculating WACC and has received extensive discussion during the privatisation of the Victorian gas industry, NSW rail access pricing and continues to be debated as regulation of public and privatised assets evolves. Macquarie believes that the significant momentum of the CAPM methodology debate in the broader regulatory context will continue to refine its performance and provide ongoing improvements to its application.

Macquarie notes that the Australian Competition and Consumer Commission ("ACCC") has recently proposed a change from applying a real pre tax WACC as an appropriate measure of a rate of return on an asset base for the purposes of regulating transmission revenues in the electricity industry. This change proposes using the nominal after tax return on equity as the key target rate of return variable to achieve regulatory outcomes. This approach represents a change in regulation methodology, however, its application to rail access regulation has yet to be sufficiently debated. In the context of this report, Macquarie has no scope to debate the relevance or preference of this approach to the one prescribed in the access legislation.

CAPM theory is founded on the relationship between investors' preferences for risk and return. Investors expect similar returns from investments of similar risk. Therefore, any entity's capacity to attract capital should depend on its returns being comparable with investments of similar risk. Portfolio theory describes how rates of return for investments of similar risk are comparable in their covariance with the market portfolio. This is demonstrated by the security market line, which displays a positive linear relationship between risk and return. Once an entity or investment's risk is understood relative to the market portfolio, and expressed using the variable beta, the CAPM delivers a value for the market's expectations on the returns to equity necessary for the investment to be sustainable. Determination of beta is the most subjective aspect of the WACC methodology.

Macquarie has sought to clearly identify the risks facing the Infrastructure so as to enable comparison with similar businesses for which relevant empirical data is available. From this data it is possible to apply CAPM theory in the derivation of the appropriate rate of return on the Infrastructure. Macquarie's analytical approach is broadly consistent with that taken by the Independent Pricing and Regulatory Tribunal ("IPART") in its determination of the maximum rate of return for Rail Access Corporation ("RAC") in NSW. Macquarie has also considered several of the statements made by the ACCC in its document, "*Draft Statement of Principles for the Regulation of Transmission Revenues*".

The CAPM and WACC formulae components and derivation methods are discussed in greater detail in Section 3.

2.5 Regulatory Objectives

The required rate of return to encourage investment over the long term is equal to an entity's actual WACC. In the presence of a natural monopoly, rates of return on assets are not regulated by competition and may lead to inefficient outcomes in respect of the prices charged for services or access, excessive investment in assets ("gold plating") or the continuance of inefficient cost structures. Regulation seeks to imitate competitive outcomes. Effective regulation requires that a target WACC be set which generates sufficient revenue to compensate the investor for its investment. At this WACC, the Infrastructure owner will be able to achieve a reasonable rate of return while charging efficient prices for access and will be motivated and able to maintain long term investment in the Infrastructure sufficient to provide services at levels required by the market.

However, calculation and application of an appropriate WACC is a necessary but not sufficient basis for pricing access. To be effective, all elements of the proposed regime must operate to achieve the desired outcomes. Such analysis is beyond the scope of this report.

2.6 Risk Assessment

Determination of the WACC for the Infrastructure using CAPM is an empirical and partially subjective process. Many of the variables applied by CAPM theory can be observed empirically, however, the calculation of an appropriate return to equity is dependent upon assumptions made concerning the Infrastructure's risk relative to the market portfolio, as measured by the Infrastructure's beta.

Beta measures the covariance of returns between an individual investment and the market portfolio. Beta is therefore a measure of systematic, non investment-specific risk. Beta data for the Infrastructure is not available as Westrail is presently an unlisted, government owned entity. Assessing comparable investments that have published beta data is accepted as the most viable approach to estimating an appropriate beta for the Infrastructure. However, scarcity of comparable data can introduce subjectivity to the process.

2.7 Separating Urban and Freight Infrastructure

Assessment of the types of risk facing the Infrastructure, made after gaining an understanding of the prevailing operating environment, has led to a clear distinction being made by Macquarie between the Urban and Freight components of the Infrastructure. This distinction has been made in consideration of the following facts:

- Urban Passenger Services are conducted by Westrail on behalf of the Department. The Department reimburses Westrail the agreed costs incurred in providing the Urban Passenger Services under a formal arrangement, regardless of the operating profitability of the service. These reimbursement payments are tied to pre-negotiated service levels. Operating risks associated with the Urban infrastructure are therefore borne by the Department. There are no foreseeable changes to these arrangements or corresponding government policies that will increase the risks facing the Urban infrastructure.
- As the Urban infrastructure serves the population of the Perth metropolitan region, ownership risk is ameliorated by the low prospects of asset stranding, asset obsolescence, unfavourable changes in the regulatory environment, decreasing use of the infrastructure, or volatility in forecast demand. The set of risks facing the Urban infrastructure are discussed in more detail in Sections 4.2 and 5.2.
- Westrail Freight does not operate at a loss and does not receive community service obligation ("CSO") payments from the Department. Approximately 90% of Westrail Freight's revenue comes from commercial agreements with private entities.
- Because none of Westrail Freight's rail freight task is directly regulated, road transport operators are able to bid for the majority of Westrail's freight task.

Based on the above facts, the market risk facing the Freight infrastructure is considered to be greater than that of the Urban infrastructure. Further, the lack of regulation of Freight compared to Urban introduces road contestability as a potential risk to Freight infrastructure. Asset stranding risk is also more prevalent in the Freight infrastructure. On the basis of these fundamental differences, Macquarie has proceeded in its analysis by considering the two components of Infrastructure separately. This approach is considered appropriate until such time as there is a significant change in the operating environment, e.g. a policy shift away from Government support of the metropolitan passenger network.

2.8 Separating Below Rail and Above Rail Assets

A key consideration is whether the risks associated with the below rail assets are able to be meaningfully assessed independently of the above rail operations. Whilst this is a theoretically correct approach, there are practical difficulties associated with availability of relevant market data. In particular, much available data is related to vertically integrated rail operations with little data available in respect of "pure" below rail assets and risks.

Macquarie has sought to overcome this information asymmetry by firstly assessing pure rail infrastructure data (NSW Rail Access Corporation, Railtrack of the UK) and thereafter identifying the differences in operations and therefore risks, between other observed companies and the Infrastructure.

There are distinguishable differences in the risk profiles of the Infrastructure assets and the "above rail" assets. How well these differences can be captured by available market data is a separate issue. Scarcity of data does not prevent rational discussion and judgement on what impact these risks should have on the Infrastructure's WACC based on extensive consultation.

Submissions received by Macquarie generally endorsed this approach. Westrail argued that due to shortages in available data it is appropriate that Macquarie derive beta values for the entire Westrail business. Macquarie recognises that there are shortages in observable data in regard to pure rail infrastructure. Consequently Macquarie has applied judgement in determination of what the appropriate beta values are that best reflect the risk profiles of both types of infrastructure. Macquarie has concluded that to consider the risks facing the entire Westrail Freight business would potentially lead to inappropriate outcomes with regard to the rate of return. These are discussed below.

With open access to rail infrastructure, the above rail assets of Westrail Freight are in competition with other rail operators as well as road and sea transport. By contrast, the rail infrastructure is in competition only with non-rail forms of transport, as it is a natural monopoly. Market risk is therefore greater for the "above rail" assets of Westrail, due to the increased contestability of revenues. For example, an existing rail customer could choose another operator or could choose to undertake the task itself. Whilst the above rail assets may be displaced, it is possible (indeed likely in many cases) that the below rail assets will continue to be used. In Westrail's case (as discussed below) many of the commodities it transports are unlikely to be economically transportable by road. Consequently, whilst Westrail Freight may run the risk of losing certain customers, the risk that those customers will chose other forms of transport is considered low. Accordingly, the risk of the Infrastructure is considered, prima facie, to be lower than the risk of the above rail business.

In an open access environment, to determine the target long term WACC on the basis of Westrail Freight's entire risk profile is considered inappropriate and could potentially lead to the perverse situation where third party rail operators are expected to pay access prices which factor in the risk of their own potential entry into the rail freight market. This would impose an inequitable cost on third party operators who would be charged via higher access rates to infrastructure. This is one example that displays the potentially inequitable outcomes if Westrail's entire risk profile is considered when determining the long term target WACC.

The rail infrastructure investment decision is influenced significantly by the rate of return applied by the Rail Access Regulator (the "Regulator"). Westrail has proposed that the rate of return (WACC) applicable to the Infrastructure is equivalent to that of the vertically integrated business because it is the integrated railway that makes the investment decision. If this argument was accepted by the Regulator, it could potentially lead to inefficient outcomes such as over capitalisation of the Infrastructure where the rate of return did not reflect the market's value of the Infrastructure.

The risks facing the Infrastructure are arguably lower than those facing the integrated business by reason of the fact that above rail activities are contestable. This implies that the discount rates used for investment analysis by the Freight operating business should be higher than that of the Infrastructure in isolation, assuming the typical relationship between risk and return.

It is possible that another above rail freight operator may have a hurdle rate that is lower than that of Westrail's above rail business. This operator may be prepared to undertake freight tasks at lower costs than Westrail or when it is uneconomic for Westrail to do so. This operator may be able to operate viably whilst paying efficient access charges to the Freight infrastructure owner. This is an example of an efficient pricing outcome advocated by the Code and is one of the key regulatory objectives. This outcome potentially increases rail infrastructure utilisation while delivering efficient pricing outcomes to freight operators and their customers. To apply a higher discount rate than the one appropriate for the Infrastructure may restrict competition between freight operators and may decrease the viability of sections of the Infrastructure if efficient outcomes achievable by other Freight operators are restricted.

