IPART
New South Wales

New South Wales Rail Access Undertaking - Review of rate of return and remaining mine life from 1 July 2009

Rail Access — Draft Report and Draft Decision
May 2009

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Invitation for submissions

IPART invites written comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

Submissions are due by 19 June 2009.

We would prefer to receive them by email <transport@ipart.nsw.gov.au>.

You can also send comments by fax to (02) 9290 2061, or by mail to:

Rail Access - Review of the rate of return and remaining mine life from 1 July 2009
Independent Pricing and Regulatory Tribunal
PO Box Q290
QVB Post Office   NSW   1230

Our normal practice is to make submissions publicly available on our website <www.ipart.nsw.gov.au>. If you wish to view copies of submissions but do not have access to the website, you can make alternative arrangements by telephoning one of the staff members listed on the previous page.

We may choose not to publish a submission—for example, if it contains confidential or commercially sensitive information. If your submission contains information that you do not wish to be publicly disclosed, please indicate this clearly at the time of making the submission. IPART will then make every effort to protect that information, but it could be subject to appeal under freedom of information legislation.

If you would like further information on making a submission, IPART's submission policy is available on our website.

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1 Introduction and executive summary

As part of its review of the rate of return and remaining mine life applicable under the NSW Rail Access Undertaking (Undertaking) the Independent Pricing and Regulatory Tribunal of New South Wales (IPART) has made a draft decision on the rate of return and remaining mine life to apply to the Hunter Valley coal network from 1 July 2009.

The Hunter Valley coal network comprises 37 track sectors with 32 sectors leased to Australian Rail Track Corporation (ARTC) on a 60-year lease from 5 September 2004. RailCorp owns the remaining five sectors.

The revised rate of return is to be applied to the regulatory asset base (RAB) to yield a return on the rail infrastructure of the coal network for the five years commencing 1 July 2009. The remaining mine life will determine the rate of depreciation charged over the same period.

IPART is releasing this draft decision for comment by stakeholders before it issues a final decision in July 2009.

1.1 Overview of draft decision

IPART's draft decision is that:

▼ the rate of return from 1 July 2009 is 7.5 per cent on a real pre-tax basis

▼ the remaining mine life from 1 July 2009 is 30 years.

IPART considers that its draft decision is appropriate for the following reasons.

▼ It balances the risks involved, including what IPART considers to be the considerable risks associated with underinvestment in the network.

▼ It is consistent with current market conditions and risks facing ARTC, however it should be noted that IPART has not made any specific allowance for the ongoing impact of the global financial crisis on the ability of firms to raise capital. It will consider this issue further for its final decision.

▼ It provides regulatory certainty. It is consistent with the 2005 decision and the context for the review, in particular the potential for the regulation of the ARTC sectors to move from IPART to the ACCC in the near future.

The rate of return parameters estimated in this draft decision are based on market data as at 5 May 2009. These will be updated prior to the final decision.

1.2   Structure of report

This report explains IPART's draft decision, including why it reached its draft decisions and the process undertaken in reaching those decisions. The draft report is structured as follows:

▼ Chapter 2 outlines the approach and review process IPART has used to reach its draft decisions and the future process to complete the review, and explains some important contextual matters

▼ Chapter 3 presents IPART's analysis on rate of return and its draft decision

▼ Chapter 4 discusses IPART's analysis on remaining mine life and its draft decision.

2   IPART's approach to the review and process

IPART has made this draft decision in accordance with the Undertaking. Section 2.1 of Schedule 3 of the Undertaking provides:

> Rate of Return means a rate of return in percentage terms approved by IPART for a period of five years to be applied to the average of the Opening and Closing Regulatory Asset Base.

Section 3.2(c) of Schedule 3 of the Undertaking provides:

> The estimate of remaining mine life will be reviewed and if necessary revised every five years from and including 1 July 2004 by IPART or an independent consultant appointed by IPART.

The rate of return and remaining mine life determined by IPART as part of its review are to apply to infrastructure owners of the Hunter Valley coal network, ARTC and RailCorp. The final decision will apply from 1 July 2009 for a period of 5 years, or until such time as the Undertaking is replaced by another undertaking such as that submitted by ARTC for the ACCC's approval.[1]

2.1   Review process

In November 2008, IPART commenced the review by inviting access providers (ARTC and RailCorp) to propose the rate of return and remaining mine life that should apply from 1 July 2009. IPART then invited stakeholders to comment on the access owners' proposal. IPART has also:

▼ released a discussion paper on rate of return for stakeholder comment

▼ engaged a consultant LECG to review estimates of the remaining mine life and released an issues paper prepared by LECG for stakeholder comment

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[1]   ARTC Hunter Valley Coal Network Access Undertaking, draft lodged with the ACCC in April 2009, available from the ACCC's website www.accc.gov.au

▼ held a stakeholder roundtable on 1 April 2009.

ARTC submitted a detailed proposal which was released for stakeholder comment in December of last year.[2] RailCorp chose not to submit a detailed proposal rather it has stated that it is prepared to accept the rate of return and the remaining mine life as determined by IPART in accordance with the Undertaking. RailCorp noted that it would be inappropriate to have different rates of return for it and ARTC.[3]

In reaching its draft decision, IPART considered the views stakeholders presented in their written submissions and raised at the roundtable. IPART also considered the recommendations of its consultant LECG on remaining mine life and its own analysis on the rate of return.

It should be noted that the submission from the NSW Minerals Council was received two weeks after the closing date. The Minerals Council submission referred to the contents of the ARTC submission which was provided on time. ARTC considered that it was disadvantaged by this delay so IPART provided it with the opportunity to provide a brief supplementary submission which addressed the key issues indentified in the Minerals Council's submission. IPART has considered both the original and supplementary submissions from ARTC, and the submission from the Minerals Council and others in making this draft decision.

For further information relating to the review, including copies of submissions and the roundtable transcript please refer to IPART's website: www.ipart.nsw.gov.au.

The timetable for the completion of the review process is as follows:

Table 2.1   Timetable for completion of the review

Process	Due date
Publication of draft decision and report	20 May 2009
Submissions to draft decision and report due	19 June 2009
Publication of final decision and report	July 2009

Stakeholder submissions on this draft decision will be taken into account in forming IPART's final decision. Please refer to the front of this report or the IPART website on how to make a submission.

It should be noted that a result of the delay in receiving submissions on both ARTC's proposal and IPART's discussion paper IPART will amend the procedures for the release of submissions on the draft report. IPART will not publicly release

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2   ARTC submission to IPART, Review of Rate of Return and Remaining Mine Life of Hunter Valley Mines, 1 December 2008.
3   RailCorp submission to IPART, NSW Rail Access Undertaking: Review Rate of Return - Review of Remaining Mine Life, p 1, 29 October 2008.

stakeholder submission until all submissions are received to overcome any procedural concerns.

2.2   Context for the review

ARTC has recently submitted to the ACCC a draft Hunter Valley Coal Network Access Undertaking for approval. While it has not had the time to review this draft undertaking in any detail, IPART understands that it is ARTC's current intention that this new undertaking would replace the existing Undertaking for those parts of the Hunter Valley coal network of which ARTC is the rail infrastructure owner. If this new undertaking is approved, the ongoing need for the current Undertaking will need to be considered. Therefore, this decision could be IPART's last on the rate of return and remaining mine life of the Hunter Valley coal network and it is also highly likely that this decision will not be in effect for the full five years for that part of the network leased to ARTC.

3   IPART's draft decision on the rate of return from 1 July 2009

In previous decisions made under the Undertaking, IPART used a real pre-tax weighted average cost of capital (WACC) to determine an appropriate rate of return to apply to the RAB. IPART has again used the real pre-tax formulation in making its draft decision. This chapter outlines the key reasons for IPART's draft decision on rate of return.

The WACC aims to provide the operator of regulated assets with a rate of return equivalent to that required by the market to invest in those assets.

Under the WACC framework for the Hunter Valley coal network, the overall return on capital is calculated in the following manner:

Return on capital = WACC × average of the opening RAB and closing RAB

The cost of capital is weighted by the return required by the two sources of funding available to a business - equity and debt, and their proportion used by the business. 'Equity' refers to funds raised from the owners of the business, the shareholders. 'Debt' refers to any borrowings of the regulated business.

3.1   Overview of IPART's draft decision

IPART's draft decision is that a rate of return of 7.5 per cent real pre-tax should apply from 1 July 2009.

IPART has considered public submissions and comments made at the workshop held in April 2009. In assessing the appropriate WACC IPART has had regard to the impact of the current global financial crisis on the cost of debt and equity return and the decisions of other regulators, interstate and overseas. In particular, the AER has recently released its final decision on its review of the WACC parameters for electricity transmission and distribution network service providers.[4] However as the AER's decision was released just prior to IPART's draft decision IPART has been able to note, but not fully consider, the AER's decision. A fuller consideration of the AER's decision, to the extent relevant, will be reflected in the final decision for this review.

As discussed in detail below, IPART has not amended individual WACC parameters for the impact of the global financial crisis nor has it taken current market volatility into account is choosing the rate of return within the WACC range.

IPART considers that its draft decision is appropriate for the following reasons:

▼ A rate of return above the mid-point of the WACC range is appropriate given the risks facing ARTC.

▼ It balances the risks appropriately as IPART considers that the costs of underinvestment in the rail infrastructure are high and exceed those attached to overinvestment given the importance of the rail infrastructure to the total coal supply chain in the Hunter Valley. IPART has provided an allowance of 60 basis points to take account of these risks. This is consistent with the 2005 decision for rail access.

▼ It is consistent with current market conditions, however it should be noted that IPART has not made any specific allowance for the ongoing impact of the global financial crisis on the ability of firms to raise capital. It will consider this issue further for its final decision.

▼ It has been derived using an approach which is consistent with the 2005 decision. Given the likelihood that ARTC will be regulated by the ACCC in the near future, IPART considers that there is merit in maintaining regulatory certainty at this point rather than adopting substantial change.

The parameters used to calculate the WACC range for this draft decision are shown in Table 3.1.

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4   AER, *Final decision Electricity transmission and distribution network service providers*, Review of the weighted average cost of capital (WACC) parameters, May 2009.

Table 3.1 WACC range – 2009 draft decision

Parameter	Value
Nominal risk free rate	4.58%
Inflation	2.54%
Market risk premium	5.5-6.5%
Debt margin	2.8 – 3.5%
Debt to total assets	60 – 50%
Dividend imputation factor (gamma)	0.5 – 0.3
Tax rate	30%
Equity beta	0.7-1.0
Cost of equity (nominal post-tax)	8.4 – 11.1%
Cost of debt (nominal pre-tax)	7.4 – 8.1%
WACC (real pre-tax)	**5.7 – 8.3%**
WACC mid point[a]	**6.9%**

Note: The Tribunal has directly estimated the equity beta. The implied asset beta range using a debt beta of zero, a cost of debt of 6.7 per cent, a tax rate of 30 per cent and a gamma of 0.4, is 0.32 to 0.46.

a IPART calculates the midpoint of the WACC range directly from the midpoints of the individual input parameters. Hence, the midpoint cannot be replicated by simply averaging the lower and the upper bound of the WACC range.

The 2005 decision is presented in Table 3.2 below. IPART set a rate of return of 7.3 per cent, 70 basis points above the mid-point of the WACC range.

Table 3.2 WACC range – 2005 final decision

Parameter	Value
Nominal risk free rate	5.5%
Inflation	2.7%
Real risk free rate	2.7%
Market risk premium	5.5-6.5
Debt margin	1.13%-1.23%
Debt to total assets	60-50%
Dividend imputation factor (gamma)	0.5-0.3
Tax rate	30%
Equity beta	0.7-1.0
Cost of equity (nominal post-tax)	9.4-12.0%
Cost of debt (nominal pre-tax)	6.6-6.7%
WACC (real pre-tax)	**5.5-8.0%**
WACC mid-point[a]	**6.6%**

a IPART calculates the midpoint of the WACC range directly from the midpoints of the individual input parameters. Hence, the midpoint cannot be replicated by simply averaging the lower and the upper bound of the WACC range.

IPART had adopted a consistent approach between this draft decision and the 2005 decision for the following parameters:

▼ Risk free rate is calculated using the same approach as the 2005 decision.

▼ The following parameters are the same as for the 2005 decision: Market risk premium (MRP); Debt to total assets; Gamma; Tax rate; and Equity beta.

A few parameters have been calculated using a different methodology or IPART has adopted a different value.

▼ Inflation – in its 2005 decision IPART used the Fisher equation and differences between the nominal and real risk free rates. For this draft decision, IPART has used inflation-indexed swaps.

▼ Debt margin – IPART has maintained the same methodology but has switched from using CBASpectrum to Bloomberg data.

3.2   Pre-tax real WACC or post-tax nominal WACC

The WACC can be calculated before or after tax, and can be expressed in real or nominal terms. Theoretically, the calculation of the WACC as pre-tax or post-tax should have little impact on the revenue outcome for the regulated business, provided the same tax rate is assumed.

In either case, the effective or statutory tax rate may be used. IPART has used the statutory tax rate of 30 per cent in all previous decisions.

In its submission, QRNational Coal stated that its preference was to use a post-tax nominal framework to calculate the WACC.[5] The Minerals Council also supports using a post-tax approach.[6] However, ARTC proposed a pre-tax real formulation.[7] ARTC sees substantial benefits in providing a consistent regulatory framework over time particularly in times of a substantial investment program. In addition in its proposed new undertaking ARTC proposes to continue to use the real, pre-tax approach.[8]

IPART has used a pre-tax WACC formulation and the statutory tax rate to make its draft decision on the rate of return as this is its preferred approach used in recent regulatory decisions and the 2005 rail access rate of return decision. In its issues paper IPART noted the importance of consistency over time in its WACC decisions. As the form of presentation of the WACC (ie, real pre-tax or nominal post-tax) should not affect the cash flow outcomes IPART was not persuaded that a change was warranted.

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[5]   QRNational Coal's submission, 8 April 2009, p 1.
[6]   NSW Minerals Council's submission, April 2009, p 11.
[7]   ARTC's proposal, 1 December 2008, p 3.
[8]   ARTC's supplementary submission, April 2009, p 13.

3.3   WACC parameters

There are a number of input parameters to consider in determining an appropriate WACC range. Some of these parameters are directly determined by the market, while others are determined by IPART according to a preferred theoretical approach.

The calculation of the cost of capital under the WACC framework requires the estimation of the following parameters:

1. Parameters determined by financial market data:

    ▼ Risk free rate (R_f)

    ▼ Debt margin ($R_{D} - R_f$)

    ▼ Adjustment for expected inflation (Π).

2. Parameters determined through other methods:

    ▼ The market risk premium (MRP) ($R_m - R_f$)

    ▼ The correlation between a business's risk and that of the overall market (β_e - equity beta)

    ▼ The level of gearing (D -debt, E - equity)

    ▼ The value of imputation credits (γ - gamma).

The parameters of the WACC are related to each other. For instance, a higher level of gearing implies a higher debt margin and a higher equity beta than would otherwise be the case.

These parameters are combined through the formula below, to give the pre-tax real WACC.

$$WACC = \frac{\left(1 + \left\{ \frac{R_e}{[1 - t.(1 - \gamma)]} \cdot \left(\frac{E}{D+E}\right) + R_d \cdot \left(\frac{D}{D+E}\right) \right\} \right)}{(1 + \Pi)} - 1$$

The global financial crisis has led to substantial changes in the operation of debt and equity markets. Some businesses face limited access to financial markets, while others can access financial markets only through intermediated credit or at much higher premiums than was the case over the past few years.

Equity markets have also changed. The value of Australian equity has fallen. Issuing new external equity appears to incur a greater premium than was the case over the past few years.

In addition, market volatility has risen, both in debt markets and equity markets.

These changes may impact on the methods that regulators use to estimate the WACC. However, the case for changes would need to be considered very carefully. For example, regulators in Australia have generally used current market data for financial market parameters on the principle that it includes full information on past, current and future market conditions. To take a longer term average or adjust current data in the absence of a clearly identified bias suggests the regulator, or others, know better or have better information not available to the market. This issue is discussed further below in Sections 3.4.1, 3.4.3 and 3.5.

3.4 IPART's draft decision on individual WACC parameters

The following sections discuss the reasons for IPART's draft decisions on each of the parameters used to calculate the WACC range.

3.4.1 Risk free rate

The nominal risk-free rate is used to calculate the return on equity and the return on debt. A risk free asset is not directly observable, a proxy must be chosen for the risk free asset. The yield to maturity on Australian Commonwealth Government Securities (CGS) is generally considered to be the best proxy in the Australian economy. This is because these bonds are essentially default free (government guaranteed returns) with high liquidity and yields that are transparent and published.

Table 3.3 sets out recent jurisdictional decisions on the risk free rate.

Table 3.3 Jurisdictional decisions on risk free rate

Regulator/year	Decision	Risk free rate proxy	Risk free rate sampling period
AER (2009)	NSW electricity distribution	10-year nominal Commonwealth Government Securities	15 days
ACCC (2008)	Rail Access – Interstate network	As above	20 days
ESC (2008)	Gas	As above	20 days
IPART (2008)	CityRail	As above	20 days
IPART (2008)	Sydney Water	As above	20 days
OTTER (2007)	Electricity	As above	20 days
ESCOSA (2006)	Gas	As above	10 days
QCA (2006)	Gas	As above	20 days

Source: Relevant AER, ESC, ESCOSA, QCA, IPART decisions.

The appropriateness of using CGS yields as a proxy for the risk free rate has recently been subject to debate. As part of the AER's Victorian electricity transmission review, NERA suggested that there existed an 'absolute bias' in the nominal CGS

yields.[9] This is attributable to increased institutional demand and reduced supply for these securities. The alternative put forward by NERA is to use the yields on corporate bonds adjusted by credit default swap rates (CDS).[10]

The ACCC and AER continue to use CGS as the risk free proxy in recent regulatory decisions. The regulators received advice from the Reserve Bank of Australia (RBA) and Australian Treasury regarding the above claimed 'absolute bias' inherent in the CGS yields. Both the RBA and Australian Treasury did not consider that there is 'absolute bias' in nominal CGS yields.[11] In its decision on ARTC Access Undertaking – Interstate Rail Network, ACCC has used CGS in estimating the risk free rate.

In its recently completed review of the WACC parameters for electricity transmission and distribution, AER further considered the issue of possible bias in nominal CGS yields. The AER considered arguments put forward that CGS yields are no longer an appropriate proxy for the risk free rate due to the global financial crisis. Some stakeholders put forward an argument that a divergence has emerged between yields on CGS and other risk-free assets and that this reflects a flight to quality or "convenience yield". Stakeholders argued that in these circumstances alternatives to CGS yields or an adjustment should be considered. The AER's decision stated that there was no persuasive evidence to suggest that a more appropriate proxy for the risk free rate exists, or that the CGS yields exhibits a downward bias. The AER also rejected arguments to adjust the CGS yields, it stated that such ad-hoc adjustments are inconsistent with a sustainable, long-term method to estimating the cost of equity capital which creates regulatory uncertainty.[12]

Another issue raised in the AER's review was the maturity used for the risk-free rate. In its explanatory statement, the AER considered that there was persuasive evidence to move away from the 10 year term typically used to a term that matches the regulatory period. However, in its final decision it determined the appropriate term is 10 years.[13]

The final issue involved in calculating the nominal risk free rate is the appropriate sampling period over which the proxy is measured. In theory, the best expectation of future interest rates is the published CGS price on the day that the regulatory decision comes into effect. In practice, regulators have tended to use an average of 10 to 20 days to remove the impact of price fluctuations caused by market volatility.

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[9] Submission to the AER by NERA, *Absolute bias in (nominal) Commonwealth Government Securities*, June 2007.

[10] Ibid.

[11] Debelle, Letter from RBA to Mr Joe Dimasi, 9 August 2007 and Murphy, Letter from the Australian Government to Joe Dimasi, 7 August 2007 as quoted in the AER, Issues Paper, Review of WACC parameters for electricity transmission and distribution, August 2008, pp 29-30.

[12] AER, *Final decision Electricity transmission and distribution network service providers*, Review of the weighted average cost of capital (WACC) parameters, May 2009, pp 134-140.

[13] AER, *Final decision: Electricity transmission and distribution network service providers*, Review of the weighted average cost of capital (WACC) parameters, May 2009, pp 140-169.