2.9 Impact of Open Access Regime

Macquarie recognises that the risks facing rail infrastructure are changed when an open access regime is introduced. These include factors such as:

- incentives to invest in new infrastructure;
- exposure to larger number of freight operators and associated risks; and
- loss of pricing efficiency outcomes.

Macquarie has considered these factors in determination of an appropriate beta. On balance Macquarie has concluded that the risks facing the Freight infrastructure in a ringfenced environment due to open access should not impact on the equity beta range applied as the impact of the open access regime is a diversifiable (specific) risk facing the Infrastructure. As a specific risk, Macquarie considers that the impact on the maximum WACC value selected is minimal, given the majority of the risk (due to open access) is borne by the Freight business (ie. the above rail assets), and not the Freight infrastructure.

2.10 Relationship Between the Maximum Rate of Return and Average Return

As part of this review Macquarie is required to consider the appropriateness or otherwise of translating "average" returns observed for comparable companies into the "maximum" return to be applied to any one group of operators under the Regime.

Due to the imprecise nature of using comparable entity data to derive beta values, Macquarie considers it prudent to determine a range of beta values rather than a point estimate. The high point of this range represents the maximum level of systematic risk applicable to comparable infrastructure (i.e. below rail infrastructure investments generally).

Assessment of the impact of specific risks on the appropriate *maximum* rate of return occurs independently of the assessment via CAPM. Given that specific risks are diversifiable, it would be inappropriate to go outside the range specified by CAPM. Specific risks are considered to achieve the objective of determining a risk adjusted rate of return that is consistent with returns being sought by investors in commercial enterprises operating in competitive markets and facing similar business risks to those faced by Westrail in the provision of the network service.

Macquarie has examined the relationship between the maximum rate of return and the range derived from the CAPM methodology.

First, Macquarie would make the following comments regarding the Baumol pricing methodology as outlined by the Code:

- The ceiling test constrains the maximum revenue receivable by any section of the Infrastructure to total cost. This is known as the Combinatorial Test.
- Total cost includes a return on capital described by the Code as “the WACC to the Commission”. This WACC is described by the Department in its scope of work as an appropriate risk adjusted WACC having regard to Westrail’s commercial and operating environment. Macquarie understands that the Code will be changed to reflect this.
- As the ceiling test applies the WACC to the gross replacement value (“GRV”) of the infrastructure, it is not possible to cross subsidise under-performing infrastructure by over-recovery of costs on well utilised sections of track.
- Commercial constraints on poorly utilised sections of the infrastructure mean that these sections may not earn their total cost in terms of GRV.
- Therefore, if total costs are not achieved on certain sections of the network, the entire network cannot earn its total cost on average.
- The apparent purpose of the maximum rate of return concept is to permit access pricing flexibility so that a degree of discriminatory pricing can occur in order for the network to earn an appropriate return on average.
- Understanding what this maximum rate of return should be in view of efficient discriminatory pricing outcomes is a complex task that requires significant scenario analysis of the Infrastructure’s operating environment and asset valuations. Further, modeling of the impact of the Combinatorial Test on average network returns is complex and potentially inexact.

Undertaking such an analysis is beyond the scope of this assignment given the level of information and time available.

Macquarie notes that IPART in its selection of a maximum rate of return for RAC in NSW chose a value from a range calculated by the CAPM framework and chose not to fully model the possible scenarios which incorporated variations in tonnages and resulting revenue and cost results and in turn the access pricing outcomes. Instead it sought a consensus between major stakeholders about the “reasonableness” of the maximum rate on the basis of other recent regulatory outcomes and the set of risks facing the business.

Macquarie has adopted a similar approach given the analytical complexity of modeling pricing outcomes. In Macquarie's view, the selection of the maximum point in the range is appropriate having regard to objectives of the Combinatorial Test and the fact that going outside of the range derived by CAPM is inappropriate from an economic efficiency perspective (i.e. that specific risk is diversifiable so should not be rewarded).

Macquarie has received submissions requesting that Macquarie apply an uplift factor to the maximum value (Westrail) and that Macquarie adopt the midpoint of this range as being the appropriate maximum value (NRC). Macquarie considers the likelihood of certain track sections not earning an appropriate average rate of return to be real given the GRV valuation methodology contained in the Code. Consequently the role of the maximum rate of return is to allow sufficient scope for the Infrastructure owner to achieve an appropriate average rate of return, whilst not permitting monopoly pricing. In practice, defining this maximum to achieve the necessary accuracy required is difficult in light of regulatory objectives. Returns are influenced by a number of unpredictable outcomes that impact revenue and costs, such as load fluctuations, and therefore impact on actual returns to the Infrastructure. As such, it is difficult to forecast and apply a maximum rate in practice that will not permit monopoly rents, but which also allows the Infrastructure owner to receive an appropriate rate of return with equitable access pricing outcomes for a variety of Freight operators.

Alternative approaches to achieve the desired economic and social outcomes may involve reconsideration of:

- asset rationalisation (i.e. closure of uneconomic lines);
- CSO payments; and
- asset valuations (i.e. some basis other than GRV).

Macquarie has used its judgement in the assessment of an appropriate maximum. Further discussion is provided in section 6.3. The Regulator under the current provisions of the Code will be required to review this WACC annually. The review process is discussed further in Section 7.

3. Methodology

This section outlines the methodology applied in calculating the Infrastructure's target long term WACC and the associated maximum rate of return. It includes discussion of the components of the CAPM and WACC formulae and explanation of their derivation. The results are summarised in a table at the end of this section.

3.1 Capital Asset Pricing Model

The classical CAPM uses the following formula to estimate the after tax cost of equity:

$$k_e = \left(r_f + \left(r_m \times \beta\right)\right)$$

Where:

k_e	=	after tax cost of equity
r_f	=	the nominal risk free rate
r_m	=	the Australian market risk premium (of equities over the risk free rate)
β(beta)	=	the systematic risk of equity

The CAPM theory is an imprecise measure of returns to equity and is best applied by determining a range of values for each component. This avoids reliance upon one set of values that may be inaccurate. CAPM theory is very straightforward to apply, but several of the key inputs offer scope for subjectivity and have received significant attention during evolution of Australia's regulatory debate.

Potential difficulties encountered when applying the CAPM methodology, as quoted in IPART's[1] assessment of RAC's maximum rate of return include:

- CAPM is not reliable for accurately predicting actual equity returns over time. It is argued that if market risk is not identical to systematic risk, beta cannot adequately reflect market risk.
- Some of the economic assumptions underlying CAPM may be questionable, e.g. risk free returns, mean variance analysis, and fully informed investors.
- Measuring the market portfolio is difficult.
- Whether to measure the risk free rate using a historical average rate of return on bonds, a forecast rate, or the prevailing market rate. The relationship between the term structure of the bond chosen, the regulatory period, and the average asset life are also issues.
- Estimation of the market risk premium on equity and the equity beta.
- Treatment of firm specific and systematic risk.
- A number of different methods of converting between nominal and real WACC and between post and pre tax WACC are used in the market. The method selected can significantly alter the results of CAPM.

[1] Final Aspects of the NSW Rail Access Regime, Final Report, 28 April 1999

- Whether the effective or the statutory (36 percent) tax rate should be used in grossing up the post tax cost of equity to a pre tax figure.
- The optimal gearing level, i.e. the profit maximising mix of debt and equity.

Maintaining integrity of data in the presence of these issues leads to a range of values that form the basis for determining the maximum rate of return. Assessment of specific risk issues beyond the CAPM methodology will lead to refinement of the maximum WACC.

A discussion of each of the components of the CAPM and WACC formulae follows. The components have been derived following significant independent research and key stakeholder consultation. Research has focussed on empirical data sources and current academic debate, while stakeholder consultation has included the Department, Westrail, WA State Treasury, major customers of Westrail, Freight operators and various industry representatives.

3.2 CAPM and WACC Methodology

The nominal after tax Weighted Average Cost of Capital (“WACC”) formula is:

$$WACC = k_e \frac{(1-t_c)}{1-t_c(1-\gamma)} \times \frac{E}{V} + k_d\left(1-t_c\right)\frac{D}{V}$$

Where

k_e	=	after tax cost of equity
k_d	=	nominal pre tax debt rate
t_c	=	corporate tax rate
D	=	market value of interest bearing debt
E	=	the market value of equity
V	=	the market value of the entity (V = D + E)
γ	=	franking credit utilisation (“gamma”)

3.3 Input Variables

As the Infrastructure is not a listed stock, the beta is unable to be calculated through empirical observation of market data. Other components of the formula are readily observable. The approach to determining beta is discussed in Section 3.3.12.

This section considers the derivation of the following variables:

- the risk free rate;
- the expected inflation rate;
- the Australian market risk premium;
- the debt to equity ratio;

- the corporate debt rate;
- the corporate debt margin;
- the corporate tax rate; and
- the degree of franking credit utilisation, expressed as a gamma value.

3.4 The Risk Free Rate and the Real Risk Free Rate

CAPM methodology requires that the risk free rate should equate to returns currently available in the market and be set on a forward-looking basis.

The yield on Government Bonds provides an estimate of the risk free rate. As the majority of the Infrastructure assets have lives in excess of ten years, the most appropriate bond rate to apply is a rate which matches asset lives. However, very long term bond markets are illiquid and consequently pricing is volatile. For this reason, Macquarie has derived the risk free rate from the yield on 10 year CPI Indexed Commonwealth bonds.

In its determination for RAC, IPART applied a twenty day (calendar day) average of the 10 year Commonwealth Bond rate calculated at the date of its decision. Macquarie accepts this approach as being appropriate and has applied the same averaging calculation. From this approach Macquarie has calculated a nominal risk free rate of 6.32%

To calculate the real risk free rate IPART applied a twenty day (calendar day) average of the August 2010 Capital Indexed Bond rate calculated at the date of its decision. This avoided using the Fisher equation to adjust for inflation from the 10 year Commonwealth bond rate.

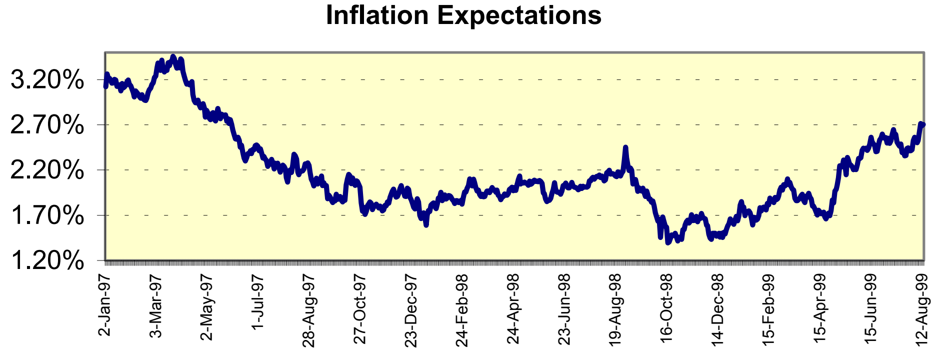
Macquarie has calculated the real risk free rate from the same twenty day average as 3.68%.

Source: Bloomberg, 13 August 1999

3.5 Inflation

The Reserve Bank of Australia sets the inflation target, implements monetary policy and is the most dominant influence on Australia's future inflation rate. The RBA's current long term target for inflation is between 2.0% and 3.0%.

For RAC's maximum rate of return determination, in April 1999 IPART applied an inflation forecast of 1.79%. Inflationary expectations have increased since that decision was made. This is reflected in the chart below.



Source: Bloomberg 13 August

The benchmark 2010 index linked bond is currently trading at approximately 3.74% real rate and the current 10 year government bond futures contract is trading at 6.33% which means the market is currently pricing average inflation assumptions looking forward 10 years at 6.57 - 3.74% = 2.83%.

The ACCC in its proposed statement S6.11[2] states that:

> "The forecast inflation rate will be deduced from the difference in the nominal bond rate and indexed inflation indexed bond rates, and will be deduced for the term corresponding to the duration of the regulatory period. Alternatively, official inflation forecasts may be used."

The current results of this approach are 2.8% and 2.5% respectively. Macquarie has applied a CPI forecast of 2.5% on the basis that the official inflation targets provided by the Reserve Bank are a more reliable medium term inflation value.

Source: Bloomberg, 13 August 1999

3.6 Cost of Debt

Generally the cost of debt is an empirical matter, and should reflect the cost of new long term debt. The appropriate cost of debt is the rate at which the Infrastructure owner is expected to be able to borrow over the term of the analysis. For the purposes of deriving an appropriate WACC which is reflective of the international industry, Macquarie has applied the current risk free rate and added a revised borrowing margin. This borrowing margin is discussed below.

3.7 Cost of Debt Margin

Macquarie has applied a borrowing margin that is reflective of comparable businesses credit ratings and their cost of debt margins. Macquarie notes that the range for cost of debt margins applied in recent WACC determination decisions has been as follows:

[2] Draft Statement of Principles for the Regulation of Transmission Revenues, 27 May 1999

CAPM Parameter	IPART Final Decision Wagga Gas (Mar 1999)	IPART NSW Rail Access Final Report on NSW Rail Access (April 1999)	ACCC Victorian Gas Transmission Final Decision (Dec 1998)
Debt margin	1.20%	1.0%	1.20%

Macquarie has applied a 1.3% lending margin for Freight infrastructure, and in accordance with a lower risk profile for the Urban infrastructure, a 1.1% lending margin.

This margin is derived from the following assumptions:

- 20bp for the typical margin between the 10 year Commonwealth Government bond rate and a "bank" rate against which credit margins would be levied;
- 90bp for the credit margin on debt funding for Freight infrastructure, and 70bp credit margin for the Urban infrastructure; and
- 20bp margin for swap costs.

3.8 Market Risk Premium

Traditionally, Australian studies have suggested the long term market risk premium to be in the range of 6% to 7%. In a submission to the ACCC, Davis suggests that applying this traditional market risk premium may not be in keeping with a forward looking CAPM framework (Davis K, *The Weighted Average Cost of Capital for the Gas Industry*, *March 1998)*. The more stable inflationary environment and impact of dividend imputation may mean that the relevant market risk premium is less than has been observed over recent years.

More recent studies have shown the range to be between 5% and 7.5%. A value of 6% was been applied by the ACCC in its Victorian Gas Access Arrangements Decision, and 6% was also applied by the Office of the Regulator General ("ORG"). The ACCC has since confirmed in its *Draft Statement of Principles for the Regulation of Transmission Revenues (May 1999)* that a value of 5% may be more appropriate in view of the ongoing debate and evidence from financial markets.

As the market risk premium is a historically derived measure applied on a prospective basis, it can be argued that the market risk premium should be lower than what empirical evidence demonstrates. Macquarie has accepted the current approach to the market risk premium value proposed by the ACCC. Submissions generally accepted the range proposed by Macquarie in the draft report.

On this basis, Macquarie has applied a market risk premium value range of 5% - 6%.

3.9 Level of Debt Funding

The appropriate level of gearing to be assumed for the purpose of calculating Infrastructure's cost of capital should reflect the level of gearing which is expected to exist for the period capital is being amortised.

It is assumed that this level of gearing will reflect an appropriate capital structure. The target gearing level, as agreed by the state government and Westrail, for Westrail as a vertically integrated railway is 50%. However, this includes the above rail assets which do not receive regulated revenue and are operated in an open, commercial market.

Both Freight and Urban infrastructure will operate in regulated environments. The ACCC considers that the nature of regulation means that there is relatively low commercial/financial risk to these businesses and the gearing for these businesses could be correspondingly high without adverse credit consequences. This view is endorsed by Macquarie. Revenue for both the Urban and the Freight infrastructure is regulated, indicating that these assets may be able to sustain higher levels of gearing than the above rail businesses. Therefore, whilst Westrail's optimal gearing level may be 50% when combining the Infrastructure and Freight operations, if we are to focus on the Infrastructure assets in a ringfenced environment, a higher level of gearing may be appropriate.

It is useful to consider gearing levels of comparable entities. These are presented in the table below:

Listed rail companies	Business Type	Gearing
Railtrack	Passenger and Freight infrastructure	19%
East Japan Railway Co	Passenger operations	1%
West Japan Railway Co	Passenger operations	0%
Canadian National Railway	North American Class 1	30%
Canadian Pacific	North American Class 1	22%
Burlington Northern Santa Fe	North American Class 1	26%
CSX	North American Class 1	39%
Kansas City Southern	North American Class 1	11%
Norfolk Southern	North American Class 1	39%
Union Pacific	North American Class 1	38%
RailAmerica	Shortline Freight operator	38%
RailTex	Regional and Shortline Freight operator	49%
Genesee and Wyoming	Regional	59%
Wisconsin Central	North American Class 2	22%
Road transport companies		
Brambles Industries	Freight transport	13%
Finemore Holdings	Freight transport	21%
Heggies Bulkhaul	Freight transport	14%
K & S Corporation	Freight transport	37%
Toll Holdings	Freight transport	17%
Infrastructure funds		
Australian Infrastructure Fund	Infrastructure	NA
Infrastructure Trust of Australia	Infrastructure	NA
Hills Motorway Group	Infrastructure	27%
Transurban Group	Infrastructure	26%

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Regulated Infrastructure	
RAC Rail Infrastructure Final Decision (April 1999)	50% - 60%
ACCC Victorian Gas Transmission Final Decision (December 1999)	60%
IPART Albury Gas Company Draft Decision (May 1999)	60%
ACCC NSW & ACT Transmission Network Draft Decision (May 1999)	60%

Source: Bloomberg, 29 June 1999

Applying gearing data from other listed rail companies is potentially inaccurate due to data measurement inconsistencies. Debt like instruments such as long term leases may not be considered in the gearing data, therefore gearing values are potentially understated.

Westrail's submission raised the issue that the Freight infrastructure does not have the same "market power" as other regulated Australian infrastructure. Westrail did not elaborate as to why the Infrastructure has less "market power" than other types of infrastructure. Macquarie has assumed that this refers to the revenue received by the Infrastructure being in part determined by the marketplace within the price tests provided by the Code. It is true that rail operators are not consigned to use its infrastructure through regulation of transport tasks to rail.

Macquarie has concluded, through examination of Westrail Freight's customer base, that the majority of revenue received by Westrail is provided by customers who have no practicable or efficient options other than to use Westrail's Freight infrastructure.

Westrail contends that the gearing data of observed listed rail companies should prevail, despite having a nominal gearing target of 50% agreed with the WA Government. This would indicate that Westrail favours a gearing level somewhere in the range of 25% to 40%.

Macquarie considers that previous Australian regulatory decisions are a more appropriate guide to gearing levels given the scarcity of pure rail infrastructure data and the potential difficulties in using vertically integrated US rail company data. This approach reflects a consistency with other regulated infrastructure assets competing for investment funds in Australia. To use a lower target gearing level would increase the infrastructure's cost of capital. If the gearing level is not reflective of the risks facing the infrastructure, the rate of return will exceed the appropriate rate necessary to attract investment funds. This will potentially lead to a suboptimal capital structure being achieved and potentially inefficient access charges.