ARTC's proposal

In its original proposal, ARTC proposed using 10-year nominal CGS yields averaged over a 20-day period as a proxy for the risk free rate on the basis that:

▼ the 10-year CGS is typically considered the longest dated liquid bond and represents the most relevant benchmark to apply

▼ a 20-day average is consistent with current regulatory practice aiming to reduce the impact of spike in yields that may occur on the day of valuation.[14]

This is the approach IPART has adopted in its recent regulatory decisions.

However, in its submission on IPART's discussion paper ARTC has argued that the current global financial crisis could impact on the WACC in three ways:

▼ a reduction in the risk free rate given the compression in CGS yields that has resulted from the "flight to quality"

▼ increases in the debt margin

▼ increases in the expected MRP.[15]

ARTC is seeking an adjustment for the first of these claimed impacts. Its consultant, Synergies, has argued that while CGS bond rates have been a reasonable proxy for the risk free rate in the past they have become a poor proxy since the global financial crisis primarily because of non-risk factors such as the flight to quality that has occurred which has distorted the proxy value. This impact has been termed the "convenience yield" by Synergies. Synergies argues that evidence suggests that this convenience yield has spiked in recent years and some adjustment should be made to reflect this impact for at least the duration of the global financial crisis. The increase estimated by Synergies is 60 basis points which should be added to the current estimates of the risk free rate.[16]

Stakeholder comments

The Minerals Council's submission supported the use of CGS as the proxy for the risk free rate. It noted that AER has considered the issue of the "convenience yield" and considered that the arguments regarding its existence were questionable and not adequately supported by the evidence.[17]

However, the ACIL Tasman report which accompanied the Minerals Council's submission supported the AER's preliminary proposal to match the term to maturity assumptions to the length of regulatory period; that is, a 5 as opposed to 10-year

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14   Report by Synergies for ARTC, December 2008, pp 24 -25.
15   Report by Synergies for ARTC, April 2009, pp 9-10.
16   Ibid, p 11.
17   Report by ACIL Tasman for NSW Minerals Council, April 2009, pp 14-15.

term. It noted some of the AER's consideration in forming its preliminary views, in particular, that using a 10-year maturity term for CGS:

▼ will on average violate the present value principles as it compensates the business for risks they do not face over the regulatory period

▼ a term for the risk free rate which matches the regulatory period better matches the financing strategies of regulated businesses

▼ rather than seeking long-term debt as a matter of preference a prudent financing strategy involves maintaining a diversified debt portfolio

▼ a forward looking MRP of 6 per cent is consistent with a 5-year term assumption.

ACIL Tasman therefore concluded that as IPART is required to review the rate of return every five years, this implied an appropriate term to maturity assumption of 5 years.[18]

IPART's draft decision

IPART's draft decision is to use the 10-year nominal CGS yields averaged over 20 days to determine the risk free rate. As at 6 May 2009, this rate was 4.6 per cent. This approach is consistent with its recent regulatory decisions and the approach used in the 2005 rail access rate of return decision. IPART considers that the 10 year CGS yields are still the most appropriate proxy for the risk free rate.

In making its draft decision IPART has had regard to the AER's recent consideration of this issue. It notes the AER's rejection of ad-hoc adjustments to the risk free rate to compensate for the impact on the "convenience yield".

IPART has considered the arguments in favour of a 60 basis points adjustment to the 10 year nominal CGS yields averaged over 20 days put forward by the ARTC. IPART notes that the extent of any bias in the 10-year nominal CGS yield ultimately depends on the assumptions made on what is better proxy for a risk free rate in Australia. Like the AER, IPART considers there is merit in providing regulatory certainty on the treatment of individual WACC parameters, and making ad-hoc adjustments to parameters could undermine this. At this stage IPART does not consider that the ARTC has provided it with convincing evidence that would warrant a shift from its previously adopted methodology. Therefore, its draft decision is to reject ARTC's revised approach to estimating the risk free rate by including an adjustment for the impact on the "convenience yield".

However, as the AER's decision was released just prior to IPART's draft decision IPART has been able to note, but not fully consider, the AER's decision. A fuller consideration of the AER's decision will be reflected in the final decision for this review.

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18 Ibid, pp 14-15.

On a practical level IPART also notes that it is not possible for IPART to set a temporary adjustment to the rate of return to compensate for the impact of the global financial crisis on CGS yields as suggested by Synergies. IPART's decision will set the rate of return for a 5-year period. If the impact of the global financial crisis on CGS yields ends within the 5-year period, undoing this adjustment would probably require an amendment to the Undertaking which is not a straightforward process.

With regard to the Minerals Council's recommendation to adopt a 5 as opposed to 10-year CGS term, IPART does not support this approach. As stated above, after considering this issue in detail the AER concluded that a 10-year term if appropriate while a 5-year term may increase refinancing risks for regulated businesses.[19]

3.4.2   Adjusting for expected inflation

IPART uses a real WACC on real regulatory asset base framework, while most market data relates to nominal interest rates. To align the market data and regulatory framework therefore requires either using real interest rate data or adjusting nominal interest rate data for expected inflation.

Until recently, jurisdictional regulators commonly used the Fisher equation to estimate market expectations of inflation from the difference in yields on nominal and indexed CGS.

$\Pi = [(1+r_f)/(1+r_{rf})]-1$

> where:
>
> Π is the forecast inflation rate
>
> r_f is the nominal risk-free rate and
>
> r_{rf} is the real risk-free rate.

Concerns have been raised that the real risk-free rate data used in the Fisher equation may be biased so that inflation is overestimated.[20] The bias in the real-risk free rate reflects a lack of supply of indexed CGS (the Commonwealth Government decided to cease issuing indexed bonds in 2003) putting upward pressure on prices and hence downward pressure on yields.

In its recent decisions on SPAusNet and NSW electricity distribution, the AER departed from estimating forecast inflation based on the Fisher equation given the scarcity of the indexed bonds. Instead, AER has adopted the RBA's short term

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[19]   AER, *Final decision Electricity transmission and distribution network service providers*, Review of the weighted average cost of capital (WACC) parameters, May 2009, pp 165-169.

[20]   Submission to AER by NERA, *Bias in inflation – indexed CGS yields as a proxy for the CAMP risk-free rate,* March 2007; ACG, *Relative bias of inflation indexed CGS yields as a proxy for the CAMP risk-free rate,* July 2007.

inflation forecasts (first two years) and the mid-point of its target inflation band beyond that for the remaining years of the 10-year period. While AER acknowledges that this is not a market-based approach, it considers that this approach provides consistency and transparency:

> The AER considers that the RBA's inflation forecasts are objective and represent the best estimates of forecast inflation for the purpose of this draft decision. The RBA's statement on monetary policy examines a wide variety of objective data influencing inflation in both the domestic and international financial markets to develop its inflation forecast. The forecast is produced on a regular basis and is publicly available, including supporting analysis and reasoning.[21]

AER's approach was based on RBA and Australian Treasury's advice:

> Given inflation expectations have been firmly anchored by the Bank's inflation target regime for some time, a rough estimate of a real risk free rate would be the nominal government bond rate less the centre of the inflation target band.[22]

> We suggest that (when) working with nominal yields and where a real return is required, making an inflation adjustment based on the mid point of the RBA's 2 to 3 per cent range, is entirely reasonable. Since the independence of the Reserve Bank Board in conducting monetary policy was formalised in March 1966, annual inflation has averaged 2.5 per cent ….. We therefore recommend that the ACCC use the mid point of the RBA's target band for inflation.[23]

IPART has taken a different approach in its recent decisions. It has adjusted the market implied inflation from the Fisher equation downwards by a scarcity premium of 20 basis points. The scarcity premium reflects the divergence between the debt margin on nominal corporate bonds and the debt margin on real corporate bonds.[24]

Table 3.4 summarises the approaches taken by jurisdictional regulators to estimate forecast inflation.

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[21] AER, *Draft Decision - New South Wales distribution determination 2009-10 to 2013-14*, November 2008, p 228.

[22] RBA, *Letter to ACCC,* 9August 2007, p. 3 as quoted in IPART, *Review of Prices for Sydney Water Corporation's Water Sewerage, Stormwater and Other Services from 1 July 2008*, June 2008, pp 159-160.

[23] Australian Treasury, *The Treasury Bond Yield as a Proxy for the CAPM Risk-free rate*, Letter to the ACCC, 7 August 2007, p 5 as quoted in IPART, *Review of Prices for Sydney Water Corporation's Water Sewerage, Stormwater and Other Services from 1 July 2008*, June 2008, p 160.

[24] NERA, *Bias in inflation – indexed CGS yields as a proxy for the CAMP risk-free rate,* March 2007; ACG, *Relative bias of inflation indexed CGS yields as a proxy for the CAMP risk-free rate,* July 2007.

Table 3.4 Estimating forecast inflation methods used by regulators

Regulator/year	Industry	Estimation approach	Forecast
AER (2009)	NSW Electricity distribution	Adopted RBA's forecasts for two years and mid-point of RBA target point thereafter and then averaging individual year to derive a forecast of the same term as the nominal risk free rate	2.47%
AER (2008)	SPAusnet electricity transmission	As above	2.59%
ESC (2008)	Gas distribution	Used compound average of actual inflation over the five years prior to the start of the next access period	2.7%
IPART (2008)	CityRail	Fisher equation adjusted downwards by 20 basis points for scarcity premium	2.7%
IPART (2008)	Sydney Water Corp.	As above	3.6%
OTTER (2007)	Electricity distribution	Adopted RBA target inflation band of 2% to 3% and having regard to a range of inflation indicators	2.5%
ESCOSA (2006), QCA (2006), ESC (2006), ICRC (2004)	Gas/electricity distribution	Fisher equation	2% to 3% range

Source: relevant decisions of AER, ESC, OTTER, QCA and ICRC.

The NSW Distribution Network Service Providers (DNSPs) in their recent submissions to AER on the 2008 electricity distribution review suggested a different approach. Rather than giving 100 per cent weight to RBA's forecast, they proposed that the regulator should consider the forecasts of different independent forecasters. The DNSPs noted that RBA's forecasts were the highest of all forecasters and concerns were raised that there may be a systematic upward bias in the RBA's estimates.[25]

On 15 May 2009, IPART released its final decision on its approach to adjusting for expected inflation in deriving the cost of capital.[26] In that decision IPART has maintained its view that using a market based approach to adjusting for inflation expectations is appropriate and has made the decision to use swap market data to estimate the inflation adjustment to the cost of capital in future WACC decisions. In response to stakeholder comments it received, IPART will also use the appropriate breakeven inflation rates and economists' forecasts of inflation as a cross-check.[27]

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[25] Competition Economists Group, *Expected Inflation Estimation Methodology,* Report for Country Energy, April 2008, p 13.