Macquarie's experience with regulated assets indicates that these assets have a robust debt capacity under most circumstances.

IPART endorsed a range for gearing ratios of between 50% and 60% for RAC. Other regulators have used a gearing ratio assumption of 60%. Due to the divergence in market risk between Urban and Freight infrastructure, Macquarie has used a gearing ratio range of 60% to 70% for Urban, and a range of 50% to 60% for Freight infrastructure.

3.10 The Corporate Tax Rate

Macquarie has assumed that the Infrastructure's effective tax rate equates to the Australian corporate tax rate of 36%. This presumes that the owner of the infrastructure is not in tax loss or otherwise subject to a reduced effective tax rate. Debate continues over whether the statutory tax rate of 36% should be applied in preference to an effective tax rate. It is generally accepted that application of the statutory rate is appropriate when deriving a real pre-tax WACC. Macquarie notes that the ACCC's recent proposal to use a nominal after tax return on equity as a benchmark for regulation has implications for this approach. The ACCC's proposal is as follows:

> "The revenue will be calculated on the basis of the cash flows associated with the regulatory accounts necessary to deliver this return after taking account of tax liabilities and the assessed value of imputation credits based on existing tax provisions and foreshadowed tax changes due to occur in the regulatory period".

This post tax approach explicitly models taxation effects in the cash flows and, from this, derivation of the WACC is a relatively straightforward exercise. This approach is proposed for pricing regulation in the electricity transmission industry. It is beyond the scope of this report to consider whether this approach could be adopted to rail. Indeed, the Code prescribes a real pre tax real rate. Reverting to the real pre tax methodology, taxation is incorporated by means of an assumption, and has been set at the statutory tax rate of 36%.

3.11 The Impact of Dividend Imputation

In the case of previous Australian access charge determinations, a required rate of return has been levied on a capital cost base before tax and dividend imputation. Macquarie advocates no adjustment for dividend imputation where cashflows can include imputation expressly. However, the present calculation requires the application of a rate of return to a cost base, so imputation must be modelled implicitly through the WACC. Recent studies (Hathaway & Officer, 1996) have concluded that an average of about 45% of the tax collected from companies is redeemed as franking credits on personal tax. This reduces the private sector's cost of capital.

The value of imputation credits is expressed as a percentage value, γ (gamma). Recent regulatory decisions have applied this value as follows:

CAPM Parameter	ORG Victorian Gas Final Decision (Oct 1998)	IPART NSW Rail Access Final Report on NSW Rail Access (April 1999)	ACCC Victorian Gas Transmission Final Decision (Dec 1998)
Gamma	50%	30-50%	50%

Submissions received by Macquarie suggested further examination of the gamma value appropriate to the specific circumstances of Westrail. This would necessarily consider the ownership status of Westrail, which may change during the next twelve months. In its submission the National Competition Council ("NCC") stated that investigation of levels of franking credit redemption according to company size and industry may be relevant. This approach requires examination of the tax positions of investors who invest in companies of particular size and from within particular industry sectors.

In the interest of competitive neutrality and regulatory consistency Macquarie believes it to be inappropriate to consider the utilisation of franking credits on a specific case basis. This may lead to outcomes that are inconsistent with the objectives of the Code, given that the rate of return is ultimately influenced by the gamma value selected.

Further, the ACCC stated in is *Draft Statement of Principles for the Regulation of Transmission Revenues, May 1999:*

> "if the regulatory framework is adjusted to take account of disadvantages faced by one group of investors, it should also take account of advantages that those investors may have over others. Thus, the Commission remains of the view that the relevant benchmark for regulatory purposes should be based on an assumption of private Australian ownership. It is left to the capital markets to transfer ownership to those who have the greatest competitive advantage in investing in Australian based utilities."

Macquarie considers that industry type and ownership status are irrelevant for the purposes of estimating gamma. The variance in value of imputation credits to government and private owners of assets should not impact the rate of return required on assets. Macquarie notes that IPART applied a range for gamma due to uncertainty over its value. Macquarie has chosen to review its a range of 30% to 50% for the gamma value for the Infrastructure, and has applied a range of 40% to 50% for its final decision. The reduction in range reflects the ACCC's view that the most appropriate value for franking credits is approximately 50%, as well as considering academic studies and ranges applied in other recent regulatory decisions noted above.

3.12 Cost of Equity

The appropriate rates of return to equity have been determined by observation of comparable businesses using the following approach:

- constructing the cost of equity from first principles using the CAPM. This method relies upon observation of the components of the formula. The most subjective part of this process is determining an appropriate "equity beta" (β_e);
- removing the effect of the comparable entity's gearing and tax regime by "un-levering" the equity beta to obtain the "asset beta" (β_a); and.
- adjusting ("re-levering") the asset beta to reflect the gearing and tax rate applicable to the Infrastructure.

Whilst theoretical in many respects, the above approach is consistently applied in practice and is arguably the best available method in the present case.

3.13 Beta Determination

Determining an appropriate asset beta is dependent upon selecting comparable private sector, exchange-listed businesses which have sufficient reliable empirical data available for an equity beta calculation. As reliable published beta information is available only in relation to certain markets, a number of listed rail, infrastructure and transport businesses have been identified according to comparable business characteristics.

Furthermore, systematic risk characteristics of the Infrastructure arguably resemble those of certain gas, electricity or road networks. Comparison with non-rail infrastructure is a useful approach to determining expected returns given that other types of infrastructure have significantly more developed regulatory environments and trading markets than rail infrastructure.

Industries which are subject to a regulated income stream which is set in a transparent and consistent regulatory framework are low risk. These industries therefore intuitively have a beta which is lower than the market average, that is, less than 1.

The following table contains adjusted equity beta data for comparable companies.

Listed railway companies	**Country**	**Business type**	**Asset Beta**	**Equity Beta Relevered**
Railtrack	UK	Passenger and Freight infrastructure	0.69	1.03
East Japan Railway Co	Japan	Passenger operations	0.68	1.01
West Japan Railway Co	Japan	Passenger operations	0.49	0.73
Canadian National Railway	Canada	North American Class 1	0.61	0.91
Canadian Pacific	Canada	North American Class 1	0.95	1.42
Burlington Northern/Santa Fe	USA	North American Class 1	0.51	0.77
CSX	USA	North American Class 1	0.60	0.90
Kansas City Southern	USA	North American Class 1	1.67	2.49
Norfolk Southern	USA	North American Class 1	0.53	0.80
Union Pacific	USA	North American Class 1	0.55	0.83
RailAmerica	USA	Shortline Freight operator	0.38	0.57
RailTex	USA	Regional and Shortline Freight operator	0.69	1.03
Genesee and Wyoming	USA	Regional	0.32	0.48
Wisconsin Central	USA	North American Class 2	0.55	0.83
		Simple average	0.66	0.98
Road transport companies				
Brambles Industries	Aus	Freight transport	0.75	1.12
Finemore Holdings	Aus	Freight transport	0.55	0.81
Heggies Bulkhaul	Aus	Freight transport	0.78	1.17
K & S Corporation	Aus	Freight transport	0.32	0.48
Toll Holdings	Aus	Freight transport	0.79	1.18
		Simple average	0.64	0.95
Infrastructure Funds				
Australian Infrastructure Fund	Aus	Infrastructure	0.52	0.78
Infrastructure Trust of Australia	Aus	Infrastructure	0.83	1.24
Hills Motorway Group	Aus	Infrastructure	0.56	0.83
Transurban Group	Aus	Infrastructure	0.58	0.86
		Simple average	0.62	0.93
		Total simple average	0.65	0.97

Regulated Infrastructure		
RAC Rail Infrastructure Final Decision (April 1999)		0.7 - 1.0
ACCC Victorian Gas Transmission Final Decision (December 1999)		1.2
IPART Albury Gas Company Draft Decision (May 1999)		0.9 - 1.1
ACCC NSW & ACT Transmission Network Draft Decision (May 1999)		0.93

Source: Bloomberg, 11 August 1999

This information is the basis for the assessment of target gearing and beta. Adjustment of these variables to account for capital structure has been undertaken using the formula endorsed by the ACCC in its *Draft Statement of Principles for the Regulation of Transmission Revenues:*

$$\beta_e = \beta_a\left[1+\left(1-T_c\left(1-\gamma\right)\right)D/E\right]-\beta_d D/V$$

The relevered beta simple averages reflect a relatively consistent systematic risk profile across rail, transport, and regulated infrastructure which approximates the market average equity beta of 1.0. Macquarie concludes its assessment of appropriate beta values for the Infrastructure following discussion of systematic risk.

4. Systematic Risk

4.1 Freight Infrastructure

Assessment of systematic risks facing the Freight infrastructure enables comparison with the listed companies identified in section 3. Systematic risk, also known as market risk, is common to all investments and hence it cannot be eliminated by holding a diversified portfolio.

In the maximum WACC determination for RAC, IPART[3] described four typical systematic risks as follows:

- Technology: customers switching to alternate modes such as road, conveyor or pipeline.
- Market: market is mature and rail customers may lose export supply contracts.
- Political and regulatory: imposition of new operating, safety, or regulatory requirements.
- Other risks (reliance on electricity motive power, environmental risks, etc).

In the Draft Report Macquarie assessed these risks as systematic risks. Various submissions questioned this treatment. In particular, NRC questioned the inclusion of certain risks faced by the infrastructure which it believed to be specific diverisfiable risks, which are beyond the CAPM framework. Macquarie has reviewed these issues and has reconsidered the set of risks as defined as systematic and specifc risk.

NRC submitted that:

> The ACCC defines systematic risk as 'the risk applicable to the market as a whole, such as economic activity, inflation, tax rises and interest rates', and specific risks as 'the residual risk unique to an individual firm or a small groups of companies that form a subset of the market.' The Commission reflects the weight of professional opinion when it states that 'consistency with the WACC/CAPM framework requires that the net impact on earnings of specific risks be factored into projected cash-flows and not the cost of capital'. Beta values should reflect only systematic risks.

Macquarie agrees that specific risks should not be considered in the selection of an appropriate beta value. Specific risks faced by the Infrastructure should be considered as part of determining what this appropriate maximum rate of return should be, as it is defined as a risk adjusted rate of return by the scope of work supplied to Macquarie. NRC's submission that a midpoint of the range should be used does not consider the impact of the Combinatorial Test on the average rate of return. The impact of specific risks are discussed in section 5.

In summary, systematic risks have been considered in assessing the appropriate range of beta values. Specific risks have been considered in determining an appropriate maximum within that range. Systematic risks have been reexamined and are discussed below.

[3] Aspects of the NSW Rail Access Regime, Final Report, 28 April 1999

4.1.1 Economic Conditions

Market wide influences on returns to the Infrastructure will have an effect in the longer term as these effects are factored in the contractual arrangements the Freight infrastructure undertakes. The long term contractual nature of the majority of costs and revenues to the Infrastructure means that short term influences will not be factored into contracts or operating arrangements. This inflexibility, whilst in some cases penalising the Infrastructure owner, generally causes returns to be involatile relative to those received by the market.

Macquarie has concluded that the rail freight task is generally stable over the medium term in face of the risks faced by the entire market. As such, influences like inflation, interest rates, tax rises and economic activity generally will impact the returns to Freight infrastructure at levels below the market average. Volatility of returns to Freight infrastructure are more likely to be underpinned by specific risk factors.

4.1.2 Market Risk Impact on Freight Volumes

Freight volume volatility has been considered in the medium term. The proposed period for the appropriate maximum WACC to be applied by the Regulator is initially three years, and then five. The expected volatility of freight volumes has been considered in view of these periods, given that the Regulator will have the option to adjust the WACC in response to significant changes in the market environment.

Major resource industry customers have indicated that they consider the corresponding rail task for their output should not be impacted upon by project/mine closures or output reductions in the foreseeable future. Macquarie has assessed historical tonnage data supplied by Westrail in concluding the view that the large scale rail task freight volumes have been relatively consistent over the medium term.

The long term grain production forecast supplied by CBH reflects solid growth, without considering the likelihood of adverse climatic conditions. The historical trend in the grain freight task supports this future growth forecast.

Macquarie has also considered forecast data supplied by Westrail to 2004/05. This data is based on the following assumptions:

1. No loss of business or price reductions as a result of third party access;
2. An early recovery from the Asian economic downturn; and
3. Contract freight prices assumed to be maintained at current levels.

The Westrail forecast data are relatively flat and are inconsistent with historical growth rates which were evident in data dating back to 1987/88, with the exception of the grain task. This may reflect a conservative forecast supplied by Westrail. This potentially underestimates the level of returns to rail infrastructure, and would not reflect the potential upside in the future rail freight task.

Financial risks associated with volatility in commodity prices are significant, and this is reflected by declining rates of return to minerals companies over the past decade. Macquarie has consulted widely to assess the extent to which market risks facing the six major resource customers are directly transferred to the Freight infrastructure. As part of this assessment Macquarie has considered the relative competitive position of the six customers in global commodity markets.

4.1.3 Conclusion

Macquarie has presented discussion of the systematic risks facing the Freight infrastructure in order to present the issues it has considered in determining an appropriate beta value.

IPART selected a range of 0.7 to 1.0 for the equity beta for RAC on the basis that it considered RAC risk to be below the market average. Westrail Freight's exposure to a greater systematic risks due to the nature of contractual relationships and customer base leads to the level of systematic risks faced by the Freight infrastructure to be greater than those faced by RAC in NSW. However, Macquarie does not consider a direct comparison with the IPART decision appropriate in view of the different treatment of risks undertaken by IPART. IPART's inclusion of specific risks in its assessment of an appropriate beta value for RAC may have led to a slightly higher beta value being selected.

The simple average of US and Canadian rail companies equity beta values has been calculated as 0.98. The selected Australian transport companies' equity beta simple average is 0.97, and listed infrastructure companies equity beta simple average is 0.92. Macquarie recognises that several of these companies have above rail freight operations in addition to owning rail infrastructure.

Submissions argued for equity beta ranges to be changed on the basis of different perspectives on the degree of risks the Freight infrastructure faces. Suggestions ranged from 0.8 to 1.0 and from 1.1 to 1.3.

After reconsideration of systematic risks in the CAPM framework information Macquarie has chosen to lower its selected equity beta range to 0.8 to 1.0 for the Freight infrastructure.

4.2 Urban Infrastructure

Urban infrastructure is simpler to analyse in terms of systematic risk. The relationship between the Department and Westrail could imply that the operation is essentially "risk free", given that the operations and costs are underwritten by the Department which acts as owner and customer. Simplistically, this would imply a beta value of zero.

However, this would be a particulalry aggressive approach to take because there are identifiable risks which increase the risk profile of the Urban infrastructure above the risk free rate. These include the typical systematic risks discussed in reference to the Freight infrastructure such as market risk and general economic conditions. Accordingly, the owner of the Urban infrastructure requires a rate of return above that of the risk free rate. Risk of Urban infrastructure may be considered comparable to that of government sponsored water supply, electricity transmission, or electricity distribution.

4.2.1 Economic Conditions

Macquarie has concluded that the Urban infrastructure is similarly exposed to changes in economic conditions as the Freight infrastructure. Further, due to the relationship that the Urban Passenger Services division of Westrail has with its owner, many of the systematic risks are not passed on to the Infrastructure itself, but borne by the ultimate sponsor of Urban Passenger Services, the Department. Correspondingly, influences on returns to the Urban infrastructure by factors like economic activity, inflation, tax increases and interest rates will be lower than the market average.

4.2.2 Market Risk

Demand for Urban rail infrastructure is expected to increase, primarily driven by Perth's population increasing, which is forecast to grow from its current 1.33 million to 2.0 million by 2029 (Source: "Metropolitan Transport Strategy" 1995). Initiatives that are discussed in the specific risk section further underpin expected demand increases for urban passenger trains.

Macquarie considers that the demand, and consequently returns for Urban infrastructure to be involatile. Market wide influences on urban rail demand will not have a large impact on the degree of returns to Westrail as, again the contractual relationship with the Department largely insulates Westrail from marketwide influences on returns.

The Department ultimately underwrites the shortfall between revenue recovered from the public and the total cost of provision of the Urban Passenger Services. In the context of the relationship between the Department and Urban Passenger Services it would be inappropriate to impose a beta that ignored the fact that systematic risk is largely transferred to the Department. Macquarie considers that an inappropriately high equity beta would potentially increase the shortfall between revenue recovered and the total cost of providing Urban Passenger Services, on the assumption that there is a political threshold for fare increases. If revenue recovered from the public did not increase to reflect a higher rate of return calculated using a higher than appropriate equity beta this would thereby increase the CSO payments to be met by the Department. This would be inappropriate as it is ultimately the Department, through its contractual relationship, that is exposed to the majority of the systematic risks faced by the Urban infrastructure.

4.2.3 Conclusion

After consulation with the Department on these issues, Macquarie has applied an equity beta range of 0.3 to 0.4 for the Urban infrastructure.

5 Specific (Non Systematic) Risk

Specific risk is assessed outside the CAPM framework and is comprised of a number of risk factors considered to be unique and non diversifiable. Qualifying the impact of these specific risks on potential volatility of returns furthers the process for estimating the appropriate risk adjusted maximum rate of return on the Infrastructure. In regulatory processes elsewhere, these specific risks have influenced the selection of the maximum rate of return from the range derived by the CAPM methodology.

5.1 Specific Risks Facing Freight Infrastructure

The specific risks facing Westrail's Freight infrastructure include its exposure to a small number of large customers, level of competition and other factors such as the regulatory environment, track failures and derailments etc. These risks are not considered within the CAPM analysis.

5.1.1 Customer Base

One of the key specific risks for Westrail Freight is its exposure to a small number of large customers who operate in competitive, volatile, commodity markets. These customers and their contracts with Westrail Freight, have been assessed to determine the degree of specific risk facing the Freight infrastructure. This is essentially a subjective process and is reliant on factual information and Westrail's own forecasts for future rail task demand. Macquarie has consulted with major customers and independent minerals and resources industry organisations as part of its assessment process.

Westrail's seven major customers generally have long term, large scale investments in infrastructure, reserves and operating assets. These dominate Westrail Freight's revenue base. Typically the output from these operations are price inelastic in the short to medium term. Consequently, volumes tend to be relatively stable with producers (Westrail Freight's customers) bearing price risk to absorb any volatility in demand. Decisions to decrease the level of output from these investments are not made without significant changes to the fundamentals of the markets in which they operate.

Macquarie has consulted Westrail Freight's major customers in order to assess the future prospects for those businesses that demand rail freight services utilising the Freight infrastructure in view of global market conditions.