[26] IPART, *Adjusting for expected inflation in deriving the cost of capital*, Analysis and Policy Development Final Decision, May 2009.

[27] Ibid, p 2.

ARTC's proposal

In its original proposal ARTC supported adopting the AER's approach which estimates inflation based on RBA's forecasts for the next two years and the mid-point of the target range for inflation after that.[28]

ARTC's submission on IPART's inflation discussion paper expressed a number of concerns with the reliability of using IPART's suggested approach of using inflation-indexed swaps including:

▼ the inconsistencies in the results of IPART's tests

▼ trading life of the derivatives is unknown

▼ there appears to be too much volatility in the long-term estimates.[29]

Stakeholder comments

The Minerals Council's submission stated that ARTC's approach was reasonable and consistent with the ACCC/AER approach. It also stated that IPART's proposed approach also had merit. It stated that is was opposed to the use of an approach which relies upon a comparison of nominal and index linked yields given the bias that has been observed.[30]

IPART's draft decision

IPART's draft decision is to use Australian inflation-indexed swaps to calculate an estimate of inflation. As at 5 May 2009, this approach provided an estimate of inflation of 2.5 per cent.

In making its draft decision, IPART has considered the issues raised by stakeholders in their submissions. On balance, IPART still considers that a market-based estimate of the inflation adjustment is preferable to the economists' forecast of inflation. A market-based inflation adjustment ensures that a regulated utility can risk-manage the inflation adjustment used in an IPART cost of capital decision. If IPART used the economists' forecast of inflation, regulated utilities would be subject to additional risk as this inflation rate would most likely differ from the inflation rate which can be risk-managed. Most concerns raised in the submissions could be addressed by estimating the inflation adjustment based on the swap market and using the breakeven inflation rate and economists' forecasts as a cross-check.

IPART notes that the ARTC submitted that the 30-year swap market inflation quote does not approximate the mid-point of the RBA target inflation rate. From there it deduces that the swap market derived inflation adjustment is not reliable. IPART

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28 Report by Synergies for ARTC, December 2008, p 29.
29 Report by Synergies for ARTC – adjusting for expected inflation submission, April 2009, p 3.
30 NSW Minerals Council's submission, April 2009, p 9.

notes that it is not using the 30-year swap rate but the 10-year yield to maturity. Furthermore, inflation rates implied in the swap rates can be risk managed. For IPART's purpose, whether a particular swap rate is below or above the midpoint of the RBA target range is of lesser importance than the fact that a business can use the swap market to risk-manage future cash flows.

While IPART does not advocate the use of the economists' forecast, it believes that a combination of the breakeven inflation rate and economists' forecasts should be used in future decisions as a cross-check.

IPART's estimate of 2.5 per cent is almost the same as the 2.4 per cent estimate provided using the AER/ACCC's approach. IPART's prior approach derived from the Fisher equation provides an estimate of 1.9 per cent (including the 20 basis point adjustment for the scarcity premium). Table 3.5 shows the forecast inflation outcomes under the different approaches.

Table 3.5 Inflation outcomes from alternative methods

Method	Estimate (five year average)
Fisher equation based on CGS	2.12%
Fisher equation adjusted for scarcity premium	1.92%
RBA forecasts and mid-point of range	2.38%
Inflation based on indexed swaps	2.54%

Source: IPART calculations, 20 day average to 5th May 2009; Inflation based on indexed swaps as of 5th May 2009, RBA: based on forecasts for year to June 2010 and year to June 2011.[31]

3.4.3   Market Risk Premium (MRP)

The MRP is the expected return over the risk free rate that investors would require for investing in a well diversified portfolio of risky assets. This generally represents the difference between the return on the market portfolio and the return on the risk-free rate ($R_m - R_f$). The MRP is one of the components used to determine the return on equity, which is given by the CAPM formula.

The CAPM formula is: $R_e = R_f + \beta_e \; x \; (R_m - R_f)$

> where:
>
> R_e is the nominal post-tax cost of equity
>
> R_f is the risk-free market rate
>
> β_e is a measure of the correlation between a business's risk and that of the overall market
>
> R_m is the market rate of return.

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[31] RBA, Statement of Monetary Policy, May 2009, p 69.

MRP is an expected return and is not directly observable. It therefore needs to be estimated through proxies. The most common approaches used include estimating past actual MRP based on historical excess market return (ex-post), adopting the MRP from surveys of market practitioners or based on forecast of future cash flows (ex-ante).

Estimating the MRP based on historical averages involves several issues. These include:

▼ how long a time period should be used for estimating the premium

▼ whether to employ geometric or arithmetic averaging

▼ which market instrument to use as the measure of the risk-free rate, and

▼ how to measure the return to the market portfolio.

The appropriate length of estimation period is generally influenced by economic considerations. Longer term data series may be unrepresentative of expectations because of substantial changes in the market but they provide more precise estimates.

Shorter term data series too may be unrepresentative because they only capture the present stage of a business cycle. However, the shorter term data is more likely to be of higher quality as data sources improve over time, therefore providing a more accurate picture of investors' current and near future expectations. Most commonly, the minimum period used to provide estimates is 30 years.[32]

In Australia, past empirical evidence has suggested a MRP range of 6 to 8 per cent reported in various studies and research as set out in Table 3.6.

Table 3.6 Historical MRP in Australia

Source	Period	Risk premium (%)
AGSM- Arithmetic average (including October 1987)	1974 to September 2000	6.2
AGSM- Arithmetic average (excluding October 1987)	1974 to September 2000	7.7
Dimson, Marsh and Staunton (2006)	1900 to 2005	7.8
Gray (2001)	1883 to 2000	7.3
Gray & Officer (2005)	1885 to 2004	7.2
Brailsford et al (2008)	1883 to 2005	6.2, 6.3[a], 6.5[b]

a: imputation credit valued at 50 cents in the dollar.

b: imputation credit at full value.

Source: Deloitte Touche Tohmatsu, *Independent Expert Report to Woodside shareholders*, 19 December 2000; Dimson, Marsh & Staunton, *The World Wide Equity Premium: A Small Puzzle, AFA 2008 New Orleans Meetings Paper, EFA 2006 Zurich Meetings Paper*; S Gray, *Issues in Cost of Capital Estimation*, October 2001; S Gray and R R Officer, *A review of the market risk premium and commentary on two recent papers – a report for the Energy Networks Association*, 2005; Brailsford et al, *Re-examination of the historical equity risk premium in Australia,* Accounting and Finance, Vol. 48, Issue 1, 2008, pp 73-97.

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[32] S Gray and R R Officer, *A review of the market risk premium and commentary on two recent papers – a report for the Energy Networks Association*, 2005, p 21.

It has been argued that the average market risk premium estimated over a long period of time provides the best estimate of what the market risk premium is likely to be in the future. However, estimates of the average market risk premium can be significantly affected by the choice of start and end dates for the analysis. This can create some difficulties in drawing conclusions about the future market risk premium from the historical data.

For example, major indices of Australian equity values have declined by about 50 per cent from their peak over the past 18 months. The average excess returns provided by the equity market in the past will be lower now than if the average excess returns were estimated 18 months ago. To the extent that a longer historical period provides a better indicator of the MRP, recent equity market changes should be factored into the estimate of the historical MRP, which would generate a lower MRP than the estimates presented in Table 3.6.

The AER also considered the MRP as part of its recent review of WACC parameters. The AER concluded that prior to the onset of the global financial crisis, 6 per cent was the best estimate of the forward looking MRP and that in stable market conditions this would remain the AER's view. However, it concluded that stable market conditions do not exist at present. It identified two scenarios: that that the prevailing medium term MRP is above the long term MRP, but will return to the long term MRP over time, or that there has been a structural break in the MRP and the forward looking long term MRP (and consequently also the prevailing) MRP is above the long term MRP that previously prevailed. It finds that the evidence indicates that a MRP above 6 per cent may be reasonable and adopted a value of 6.5 for its final decision, an increase of 0.5 from its preliminary view. While it did make this adjustment it also concluded that the weight of evidence does not suggest that a MRP significantly above 6 should be set. Rather it found that the estimates of the long-term historic average provide a range of 5.7 to 6.2 per cent.[33]

ARTC's proposal

ARTC has proposed a range of 6 to 7 per cent for MRP on the basis that:

▼ Estimates of MRP in Australia confirm that its value has remained well above 6 per cent.

▼ Studies over various time periods have consistently produced estimates that range from 6 to 8 per cent.

▼ Analysis undertaken by its consultant indicates that the long term average exceeds 7 per cent.[34]

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[33] AER, *Final decision Electricity transmission and distribution network service providers*, Review of the weighted average cost of capital (WACC) parameters, May 2009, pp 45-47.
[34] Report by Synergies for ARTC, December 2008, pp 70-71.

In a report to ARTC by Synergies claimed the main concern with IPART's proposed MRP range is that it excludes values in excess of 6.5 per cent suggested by long-term studies. The report also acknowledges that recent estimates of the MRP have fallen but argue that the current circumstances are unique and that there is a strong argument to exclude 2008 results.[35]

Stakeholder comments

The Minerals Council argues that there is a strong regulatory precedent in favour of a MRP of 6 per cent. In its submission it noted that both the AER and ACCC have rejected arguments for higher MRPs, including for ARTC's InterState Access Undertaking.[36]

IPART's draft decision

IPART's draft decision is that a MRP estimate of 5.5 to 6.5 is appropriate. At this stage IPART does not consider there to be sufficient evidence for it to depart from its traditional approach to estimating the MRP. This is consistent with the 2005 decision on rail access.

IPART notes that an estimate of the MRP is based on long term historical averages. While the other market parameters are determined on more current market values, this is a long-standing and well-accepted approach. In past decisions, IPART reviewed the available evidence on the Australian MRP and came to the conclusion that a range of 5.5 to 6.5 per cent is an appropriate estimate. This range is based on various Australian studies on the MRP. IPART has based this range on long term academic studies on the Australian MRP – the results of which are presented in Table 3.7 below.