The risks associated with these customers are borne directly by the (above rail) Freight operator. Macquarie has assessed the extent to which these risks are passed onto the Infrastructure via the relationship it has with the Freight operators who pay regulated access charges. It cannot be assumed that if a customer's business fails, the operations of the customer will not be undertaken by another entity and the rail freight task maintained along with use of the Infrastructure. Macquarie has concluded that the specific risk associated with the customer base is largely borne by the above rail business, given the prospects and long term investments undertaken by Westrail's major customers.

5.1.2 Intermodal Contestability

Assessing the degree of road contestability for Westrail's rail freight task is a complex issue. Westrail has stated that:

> "The State Government has progressively repealed regulations which restricted the choice of transport modes beginning in the early 1980's with the last restrictions removed in 1995. All of Westrail's freight business is therefore open to competition from road transport and to a lesser extent sea transport."

Westrail has stated further that 90% of its rail freight task is potentially contestable by road. Australia has low levels of restriction on the capacity of road transport, with road trains being able to achieve relatively high scale economies comapred to some other states and countries. Furthermore, Western Australia has no regulated rail freight tasks. The issue of road contestability goes beyond regulation however.

Analysis has been undertaken of historical data supplied by Westrail which details tonnes carried by commodity since 1987/88. It is clear that while smaller loads have been reduced (presumably due to increased road competition), the large scale tasks have grown steadily. Macquarie has determined that the volatility of the freight task is relatively low when considering the total scale of Westrail's freight task. The nature of rail tasks for Westrail's seven major customers are, broadly, six high volume/load resource commodities and a large scale seasonal grain task. As such, there are several issues which restrict the ability of road transport operators to effectively contest Westrail's rail freight task. These include:

- Rail offers significant scale economies and cost advantages relative to road transport when dealing with consistent, large volume loads such as those carried on the Freight infrastructure. A relatively high cost of service is therefore an effective barrier to entry for road transport.
- There are arguably "latent" barriers to entry with regard to road transport. Stakeholder consulation has indicated that if the majority of the seven major rail freight tasks were converted to road, significant environmental and social issues would arise due to the high volume nature of the task. This potentially restricts the viability of road transport as an alternative mode.

5.1.3 Regulatory

Westrail has stated that the repeal of regulations restrictings alternative forms of transport over the past fifteen years has increased the road contestability of its freight task.

Recent Federal Government initiatives have been designed to help rail freight become more competitive with road transport. The Western Australian State Government is considering privatisation to arrest the underinvestment levels in rail infrastructure. On this basis, it is expected that the regulatory environment will generally promote rather than restrict growth in rail freight transport.

Macquarie has assessed the "Transform WA" program in the context of increasing the ability of the WA road network to compete with rail freight transport.

The recent changes to the diesel fuel rebate scheme have been assessed in light of rail transport's relative competitiveness.

Macquarie is not aware of any State Government initiative that will potentially restrict the growth of rail freight transport in Western Australia.

5.1.4 Technology Risk

Changes in the technology applied in Freight infrastructure and to competing modes of transport are not likely to create a significant risk to the Freight infrastructure in the near future. Current network construction methods are not expected to change in the foreseeable future, beyond the introduction of concrete sleepers.

Westrail submitted that Macquarie dismissed technology as a significant risk. Westrail stated that changing technologies in the road transport industry have continued to provide intense competitive pressure and will continue to do so. Westrail did not provide examples of these technologies. Macquarie assumes these technologies have increased the capacity of road transport by, for example, enabling a larger number of trailers to be hauled.

Macquarie's assessment of the revenue base of Westrail Freight has concluded that the majority of freight revenue is not exposed to technological risk.

5.1.5 Grain Freight Task

Westrail is a party to the WA Export Grain Agreement, which includes the Australian Wheat Board ("AWB"), the Grain Pool, Co-operative Bulk Handling ("CBH"), the Western Australian Farmers Federation ("WAFF") and the Pastoralists and Graziers Association ("PGA"). The grain freight task is generally undertaken by rail due to economies of scale and other logistical advantages that rail enjoys. There is, however, a degree of penetration by road transport (reflected in the table below) and this typically represents the transportation of grain from farms where it is uneconomic to operate rail transport to rail heads.

Grain Logistics Committee Production and Receivals Data

Port Zone	1997/1998				2005/2006			
	Production	Receivals	Road	Rail	Production	Receivals	Road	Rail
GER	2.5m	2.25m	0.4m	1.1m	3.1m	2.8m	0.5m	1.3m
KWI	5.9m	5.4m	0.03m	5.1m	7.3m	6.7m	0.04m	6.6m
ALB	2.2m	2.0m	0.6m	1.1m	2.7m	2.4m	0.75m	1.3m
ESP	1.35m	1.2m	0.7m	0.1m	1.7m	1.5m	0.8m	0.2m
TOTAL	11.95m	10.85m	1.73m	7.4m	14.8m	13.4m	2.1m	9.4m

Source: Overview of Consultants Report for the Grains Logistics Committee, June 1998

While rail enjoys a competitive advantage over road, freight rates are broadly in line with road transport rates. Grain freight pricing is influenced by grain producers interests being promoted by representative bodies who are signatories to the WA Export Grain Agreement. Unlike Westrail's other major customers, the WA Export Grain Agreement represents a much larger number of smaller customers.

The WA Export Grain Agreement expires in October this year and is yet to be renewed.

The new agreement will be required to have competitive characteristics so as to not preclude other rail and road freight operators from contesting the grain freight task. As this agreement is yet to be renewed, Macquarie has proceeded on the basis that this will be the eventual outcome when the agreement is renewed.

Grain forecasts suggest strong growth in the rail freight task. The following independent forecasts have been compiled by Co-operative Bulk Handling ("CBH") the Grain Logistics Committee ("GLC").

Year 2005 Predictions (Tonnes) Received Into CBH Storages By Zone

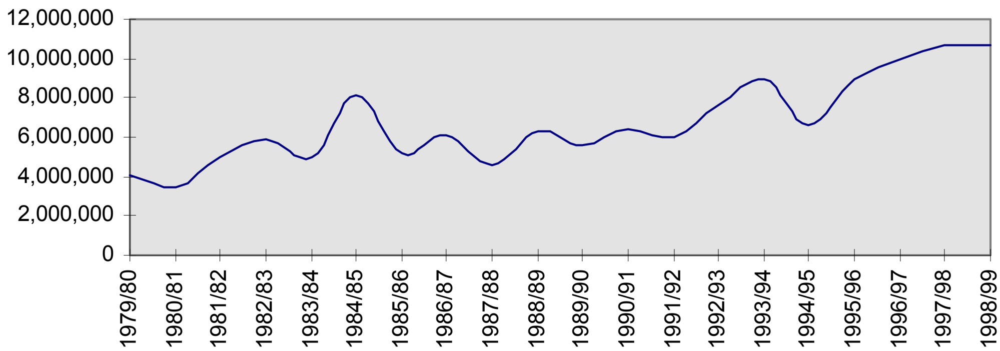
Port Zone	CBH Tonnes	GLC Tonnes
Geraldton	2,914,680	2,800,000
Kwinana	7,458,971	6,700,000
Albany	2,987,424	2,400,000
Esperance	1,962,938	1,500,000
Total	**15,324,013**	**13,400,000**

Source: CBH, GLC

Based on this data, and historical growth trends in grain production in Western Australia, the long term market risk for the grain freight task is considered to be low. Fluctuations in global demand are reflected much more in price movements than in tonnes transported. Flexibility in cropping programs is limited to certain farming regions in Western Australia and as a consequence, the grain freight task is relatively stable.

Climatic change has a much greater impact on production than demand volatility. The impact of climatic change over the past fifteen years was most significant in the years 1983/84, 1987/88 and 1994/95. Average annual growth of CBH receivals has been in excess of 8% since 1979/80.

Total All Grains (tonnes) Received into CBH Storages by Season Commencing 1979/80



Source: CBH

The grain freight task is divided between road and rail, with rail handling approximately 70% of grain received.

Road transport is primarily used to take grain from farms which are not located near rail heads to receival points for rail transport. Road enjoys a competitive advantage over rail in these areas because it is not economic for rail to maintain Infrastructure and operations in areas such as these which have low tonnages.

A key outcome of the Grain Logistics Committee report was to rationalise receival points on the rail network to form a set of Strategic Receival Points ("SRP's"). These points were selected to increase economies of scale in the WA rail transport system and to reduce the imminent capital expenditure requirements associated with maintaining the existing Infrastructure. These initiatives are expected to increase the efficiency of the grain network, as well as providing:

- improved sampling and weighing facilities;
- extended hours of service;
- fast outloading to rail and road; and
- storage capacity for a range of grain varieties.

The grain task for road transport is likely to increase in areas where outlying rail routes are closed.

On balance, the improvement in operating efficiency of the rail transport system resulting from the SRP strategy should improve the remaining network's overall competitive position with regard to road transport.

5.1.6 Conclusion

While Westrail's exposure to seven large customers may suggest significant risk, the majority of that risk is in fact borne by the above rail assets because there is a low risk of mode substitution. Macquarie has therefore concluded that this risk is limited to the likelihood that these operations will significantly decrease their freight requirements. In other words, the principal specific risk is that one or more of Westrail's major customers will reduce or lose its freight task (e.g. by losing export contracts). The risk of mode substitution is considered low and the risk that the loads will reduce or cease is also low in view of historical data and stakeholder consultation.

Macquarie recognises that a certain amount of general freight carried by interstate carriers in the standard gauge route between Perth and Kalgoorlie is very contestable by road and to some extent sea, which is contrary to the other major commodities carried on this route.

After assessment of specific risks, it has been concluded that they do not justify an explicit upwards revision of the appropriate maximum rate of return on infrastructure i.e. beyond the top of the CAPM range value of 8.2%, which would imply an "uplift" factor. Westrail requested that Macquarie address the issue of an uplift factor. Macquarie endorses the view taken by IPART that applying an uplift factor to a maximum rate of return would potentially permit monopoly pricing to occur.

5.2 Specific Risks Facing Urban Infrastructure

5.2.1 Ridership Volatility

Historical data has shown that growth in ridership is most significantly impacted upon by the availability of rolling stock capacity at peak usage periods. Currently, approximately 38% of daily ridership occurs during the period 7.30am to 8.30am. Previously, when the system has been at full capacity during these periods, ridership has declined in response to perceived capacity shortages.

Traditionally, annual growth in ridership has fluctuated between 2.5% to 5%, subject to availability during peak periods. Extensions to the northern line and the South West railway system will underpin further usage of the existing Infrastructure.

There are currently a number of initiatives being developed by the Department, Transperth and Westrail to improve ridership during non peak periods. These are designed to increase utilisation of excess capacity and recover a higher proportion of the fixed costs of the Urban Network and operations.

On balance, Macquarie has concluded that factors increasing risks associated with ridership volatility are being reduced by the current expansion program and initiatives designed to increase non peak period usage.

5.2.2 Legislative Changes

The introduction of open access to rail infrastructure could arguably increase the demand for Urban infrastructure because operators other than Westrail will be able to offer alternative services. It is therefore unlikely that these policy changes will impact negatively on the utilisation of the Urban infrastructure. Because the Department has not signalled an intention to allow the private sector to participate in urban rail services, Macquarie has concluded that the proposed legislative changes will have little positive or negative impact on the risks facing the Urban infrastructure.

5.2.3 Regulation of Competition

The prohibition in relation to Transperth buses operating on the Mitchell Freeway is a key incentive for the utilisation of the Northern rail network. Buses are primarily used as "feeder" vehicles to the rail system, increasing the utilisation of the Northern rail system during peak periods. Studies have shown that the usage of buses along the Mitchell Freeway during peak periods to supplement rail transport is not practical, as the road traffic congestion limits the contribution buses can make to the Urban passenger task. As such, rail enjoys advantages over road transport in high usage periods. This has also been borne out of surveys undertaken with the Urban network's customer base for whom reliability, frequency and speed of services are the major concern.

Macquarie has concluded that competition for the Urban network will remain low in the absence of any policy changes that permit passenger buses to compete with the Northern Urban rail network.

5.2.4 Technology Risk

Changes in technology applied in rail infrastructure and competing modes of transport are not likely to create a significant risk of obsolescence in the near future. Current network construction methods are not expected to change in the foreseeable future. Technological changes to the Urban Passenger System have increased its service capacity.

5.2.5 Level of Government Funding

New train capacity was supplied last year to satisfy peak period demand on the Northern line. Further, extensions to the Northern line beyond Currambine and the South West rail line to Mandurah are planned. Funding options for this Infrastructure expansion are currently being developed by the State. On this evidence there is clear governmental support for the increased investment in Urban infrastructure to meet increased passenger demand.

5.2.6 Public Relations and Service Enhancements

Public relations are playing an increasingly pro-active role in promoting passenger train usage. As mentioned previously, there are a number of initiatives currently being developed to improve the economics and cost recovery of Urban rail transport during non peak periods. These initiatives include alternative pricing approaches and improved security. This more commercial approach to improving cost recoupment through increased ticket revenue is expected to continue as a means of decreasing the current dependence on funding from the Department.

5.2.7 Availability of Rolling Stock and New Infrastructure Capacity

Extensions to the Northern line and South West railway represent significant infrastructure growth, with the length of track being increased by over 70% in total.

Historical evidence shows that as new capacity has been provided, demand has utilised it quickly. This is likely to continue provided service standards are maintained. The Government and the Department have responded postively to capacity shortfalls previously. Current expansion plans reflect a commitment to continue to support the Urban rail passenger system.

5.2.8 Conclusion

Macquarie has resolved that the specific risks facing the Urban infrastructure are not sufficient to warrant a change from the range calculated by the CAPM analysis. Macquarie considers that because of the relatively low prospect for variation in returns via access charges selection of the midpoint of the range is appropriate.

6. Results

6.1 Table of Component Values

The following table displays component values for the CAPM and WACC formulae outlined previously, as well as results calculated on the basis of these formulae.

WACC Parameter		Freight Low Value	Freight High Value	Urban Low Value	Urban High Value
Real Risk Free Rate (rr_f)	%	3.65	3.65	3.65	3.65
Expected Inflation Rate (f)	%	2.5	2.5	2.5	2.5
Nominal Risk Free Rate (r_f)	%	6.24	6.24	6.24	6.24
Cost of debt margin (over r_f)	%	1.3	1.3	1.1	1.1
Cost of Debt (r_d)	%	7.54	7.54	7.34	7.34
Market Risk Premium (r_m-r_f)	%	5.0	6.0	5.0	6.0
Corporate Tax Rate (T)	%	36	36	36	36
Gearing (D/V)	%	60	50	70	60
Gamma (γ)	%	50	40	50	40
Equity Beta		0.8	1.0	0.3	0.4
Nominal Cost of Equity	%	10.2	12.2	7.7	8.6
Nominal Post Tax WACC	%	6.1	7.4	5.1	5.6
Real Pre Tax WACC (Market practice transformation)	**%**	**6.8**	**8.9**	**5.3**	**6.2**
Real Pre Tax WACC (Reverse transformation)	**%**	**5.5**	**7.5**	**4.0**	**4.8**
Real Pre Tax WACC Midpoint	**%**	**6.2**	**8.2**	**4.6**	**5.5**
Final Decision Appropriate Maximum			**8.2**		**5.1**

6.2 Transformation of Nominal post tax WACC to a real pre tax WACC

Macquarie has used both methods of transformation, known as the market practice and reverse transformation methods. These differ in the order of treatment of tax and inflation in calculating a real pre tax WACC from a nominal post tax figure. Macquarie has selected the midpoint between each conversion method. This approach is endorsed by the ACCC when deriving a real pre tax WACC, and was applied by IPART in its Aspects of the NSW Rail Access Regime Final Report. Macquarie rejects Westrail's submission proposed that this method is inappropriate on the basis that it is inconsistent with other regulatory outcomes recently determined in Australia. Macquarie has considered this view, but notes that the method is, in fact, consistent with current market practice.

The combination of the two transformation methods leads to a range being calculated from which a mid point is selected. These two midpoints represent each end of the range calculated by the high and low variable sets. The validity of this method has been questioned by both Westrail and WA Treasury. Macquarie would refer Westrail and WA Treasury to the ACCC's Final Decision on the access arrangements for the Victorian gas networks (Section 3.5 *Rate of Return* page 61). Contained in this decision is an extensive discussion on the merits of applying both transformation methods that cannot be fully reproduced in this report. Suffice to say that the two methods of transformation when used in combination overcome the data transformation inaccuracies that result from applying only the market practice method of transformation.

The ACCC when simulating cashflows derived from revenues calculated using a real pre tax WACC figure showed that the implicit nominal post tax return on equity was different from that used originally to derive the real pre tax WACC using the market practice method. That is, there was an inconsistency in the calculations when demonstrated in practice. Modelling of the two transformation methods via the simulation of cash flows using real pre tax WACC values to set revenues has shown that each method produces results that reduce the level of inconsistency. This averaging approach has become the generally adopted method when deriving real pre tax WACC values.

6.3 Maximum Rate of Return on Rail Infrastructure

The selection of the maximum WACC becomes a judgement call on the reasonableness of the maximum WACC after considering the entire set of risks facing the infrastructure, the Combinatorial Test, other regulatory decisions and submissions from stakeholders and the public alike. There is no straightforward process or "science" of deduction of the maximum rate from the range provided by CAPM. Modeling the Combinatorial Test to examine the impact of the maximum rate on the average rate is a complex and potentially inexact task which has not been undertaken in this instance. Macquarie's conclusion regarding the accuracy of the Code's pricing methodology is that the maximum rate of return may only lead to an appropriate average rate of return by coincidence and not by design.

The decision to select a maximum above the midpoint of each range recognises that different sections of the network will earn different rates of return, and that on average these returns are appropriate. There is greater scope for divergence in returns across the Freight infrastructure as there will be higher volatility in access revenues in the short term compared to the revenue received by the Urban infrastructure. This is a valid argument for having a higher maximum WACC for the Freight infrastructure to avoid short term average returns being lower than appropriate.

Assessing the potential impact of the Combinatorial Test on average returns forms the basis for selection of a maximum rate. This is combined with consideration of specific risks that may clearly increase the volatility of returns to the Infrastructure. This approach is defined by the scope of work where Macquarie is required to:

> … calculate the maximum WACC value for the Western Australian rail track network, having regard to Westrail's commercial and operating environment.
>
> This should be a risk-adjusted rate of return to Westrail that is consistent with the returns currently being sought by investors in commercial enterprises operating in competitive markets and facing similar business risks to those faced by Westrail in the provision of the network service.

Risk adjustment of the WACC appropriate to both the Freight and Urban infrastructure due to specific risks considered by Macquarie has not increased the WACC beyond the range calculated by the CAPM analysis. Selection of the WACC within the range has been made after considering the proposed regulatory environment, the likely impact of the Combinatorial Test on total revenues and consideration of submissions on what the maximum rate should be.