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35 Report by Synergies for ARTC, April 2009, pp 16-17.
36 NSW Minerals Council's submission, April 2009, pp 9-10 and report by ACIL Tasman for the NSW Minerals Council, April 2009, pp 24-27.

Table 3.7   Results of academic studies of the MRP

Source	Methodology	Period	MRP
AGSM[a]	Arithmetic average, incl. Oct 1987	1974-1995	6.2
	Arithmetic average, excl. Oct 1987	1974-1995	8.1
	Arithmetic average, incl. Oct 1987	1974-1998	6.2
	Arithmetic average, excl. Oct 1987	1974-1998	7.9
	Arithmetic average, incl. Oct 1987	1974-2000	6.1
	Arithmetic average, excl. Oct 1987	1974-2000	7.6
	Arithmetic average, incl. Oct 1987	1974-2003	5.8
	Arithmetic average, excl. Oct 1987	1974-2003	7.1
Officer	Arithmetic mean[b]	1882-1987	7.9
	Arithmetic mean[c]	1882-2001	7.2
	Arithmetic mean[d]	1946-1991	6.0-6.5
Hathaway[e]	Arithmetic mean	1882-1991	7.7
	Arithmetic mean	1947-1991	6.6
Dimson, Marsh & Staunton[f]	Arithmetic mean	1900-2000	7.6
Gray[g]	Arithmetic mean	1883-2000	7.3

[a] Centre for Research in Finance, AGSM "Risk Premium Estimates for Investors in Fully Paid Australian Listed Equity", Australian Graduate School of Management, August 2004.

[b] Officer, R. "Rates of return to shares, bond yields and inflation rates: An historical perspective", in *Share Markets and Portfolio Theory; Readings and Australian Evidence*, 2ed, University of Queensland Press, 1992.

[c] Provided by Professor Officer to the Essential Services Commission (Review of Gas Access Arrangements, Final Decision, October 2001). Original information published in Officer, R. "Rates of return to shares, bond yields and inflation rates: An historical perspective", in *Share Markets and Portfolio Theory; Readings and Australian Evidence*, 2ed, University of Queensland Press, 1992.

[d] Officer, R. "Rates of return to shares, bond yields and inflation rates: An historical perspective", in *Share Markets and Portfolio Theory; Readings and Australian Evidence*, 2ed, University of Queensland Press, 1992.

[e] Hathaway, N. *unpublished manuscript.*

[f] Cited in: E. Dimson, P. Marsh and M. Staunton, *Triumph of the Optimist: 101 years of Global Investment Returns*, Princeton University Press, 2002.

[g] Gray, S. "Issues in Cost of Capital Estimation", UQ Business Schools, University of Queensland, 19 October 2001.

IPART has had regard to the AER's decision to increase the MRP to 6.5 per cent. However, as the AER's decision was released just prior to IPART's draft decision IPART has been unable to fully consider the AER's decision. A fuller consideration of the AER's decision will be reflected in the final decision for this review.

However, it should be noted that IPART's estimate of the MRP range includes the value included in the AER's decision. It is also consistent with the AER's analysis which indicates that recent estimates of the MRP are between 5.7 and 6.2 per cent. IPART also notes that AER concluded that there was not sufficient evidence to warrant a MRP value greatly in excess of 6.0 per cent.

The analysis presented in the Synergies report and the discussion in the AER's decision report highlights the difficulty of using historic data to estimate a forward looking MRP. The impact of the recent fall in equity markets highlights the

difficulties in using a backward looking estimate of the MRP, as the risk premium required by the market is unlikely to have fallen in current economic conditions. Synergies acknowledge IPART's concern on this matter in its submission on the discussion paper and the report by Synergies demonstrates that estimates of the MRP taking into account more recent data have fallen substantially. However, it argues that this highlights how unique the current period is.[37]

This volatility highlights the need to take long-term historic averages into account when estimating the MRP. IPART does not accept that it is appropriate to exclude periods from an approach which is based on long-term historical averages. Indeed periods of fluctuating market returns are not a new phenomenon and to exclude any period of market volatility which impact on the historic averages will create potential biases in the estimates.

While IPART considers that normally market conditions will be fully reflected in current market rates, it recognises that the current circumstances are unusual. If an adjustment for these circumstances is warranted it could be incorporated through an adjustment to an individual parameter such as the AER has done with the MRP, or the choice of a higher WACC within the range. This is discussed further below in Section 3.5.

3.4.4 Debt margin

Debt margin is a premium that is added to the risk free rate of return to calculate the cost of debt. For a regulated business, the debt margin is influenced by the credit worthiness of the firm, the gearing level, the supply and demand of the relevant debt markets at the time the debt is being raised and debt raising costs.

Australian regulators typically assess a debt margin on the assumption that an efficient regulated business seeks to target at a minimum an investment grade credit rating profile of BBB, BBB+ or A. The debt margin is estimated by reference to data on generic debt margins for investment grade rated debt securities of 10-year maturity sourced from CBASpectrum or Bloomberg. An average of debt margins is calculated over 10 to 20 days prior to decision date.

The debt margin and credit rating of a firm will be largely determined by the characteristics of the firm, such as its business risk and level of gearing. A regulated firm does not necessarily operate at the optimal capital structure. For instance, ARTC has much lower levels of debt than reflected in its proposal for a 50 per cent to 55 per cent benchmark gearing level. The actual debt that the regulated company has, if any, will therefore not reflect the debt margin relevant to the benchmark gearing level.

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[37] Report by Synergies for ARTC, April 2009, p 17.

In recent regulatory reviews there have been debates about the appropriate debt margin estimates to use in calculating the debt premium. It has been argued that the data on yields supplied by CBASpectrum are understated relative to their observed yields.[38] In March 2008, the CBASpectrum fair yield curve for BBB bonds (10 years) and the Bloomberg fair yield curve for BBB bonds (10 years) diverged, with estimates from CBASpectrum yielding increasingly higher margins (Figure 3.1). This was contrary to previous arguments that CBASpectrum systematically understated yields, but the size of the discrepancy is of concern.

The AER had previously used debt margin estimates based on Bloomberg BBB rated fair yields which it considers produce the smallest average error.[39] In its decision on ARTC's Undertaking on its interstate rail network, ACCC followed a similar approach.[40]

The Commonwealth Bank of Australia has also advised IPART in January 2009 that it will no longer provide access to CBASpectrum to non-bank customers. IPART will therefore have to use a different method to determine the debt premium than it has used in the past.

Figure 3.1   Fair yields – CBASpectrum and Bloomberg comparison
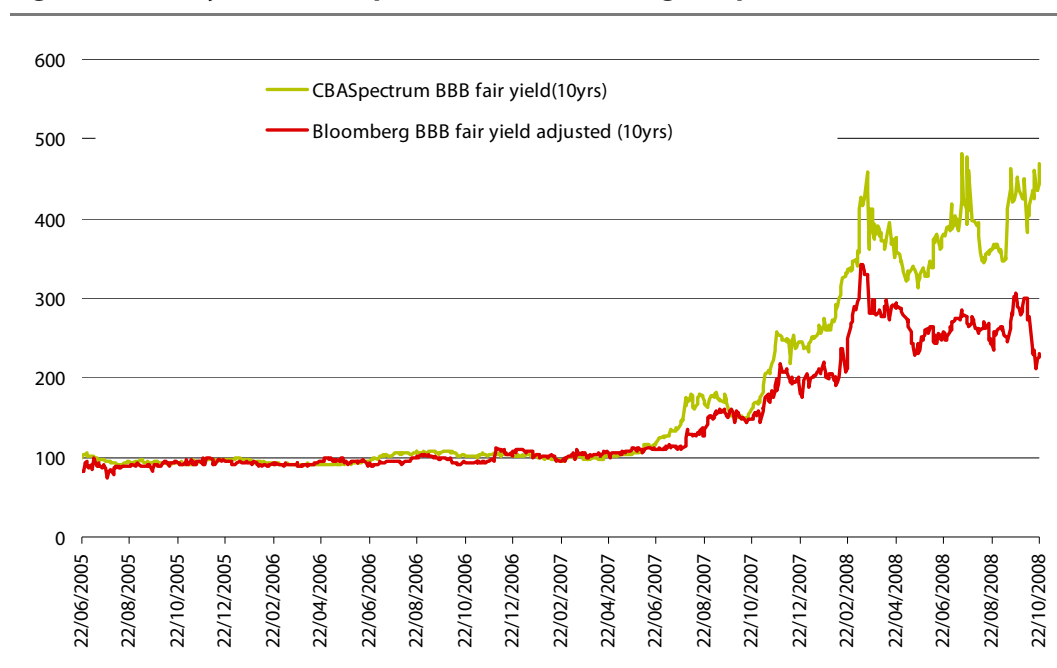
Source: Bloomberg and CBA Spectrum.

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[38]   ActewAGL Supplementary Submission, Estimating the debt margin for ActewAGL, A report for ActewAGL prepared by NERA, February 2004.

[39]   AER, *Final Decision: SP AustNet transmission determination 2008-09 to 2013-14*, January 2008, p 96. As Bloomberg ceased publishing it BBB fair yield for bonds with 9 or 10 year maturities, the 8-year Bloomberg BBB fair yield was extrapolated to replicate a 10-year benchmark BBB yield.

[40]   ACCC, *Final Decision, Access Undertaking – Interstate Rail Network, Australian Rail Track Corporation*, June 2008.

Table 3.8 summarises the debt margin estimates determined by the Australian regulators in recent regulatory decisions. Recent estimates of the debt margin have been around 3 per cent or 300 basis points.

Table 3.8   Debt margins applied in recent regulatory decisions

Regulator/year	Industry	Methodology	Debt margin[a]
AER (2009)	NSW electricity distribution	Bloomberg BBB fair yield curves and interpolation	3.48-3.52%
ACCC (2008)	ARTC interstate rail access	Same as above	3.42%
AER (2008)	Electricity transmission (SP AustNet)	Same as above	2.11%
IPART (2008)	CityRail	CBA Spectrum fair yield and specific bonds	2.78% to 5.88%
IPART (2008)	Sydney Water	Same as above	3 % to 3.56%
ERA (2008)	WestNet (freight)	Same as above	3.02%

a excluding debt raising costs.