Again, Macquarie would emphasise that this selection process is founded in judgement on how the divergence in returns across the infrastructure will impact the average rate of return. The appropriateness of the maximum will be evident in the commercial outcomes and the actual average rate of return received by the Freight infrastructure.

The appropriateness of the concept of a maximum rate of return used to derive average returns is yet to be fully understood, given the newness of the pricing methodology in the Australian rail industry. Long term effects of the approach on investment and competition levels will take time to emerge, and as such the methodology needs to be closely monitored considering the reform objectives of the State Government and National Competition Policy.

Treasury questioned whether Macquarie should consider the costs of setting the rate too high or too low, in view of the competing objectives of increasing investment and increasing rail on rail competition and the general competitiveness of the Freight business. Macquarie in its scope of work is required to independently assess the maximum rate of return on rail infrastructure. Assessing the relative merits of competing policy issues like investment and competition is beyond the scope of work and falls into the confines of the Regulator.

Westrail has submitted that the maximum rate of return should be 10.5%. Conversely, NRC has submitted that it considers the appropriate maximum rate of return should be 7.0%. Macquarie's application of CAPM methodology has delivered a range of 6.2% to 8.2% for the Freight Infrastructure. From this, and careful consideration of the role of the maximum WACC in view of the Combinatorial Test, Macquarie has determined that the maximum value for the rate of return on Freight Infrastructure to be 8.2%. Macquarie's view , in the absence of detailed financial information, is that the high point of the range calculated by the CAPM methodology is justified and offers the "best hope" to achieve an "average return on average" (by maximising negotiating flexibility).

Macquarie's application of CAPM methodology has delivered a range of 4.6% to 5.5% for the Urban infrastructure. Macquarie has determined the maximum rate of return on Urban infrastructure to be 5.1% (which is essentially the midpoint).

7. Review of the maximum rate of return

7.1 Mechanism and Frequency

Macquarie proposes that the maximum rate of return be reviewed in three years time. Thereafter, the maximum rate of return should be reviewed every five years.

Uncertainty associated with the proposed privatisation of Westrail Freight, and the continued evolution of open access regimes in Australia over the next two to three years are likely to see increased volatility in the rates of return attributable to the Infrastructure. Beyond this initial period, the effects of competition and market efficiency are likely to deliver more predictable returns on investment. Both rail operators and infrastructure owners will be exposed to the risks associated with these market environment changes and the regulator should retain a degree of flexibility to both respond and influence this environment.

The Regulator will need to change the WACC for a number of reasons in accordance with the set of objectives of the State's rail reform process. The Regulator is the best judge of when changes to the WACC are appropriate as it sets and monitors the achievement of those objectives, of which the maximum WACC as a rate of return is one influence. The WACC is one component of the determination of access prices, which are key to promoting competition and growth in the rail freight transport industry.

The scope of work requested discussion of a review mechanism. Macquarie has interpreted this request as referring to the appropriate methodological review process of the maximum WACC value required over time, i.e. price paths or regulatory periods. This process, as presented by the request for tender documents and the Code is to be undertaken by the Regulator.

This process is described in the Code as follows:

> 3. Regulator to determine weighted average cost of capital
>
> 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 to the Commission expressed on a real before tax basis; and
>
> (b) publish notice of the determination in the *Gazette*.

This implies that the WACC be recalculated and applied annually regardless of the materiality or significance of any movements in component variables. The annual review period seems short when considering the potential impact changes in the maximum WACC value might have on the competitive positions and commercial strategies of freight operators. It would also require, in addition to the management of deviations beyond the ceiling and floor tests, further administrative resources.

The review period for the WACC should be supported in the interim by an annual revision process, as outlined in the Code, in order to monitor material changes in the WACC value resulting from changes in economic conditions. Judgement as to the materiality of the changes in the WACC value to access pricing will be required in light of the corresponding impacts on price volatility. This judgement by the Regulator will be on the basis of the perceivable cost-benefit of the administration of changes to the ceiling test relative to maintaining potentially inappropriate total revenue levels to the infrastructure.

Macquarie considers that changes in the following WACC components will have the most pronounced impact on the appropriate maximum rate of return on the Infrastructure:

- the risk free rate;
- inflation forecasts;
- market estimation and empirical evidence on the value of the market risk premium and the proportion of franking credits utilisation (gamma);
- significant changes to long term borrowing margins; and
- significant changes to market expectations of rates of return on Infrastructure.

In view of the potential volatility of these variables in the medium term, the suggested review frequency will enable the regulator to implement a new WACC value. This flexibility is also necessary to maintain influence over policy outcomes.

Macquarie believes that the future review mechanism should reflect current regulatory approaches that are deemed appropriate at the time of review. As the regulatory debate continues, the methodology underpinning access pricing practices will evolve, and the performance of regulatory instruments is expected to improve. Therefore, it is prudent to consider current empirical evidence and policy outcomes when deciding upon what mechanism to apply at any future point in time.

As mentioned earlier, the ACCC is proposing changes to the way in which electricity transmission is priced. This is one example of the evolving nature of regulatory pricing of Infrastructure access. The Code's pricing methodology is relatively immature when compared to other infrastructure industries and will benefit from the investigation and application of outcomes in other regulatory settings.

There are significant risks associated with the introduction of a third party access regime as the policy objectives and the regulatory process are untried in WA. The review mechanism objectives must benefit from both the evolving national regulatory debate and the emergence of unique empirical evidence in WA.

7.2 Management of Deviations Beyond the Ceiling and Floor Tests

Management of breaches of the price tests on an individual route basis is a necessary task in view of the objectives of the Code. The underlying objectives of the ceiling and floor tests are restriction on monopoly rents being achieved and ensuring operators at least pay the incremental cost of their access to that Infrastructure. The reality of the commercial environment means that on occasion these price tests will be breached.

Access pricing is negotiated on the basis that these tests will not be breached. Commercial circumstances, e.g. lower or greater than forecast tonnages may change the economics of access pricing so that access prices charged to operators are not cost reflective or, in aggregate, contain monopoly rents (ie. breach the ceiling test).

IPART proposed reconciliation of deviations from the price tests on an ex-post basis using an "Unders and Overs" account, the management of which is to be the responsibility of RAC and its customers. This process was based on a similar process undertaken by IPART in the regulation of the NSW electricity industry. As the arbiter of the NSW Rail Access Regime, and not the Regulator, it is not IPART's role to administer this process.

The Code does not currently have provision for a process of review or management of deviations in rates of return which exceed the maximum rate of return. This is one area of the Code that appears to require further refinement.

Macquarie suggests that the Regulator in conjunction with Westrail Infrastructure develop an efficient and effective system of managing deviations from the maximum rate of return. Macquarie is not positioned to recommend a process that will ideally suit the interests of the Regulator, Westrail Infrastructure and customers alike. Macquarie would recommend that the Regulator seek evidence from RAC on the performance and administration of the Unders and Overs account in order to adopt or refine that approach. Macquarie would also recommend that the Regulator seek other guidance from the national regulatory bodies, (ACCC, NCC) on other potential precedents for the management of deviations beyond the floor and ceiling tests.

Appendix 1 - Definition of Infrastructure

Freight Infrastructure

Standard Gauge Routes

1. The mainline track between Kalgoorlie and Kwinana, including
   a. the spur line from the mainline to the private sidings at West Kalgoorlie; and
   b. the diagonal line from the mainline at Forrestfield to the north spur and the north spur service line at Kewdale.
2. The dual gauge track between Midland and East Perth, including the south leg of the Woodbridge Triangle.
3. The mainline track between Kalgoorlie and Leonora.
4. The mainline track between West Kalgoorlie and Esperance, including the spur line to Redmine.
5. The mainline track between Cockburn and Robb Jetty, the dual gauge track between Robb Jetty and Leighton and the spur line between Leighton and North Fremantle.

Narrow Gauge Routes

6. The mainline track between Midland and Mundijong via Forrestfield and Kwinana.
7. The mainline track between Cockburn and Robb Jetty.
8. The South-West mainline track between Armadale and Picton.
9. The mainline track between Picton and Lambert, including the spur line from Boyanup to Capel.
10. The track between Pinjarra and Alumina Junction and between Alumina Junction and Pinjarra South.
11. The mainline track between Brunswick Junction and East Collie Junction and the spur line to Premier.
12. The dual gauge mainline track between Midland and Avon.
13. The Great Southern Railway between Avon and Albany, including the following spur lines:
    a. from York to Quairading;
    b. from Narrogin to Merredin;
    c. from Narrogin to Kulin via Yilliminning;
    d. from Wagin to Lake Grace, from Lake Grace to Hyden and from Lake Grace to Newdegate;
    e. from Katanning to Nyabing;

f. from Tambellup to Gnowangerup;

g. from Merredin to Kondinin; and

h. from Merredin to Trayning.

14. The mainline tracks between Avon Yard and

a. McLevie via Goomalling;

b. Beacon via Goomalling and Amery, including the spur line from Burakin to Kalannie; and

c. Mukinbudin via Goomalling and Wyalkatchem.

15. The mainline track between Millendon Junction and Geraldton, including the spur line from Dongara to Eneabba.

16. The mainline track between Toodyay West and Miling. The mainline track between Geraldton and Maya via Mullewa.

Urban Infrastructure

18. The narrow gauge double tracks between Perth and

a. Currambine;

b. Fremantle;

c. Armadale; and

d. Midland.

Source: WA Government Railways (Access) Code 1999 Draft 9