Source: Relevant regulators' decisions.

ARTC's proposal

ARTC is of the view that the credit rating of BBB remains appropriate for its Hunter Valley coal network business based on a benchmark capital structure of 50 per cent to 55 per cent and given the size of the investment program going forward.

Due to the concerns regarding the historical downward bias observed in CBASpectrum, ARTC on the advice of its consultant, Synergies, proposes to adopt the methodology used by AER and ACCC in determining the debt margin. The methodology calculates the debt margin based on a 20-day average of the 8-year Bloomberg BBB bond yield plus the difference between the 8 and 10-year A-rated bond yield. At 28 November 2008, this estimate was 300 basis points (3 per cent). ARTC also proposes to include a debt raising cost of 12.5 basis points in the debt margin.[41]

To support the above recommendation to ARTC, Synergies has considered the results of AER's analysis that showed that the interpolated Bloomberg estimates proved the most reliable proxy for the 10-year Bloomberg fair value BBB yield over an 18 month period. Further, there is no new evidence that shows that the fair yield estimates produced by CBA Spectrum are free of any bias.[42]

ARTC's consultant has expressed some concerns with alternative approaches to estimating the debt margin discussed by IPART in its rate of return discussion paper. In particular, that it included AAA credit wrapped swaps. It argued that these would only be of relevance if the company's underlying credit rating is BBB and that

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[41]   Report by Synergies for ARTC, December 2008, pp 74-76.
[42]   Ibid, p 75.

the cost of the credit wrap is added to the AAA debt margin. It argued that it is more appropriate to reference yield curve data from Bloomberg or CBASpectrum.[43]

In IPART's decision for electricity network distribution services in 2004, it included an allowance for debt raising costs based on reasonable estimates by consultants. This decision reflects market evidence that suggests that long-term investments (other than project finance) of more than five years may be difficult to obtain in the Australian market. This implies that businesses frequently have to refinance their debt and incur costs in doing so.

Allowances for debt raising costs suggested in previous consultancy reports by ABNAmro and Westpac suggest values from 12.5 to 25 basis points. Based on this information and informal discussions with credit risk managers at the Commonwealth Bank, IPART has allowed for a debt raising allowance of 12.5 basis points.

Stakeholder comments

The Minerals Council supports ARTC's proposed approach but recommends that the term used should match the regulatory period ie, 5 years. It argues that an allowance of 0.083 per cent for debt raising costs is appropriate.[44]

IPART's draft decision

IPART's draft decision is the appropriate level of the debt margin is 2.82 to 3.50 per cent inclusive of an allowance of 12.5 basis points for debt raising costs (as at 5 May 2009).

In its recent decisions, IPART based its debt margin estimate on a 20-day average of fair value yield curve data obtained from fair value yield curves for BBB and BBB+ rated Australian corporate bonds with a maturity of 10 years, as well as actual bond yields for BBB and BBB+ rated securities. [45] An allowance of 12.5 basis points was made for transaction costs associated with the raising of debt.

IPART has considered further the composition of the portfolio of bonds referenced in these recent decisions. IPART considers that one of the bonds that IPART used in estimating the debt margin, the AGL bond, should be excluded. This is because it will mature in September this year, therefore its yield is not likely to be representative of the yield of 10-year corporate debt.

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[43] Report by Synergies for ARTC, April 2009, pp 14-15
[44] NSW Minerals Council's submission, April 2009, pp 8-9.
[45] For example, see IPART, *Review of CityRail fares, 2009-2012 – Final Report*, December 2008; and IPART, *Gosford City Council and Wyong Shire Council – Prices for water, sewerage and stormwater drainage services from 1 July 2009 to 30 June 2013 Draft Report*, March 2009.

Except for excluding the AGL bond from its portfolio of proxy corporate bonds, IPART has retained the same methodology used in its recent decisions. The range of values shown in Table 3.9 below is based on market data averaged for the 20 days to 5 May 2009 and excludes any observations of the AGL bond.

Table 3.9   Debt margin as at 5 May 2009

Security	20-day average to 5 May 2009
Bloomberg fair value BBB (8 year)	350
Coles (July 2012)	295
General Property Trust (August 2013)	320
Santos (September 2015)	344
Snowy Hydro (February 2013)	282

Source: Bloomberg, all quotes inclusive of a 12.5 basis points debt raising costs allowance.

As noted in previous reports[46], IPART has conducted preliminary analysis on alternative proxy data for the estimation of the debt margin. This was in response to concerns that market conditions in the Australian corporate bond market may no longer reflect the actual cost of debt a utility would face in a competitive market due to considerable volatility that has emerged in the market for corporate bonds.

The analysis conducted in the CityRail Final Report highlighted the extent of the volatility in the yield on corporate debt resulting from to the current financial crisis.[47] Yields prior to the middle of 2007 were fairly stable. Since then, a re-pricing of risk became evident, particularly with regards to:

▼ industry-specific issues (property and financial services)

▼ business-specific issues (mainly debt and its refinancing).

IPART has expressed concerns that its traditional approach to estimating the debt margin is particularly volatile due to the small number of proxies included. In particular, IPART's analysis of credit spreads of utility-issued bonds indicates that while there has been an increase in yields since mid-2007, this increase is considerably less than that evident using IPART's traditional methodology.

IPART has updated this research as part of a discussion paper on approaches to calculate the debt margin. IPART intends to release the discussion paper on alternative portfolios of securities in May. IPART's analysis indicates that the current upward trend in debt margins may not be as pronounced in those industries which IPART regulates.

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46 IPART, *Review of CityRail fares, 2009-2012 – Final Report*, December 2008; IPART, *Gosford City Council and Wyong Shire Council – Prices for water, sewerage and stormwater drainage services from 1 July 2009 to 30 June 2013, Draft Report*, Appendix C.

47 See IPART, *Review of CityRail fares, 2009-2012 – Final Report,* December 2008, Appendix G.

For the purposes of this draft decision, IPART has constructed a range for the debt margin from its traditional portfolio of securities, excluding the AGL bond that matures in September 2009. This method provides estimates of the debt margin of 2.8 to 3.5 per cent. IPART will consider the merits of adopting a portfolio of utility bonds as a proxy for the debt margin after it received feedback from stakeholders on its discussion paper, expected to be released in May.

IPART has compared the 20-day average debt margins generated using its traditional methodology (excluding the AGL bond)[48] and the debt margin based on a portfolio of utility-issued bonds. The results are presented in Table 3.10.

Table 3.10 Debt margins as at 5 May 2009

	Lower bound	Upper bound
Traditional methodology	2.8%	3.5%
Utility issued bonds only	1.1%	3.5%

Note: Includes 12.5bp debt raising costs.
Source: Bloomberg and IPART analysis.

IPART has included an allowance of 12.5 basis points in the debt margin in recognition that debt raising and debt refinancing costs are costs above the debt margin that businesses incur in competitive markets.

3.4.5 Level of debt to total assets (gearing)

Gearing refers to the capital structure of an entity measured as the proportion of total assets that are funded by debt. Gearing is used to weigh the costs of debt and equity in estimating the WACC. Gearing is also used to determine the credit rating and debt premium and to re-lever asset betas into equity betas.

It is a common regulatory practice to benchmark a regulated business's capital structure by reference to gearing levels of businesses operating in similar industries rather than using the regulated business's actual capital structure. In doing this the regulator is aiming to approximate the optimal capital structure of the business.

US listed rail infrastructure companies provide one benchmark for ARTC, although they differ in many ways to ARTC. These companies comprise rail infrastructure operations, typically for freight, and many also offer transportation services. They operate in the US, Canada and Mexico. The most recent observed gearing level of US rail infrastructure companies are shown in Table 3.11.

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[48] IPART has relied on fair value yields and actual bond yields from Bloomberg as CBASpectrum has discontinued its service to some non-bank customers. However, the treatment of this data is the same as in previous determinations.

Table 3.11 Gearing levels of North American rail operators

Firm/company	Description of operation	Capital Structure (gearing)
Burlington Northern Santa Fe Corp	Operates a railroad system in the US and Canada, including provision of infrastructure and transportation	46%
CSX Corporation	International freight transportation company	49%
Genesee & Wyoming Inc.	Owns and operates regional freight railroads and provides rail services	39%
Kansas City Southern	Operates rail freight services in the US and Mexico	49%
Norfolk Southern Corporation	Owns and operates rail track, rail services and a land corporation	41%
Union Pacific Corporation	Rail transportation provider	37%

Source: ARTC, 2008, pp 98-99, Bloomberg, IPART calculations.

US rail infrastructure companies had gearing levels of between 37 per cent and 49 per cent, as of January 2009. These gearing levels are above the historical averages for these firms, reflecting recent declines in equity values.

Australia regulators have used an assumed gearing level of 35 per cent to 60 per cent in rail access or firms in related industries (Table 3.12).

Table 3.12 Gearing level adopted by Australian regulators for rail and coal infrastructure

Regulator	Industry	Gearing (Debt/Debt+Equity)	Credit rating
ACCC (2008)	ARTC (interstate network)	50%	BBB
ERA (2008)	WestNet Rail (freight)	35%	BBB+
QCA (2005)	Queensland Rail	55%	BBB+
QCA (2005)	Dalrymple Bay Coal Terminal	60%	BBB+
IPART (2005)	Hunter Valley coal network	50% to 60%	BBB to BBB+

Source: ACCC; QCA; IPART; ERA

Generally, the capital structure of a firm is driven by the business risk of the firm and the cost of debt versus equity. Where the business risk of a firm is high, it is expected that the firm will carry less debt and vice versa. Accordingly, a coal network is expected to have a more stable cash flow than a rail network that carries general freight that may face more competition from other forms of transport. Arguably, a below rail service provider could sustain a more highly geared capital structure.

ARTC's proposal

ARTC proposes a debt to total assets range of 50 to 55 per cent. The lower bound is set by reference to recent regulatory decisions and the average gearing of rail operators (48 per cent over the last five years). The upper bound is set at 55 per cent which is based on ACCC's standard gearing assumption for regulated distribution and transmission businesses (60 per cent) adjusted downward to reflect the higher business risk faced by an access provider to a coal rail network relative to regulated energy network companies.[49] ARTC notes that its higher business risk relative to energy transmission or distribution reflects an uncertain demand outlook for ARTC's services on the Hunter Valley coal network.[50]

Stakeholder comments

The Minerals Council suggests that the debt to total assets range of 50 to 60 per cent is reasonable. However, given current market conditions it endorses moving towards the bottom end of that range (ie, 50 per cent) to provide an appropriately conservative gearing benchmark. It expects that this will allow ARTC to obtain a BBB+ credit rating.[51]

IPART's draft decision

IPART's decision on the appropriate level of debt to total assets is 50 to 60 per cent.

In its recent regulatory decisions for other industries IPART has adopted a debt funding level of 60 per cent. However, in its last rail access decision, IPART adopted a lower level of debt funding – 50 to 60 per cent which was consistent with the 1999 decision on rail access.

IPART's draft decision is to maintain the approach used in past rail access decisions and adopt a debt to total assets range of 50 to 60 per cent. This reflects the research in IPART's rate of return discussion paper that US rail infrastructure companies had debt funding levels below 50 per cent and that other Australia regulators have used an assumed gearing levels of 35 per cent to 60 per cent in similar reviews.

3.4.6   Dividend imputation factor (gamma)

Under Australia's dividend imputation system, domestic equity investors receive a tax credit (franking credit) for dividends paid out from after-tax company profit. The franking credit can be offset against the personal tax of equity investors and hence represents additional cash flow to these investors. The value of the imputation credit is represented by 'gamma' (γ).

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[49] Report by Synergies for ARTC, December 2008, p 31.
[50] Ibid, p 30.
[51] NSW Minerals Council's submission, April 2009, p 10.

The cost of capital was first adjusted by Officer to reflect the imputation credit.[52] The value of gamma is the product of two elements:

▼ the proportion of company tax paid distributed to shareholders as franking credits (distribution rate), and

▼ the value placed by an investor on one dollar of franking credits (utilisation rate or theta).

The distribution rate was found to be around 71 per cent (Hathaway and Officer 2004).

A number of empirical studies using different methodologies to estimate the utilisation rate of imputation credits have been undertaken. The results from these studies are shown in Table 3.13.

Table 3.13 Empirical estimates of gamma utilisation rate

Study	Methodology	Value of franking credit	Gamma[a]
Hathaway & Officer (2004)	Analysis of tax statistics	0.50	0.36
Cannavan, Finn & Gray (2004)	Inference from value of individual share futures (ISF) and low exercise price options (LEPO)	0.50 (pre 45-day rule)	0.36
		0.00 (post 45-day rule)	0.00
Bellamy & Gray (2004)	Dividend drop-off (adjusted), 1995-2002	0.00	0.00
Beggs and Skeels (2006)	Dividend drop-off (1987 – 2000)	0.57	0.41
Feuerherdt, Gray & Hall (2007)	Dividend drop-off, hybrid securities	0.00	0.00
Handley and Mahesawaran (2008)	Analysis of tax statistics	0.81	0.58

a   Assumes a distribution rate of 71 per cent.

Source: Hathaway and Officer, *The value of imputation tax credits – Updated 2004*, Capital Research Pty Ltd, November 2004, p 26; Cannavan, Finn and Gray, *The value of dividend imputation tax credits in Australia*, 73 Journal of Financial Economics, 2004, p 192.; Beggs and Skeels, *Market arbitrage of cash dividends and franking credits*, 82 The Economic Record 258, 2006, p 252; SFG, *The impact of franking credits on the cost of capital of Australian companies*, Report prepared for Envestra, Multinet and SP AustNet, October 2007, p 45; Feuerherdt, Gray & Hall, *The Value of Imputation Credits on Australian Hybrid Securities*, International Review of Finance, 2007, p 3; Handley and Mahesawaran, *A measure of the efficacy of the Australian imputation tax system*, The Economic Record, Vol. 84, No. 264, March, 2008, pp 82-94..

Dividend drop-off method

The dividend drop-off method is commonly used to empirically estimate theta. Essentially, the analysis compares the share price before dividend issue (cum div price) with the share price after the dividend issue (ex-div price). The difference in the prices (drop-off) represents the cash value of the dividend and the market value

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[52] R R Officer, *The Cost of Capital under an imputation tax system, Accounting and Finance*, 1994, pp 1-17.

of imputation credit attached to the share.[53] It is widely held that this method suffers from statistical problem (multi-collinearity) which makes it difficult to separate the value of cash dividends from the value of imputation credits. As a result, it is difficult to obtain a reliable value for the individual coefficients.

Utilisation of franking credits inferred from derivatives

This methodology essentially compares the difference in the pricing of certain derivative securities and their underlying shares. The 2004 study undertaken by Cannavan et al suggested that equity investors place a very low value on imputation credit, in particular after the introduction of the 45-day holding period rule.[54] Compared with the dividend drop-off methodology it uses a larger number of observations for a given company and this tends to enhance the reliability of the results. Also, as derivatives trade well in advance of ex-dividend dates, prices are not contaminated by the activities of short term arbitrage traders. However, some finance experts argue that those trading in derivative instruments may not value imputation credit in the same way as the average investor under CAPM.[55]

Analysis of tax statistics

The utilisation of franking credit can also be estimated by examining ATO data on the redemption of franking credits by taxpayers. Studies that use tax statistics *directly* calculate the utilisation rate for all investors across the Australian market based on the proportion of credits redeemed by taxpayers. A recent study by Handley and Maheswaran estimated a utilisation rate of 81 per cent and 71 per cent over the periods 2001 – 2004 and 1990 – 2004 respectively.[56]

Gamma value adopted by Australian regulators

A majority of recent regulatory decisions in Australia, excluding the AER, have adopted a gamma of 0.50 as shown in Table 3.14.

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[53] Beggs and Skeels, *Market arbitrage of cash dividends and franking credits*, 82 The Economic Record 258, 2006, p 258.
[54] The Australian Taxation Office introduced the 45-day rule in 1997 to prevent short term trading in imputation credits. The rule requires an investor to hold a stock for at least 45 days prior to announcement of dividend by the company to qualify for the imputation credit.
[55] Cannavan et al, op cit, 2004, pp 167-197.
[56] Handley & Maheswaran, *A measure of the efficacy of the Australian imputation tax system,* 84 The Economic Record 264, 2008, p 90.

Table 3.14 Gamma value adopted by jurisdictional regulators

Regulator	Sector	Gamma (final)
AER (2009)	Electricity transmission and distribution WACC review, final decision	0.65
AER (2009)	NSW Electricity Distribution	0.50[a]
IPART (2008)	CityRail	0.30 – 0.50
IPART (2008)	Sydney Water	0.30 – 0.50
ESC (2008)	Gas	0.50
ERA(2008)	WestNet (freight)	0.50
ESCOSA (2006)	Gas	0.48
QCA (2006)	Gas	0.50
ACCC (2008)	ARTC interstate rail network	0.50

a the National Electricity Rules clause 6.5.3 deems the assumed gamma to be 0.5.

Source: relevant decisions of IPART, AER, ACCC, ESC, QCA, ESCOSA and ERA.

ARTC's proposal

Guided by recent empirical studies and analysis undertaken by its consultant, ARTC submits that it is appropriate to assume a value of zero for gamma on the basis of evidence including:

▼ Statistical problems in estimating a reliable gamma using the dividend drop-off methodology.

▼ The introduction of the 45-day rule introduced from July 1999 resulted in a major structural change that has impacted on the value of franking credits as found by recent studies.

▼ The influence of foreign investors is already recognised in all market determined parameters including the risk free rate, debt margin and the MRP. It is therefore inconsistent to assume a fully segmented market and ignore the presence of foreign investors in the Australian market (Synergies disagrees with IPART in that the Australian market is fully segregated and the marginal investor is therefore a domestic investor).[57]

In its submission on the discussion paper, ARTC's consultant questions why IPART uses a range from 0.3 to 0.5 when there is evidence to suggest that a value of zero is feasible. Not including zero within the range suggests that it is not a reasonable outcome which runs counter to evidence provided by a number of reputable studies.[58]

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[57] Report by Synergies for ARTC, December 2008, pp 91-92.
[58] Report by Synergies for ARTC, April 2009, p 19.

Stakeholder comments

In its submission on IPART's discussion paper, QRNational Coal argued that a gamma of zero is most appropriate given the significant conjecture as to whether the dividend imputation has any significant bearing on market returns.[59]

The Minerals Council supports a gamma of 0.65. In forming its view it has relied on the AER's finding that a reasonable range for the gamma lies between 0.57 and 0.74. It submits that there is regulatory precedent from other regulators for IPART to move away from its recent decisions.[60]

IPART's draft decision

IPART's draft decision is to adopt a gamma of 0.3 to 0.5. This is consistent with its 2005 decision.

In arriving at this decision, IPART had regard to a number of studies where gamma has been estimated.[61] Recent evidence on gamma is mixed, with estimates from the two most recent studies being zero and 0.58, using different methods.[62] The higher figure has received more weight by other regulators. As such, IPART considers that there is not sufficient evidence to move away from an estimate of gamma of 0.3 to 0.5. This is consistent with the 2005 decision on rail access. In addition, the ACCC has previously reviewed the evidence presented by ARTC in support of its proposed value of gamma for its interstate rail network undertaking and decided on a gamma of 0.5.[63]

IPART also considers that there is strong merit in maintaining a consistent approach to the estimate of gamma across regulatory decisions. There is a presumption that unless an alternative approach to the calculation of gamma is demonstrated to be clearly superior, the existing approach by IPART should be preferred.

In reaching this decision IPART has noted the AER's recent decision to adopt a gamma of 0.65.[64] IPART will undertake further analysis of the reasons behind the AER's decision prior to finalising its report.

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[59] QRNational Coal submission, 2009, p 1.

[60] NSW Minerals Council's submission, April 2009, p 10.

[61] See for example, Cannavan, Finn & Gray, *The value of dividend imputation tax credits in Australia,* Journal of Financial Economics 73,1,pp 167-197; Bellamy, D and S. Gray (2004). *Using Stock Price Changes to Estimate the Value of Dividend Franking Credits.* Working Paper University of Queensland, Business School; Chu, H., Partington G. *The market value of dividends: evidence from a new method*, working paper, UTS, 2001.

[62] Feuerherdt, Gray & Hall, *The Value of Imputation Credits on Australian Hybrid Securities,* International Review of Finance, 2007, p 3; Handley and Mahesawaran, *A measure of the Efficacy of the Australian imputation tax system*, The Economic Record, Vol. 84, No. 264, March, 2008, pp 82-94.

[63] ACCC, *Final Decision Australian Rail Track Corporation Access Undertaking − Interstate Rail Network*, July 2008, pp 164.

[64] AER, *Final decision Electricity transmission and distribution network service providers*, Review of the weighted average cost of capital (WACC) parameters, May 2009, p 48.

3.4.7 Tax rate

IPART's draft decision is to use a pre-tax real WACC to set the rate of return from 1 July 2009. To calculate the pre-tax real WACC requires the use of a tax rate regulators can either choose:

▼ an effective (or actual) tax rate, or

▼ the statutory tax rate (30 per cent).

Differences between the effective and actual tax rates can reflect regulatory depreciation versus depreciation allowed for tax purposes and tax minimisation possibilities.

ARTC's proposal

ARTC has proposed to use the statutory tax rate. ARTC opposes using an effective tax rate. It contends that while its effective tax rate could possibly fall both below and above 30 per cent, any timing differences could be expected to balance out in the long-term such that the effective and statutory rates should equate.[65]

Stakeholder comments

The Minerals Council submits that IPART should adopt a post-tax approach to calculate the WACC but that if it chooses to maintain its current pre-tax approach it should use the effective tax rate as opposed to the statutory rate. It assumes an effective tax rate of 10 per cent and argues that IPART should determine an effective tax rate for ARTC. It argues that this is appropriate because with accelerated depreciation schedules, use of the statutory tax rate will over-estimate the tax burden where there is a significant capital expenditure program.[66]

IPART's draft decision

IPART's draft decision is to use the statutory tax rate of 30 per cent as it has done in its recent regulatory decisions. This is also consistent with the 2005 rail access rate of return decision.

In practice, most practitioners use marginal or statutory tax rate. Given that effective tax rates are continually changing over time and are largely specific to individual companies, it is extremely difficult to derive a generally applicable effective tax rate. IPART also agrees with ARTC's contention that the effective and statutory tax rates should equate over the longer-term. Therefore, IPART considers it is more appropriate to use the statutory tax rate.

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65 ARTC's supplementary submission, April 2009, p 14.
66 NSW Minerals Council's submission, April 2009, pp 11-12.

3.4.8   Equity beta

Under the CAPM, the systematic risk of an asset is measured by its 'beta' factor. In statistical terms, the beta factors reflect the extent to which future returns are expected to co-vary with the overall market. An equity beta of 1 means the equity in the asset has the same risk as the market whereas higher risk equity will have a beta greater than one.

A business entity's equity beta is determined by its 'business risk' and 'financial risk'. Business risk arises from the variability of the business's cash flow to the overall economic activity while financial risk refers to the debt level (or gearing) of the business. A higher debt level implies a higher equity beta.

Equity beta is used to estimate the equity return of a business by the CAPM formula:

$Re = Rf + \beta e \ x \ (Rm - Rf)$.

If a firm is listed on a stock exchange, its equity beta can be estimated by analysing the movement of the firm's share price relative to that of the market. For a firm not listed on a stock exchange, the common approach to determine the firm's equity beta is to undertake the de/re-levering process based on observed equity beta of comparable firms that are listed on share markets. As comparator firms have different gearing levels the observed equity betas needs to be de-geared to produce an asset beta. In essence, the asset beta removes the effect of financial risk from the systematic risk. The equity beta for the regulated firm is then estimated by re-gearing the asset beta by the benchmark gearing level chosen for the regulated firm. The process is undertaken through the Monkhouse formula:

$\beta e = \beta a + (\beta a - \beta d)*\{1- [Rd/(1+Rd)]*[t*(1-\gamma)\}*D/E$

Where:

> βa = asset beta
>
> βd = debt beta
>
> Rd = the cost of debt capital
>
> t = corporate tax rate
>
> γ = gamma
>
> D/E = value of debt/value of equity

The most recent equity betas of US rail infrastructure companies and operators, and their asset betas estimated by applying the Monkhouse formula with a zero debt beta are set out in Table 3.15.

Table 3.15 Equity and asset beta estimates of North American rail operators

Company	Equity beta	Gearing	Asset beta[a]
Burlington Northern Santa Fe Corp	0.78	0.46	0.42
CSX Corporation	1.00	0.49	0.51
Genesee & Wyoming Inc.	1.42	0.39	0.87
Kansas City Southern	1.39	0.49	0.71
Norfolk Southern Corporation	1.06	0.41	0.63
Union Pacific Corporation	0.91	0.37	0.58

a Asset beta = equity beta *equity/equity+debt.

Source: Bloomberg, IPART calculations.

Regulators also arrive at the value for the equity beta by assessing a number of other relevant issues including:

▼ risk relative to that of comparable listed companies and other regulated industries, both in Australia and overseas

▼ a first principles analysis of asset risk, including:

– variability in revenues and covariability with economic activity

– structure of regulation

– operating leverage (the extent to which costs are fixed)

▼ submissions from the regulated firms and relevant stakeholders

▼ previous regulatory decisions.

Table 3.16 summarises recent regulatory decisions on rail made by Australian regulators.

Table 3.16 Recent regulatory decisions on asset beta

Regulator/year	Sector	Asset beta
ACCC (2008)	ARTC Interstate rail network	0.65
ERA (2008)	WestNet Rail (freight)	0.65
QCA (2008)	Queensland Rail	0.50
QCA (2005)	Dalrymple Bay Coal Terminal	0.50
IPART (2004)	Hunter Valley Coal Network	0.32 to 0.46

Source: Relevant decisions of ACCC, ERA and QCA.

ARTC's proposal

ARTC proposes an asset beta range of 0.50 to 0.60, based on an assessment of its systematic risk factors that impact on the asset beta (first principles analysis) and having regard to asset betas of a set of comparable companies (listed on sharemarkets) with similar business and risk profile as ARTC and relevant regulatory decisions.

Its consultant's (Synergies) first principles analysis concludes that:

▼ ARTC has high operating leverage (due to high fixed cost base) and hence high systematic risk.

▼ Demand for ARTC's service is closely intertwined with demand for coal, in particular thermal coal for export.

▼ ARTC is regulated by revenue cap which provides some revenue certainty for the term of regulatory period.

▼ ARTC possesses market power but regulation prevents it exercising this power.[67]

The lower bound of the asset beta range proposed by ARTC mirrors the recent QCA decision in relation to Queensland Rail's Central Queensland Coal Network while the upper bound is based on other rail regulatory decisions as well as estimates from listed coal and rail companies used in the analysis of comparable companies.[68]

Based on the asset beta range of 0.50 to 0.60, and applying the Monkhouse formula, the corresponding equity beta proposed by ARTC is 0.99 to 1.32.[69]

Stakeholder comments

The Minerals Council submission opposes the use of an asset beta of 0.5 to 0.6. The Minerals Council does not consider the arguments put forward suggesting that investment in new mines creates significant asymmetric risk which should compensated for in the beta value are convincing. It argues that the asset beta of 0.44 determined by IPART in its 2005 decision remains a relevant benchmark.[70] It recommends an equity beta of 0.88.[71]

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[67] Report by Synergies for ARTC, December 2008, pp 56-57.
[68] Ibid., 2008, p 57.
[69] Ibid, p 8.
[70] NSW Minerals Council's submission, April 2009, p 11.
[71] Report by ACIL Tasman fro the NSW Minerals Council, April 2009, p 36.

IPART's draft decision

IPART's draft decision is to adopt an equity beta of 0.7 to 1.0. IPART notes that in its recent rate of return decisions, IPART has used a direct estimate of the equity beta rather than estimating an asset beta and then re-leveraging this asset beta to obtain an equity beta.

Table 3.17 summarises IPART's most recent equity beta decisions. As it has directly estimated the equity beta, IPART did not report estimates of the asset beta in its recent decisions.

Table 3.17 IPART - recent equity beta decisions

	2008 CityRail	2008 Sydney Water	2006 Bulk water	2005 rail access	2005 Metro water	2003 Metro water
Equity beta	0.8 - 1.0	0.8 - 1.0	0.8 - 1.0	0.7-1.0	0.8 - 1.0	0.65 - 0.90

Source: Various IPART decisions.

IPART is of the view that the systematic risks facing ARTC may be smaller than represented in an asset beta of 0.5 to 0.6 or an equity beta of 0.99 to 1.32 as proposed by ARTC. But it does note that while ARTC's systematic risks may be lower, there may be asymmetric risks that need to be considered.

Therefore, for the purposes of this draft decision IPART has maintained its 2005 rail access decision on equity beta as it considers that there insufficient convincing evidence to warrant a shift from that equity beta estimate of 0.7 to 1.0.

IPART notes that the AER's recent decision on equity beta adopted a lower value of 0.8.[72] As the AER's decision was released just prior to IPART's draft decision IPART has only been able to note, but not fully consider, the AER's decision. A fuller consideration of the AER's decision will be reflected in the final decision for this review.

3.5 Choosing within the WACC range

IPART has chosen WACC estimates at various points within the range in the past. These decisions have reflected:

▼ IPART's view on the likely values of the parameters within each range

▼ the costs of choosing a WACC that is too high versus choosing a WACC that is too low

▼ stakeholders' views in the appropriateness of various estimates of the WACC for new investment.

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[72] AER, *Final decision Electricity transmission and distribution network service providers*, Review of the weighted average cost of capital (WACC) parameters, May 2009, p 48.

A further issue to be considered is the ongoing impact of the global financial crisis on the ability of firms to raise capital and its cost. IPART notes that the AER gave weight to the impact of the global financial crisis in its decision to increase the MRP. While IPART considers that normally market conditions will be fully reflected in current market rates, it recognises that the current circumstances are unusual. If an adjustment for these circumstances is warranted it could be incorporated through an adjustment to the risk free rate, an adjustment to the MRP, or the choice of a higher WACC within the range. The latter option was not available to the AER under its approach, but is available to IPART for this review. As noted above, IPART will further analyse the AER decision but at this stage it is has not made a specific allowance for the impact of the global financial crisis but will further consider this issue for its final decision.

In its 2005 decision, IPART chose a WACC above the mid-point of the range. This reflected broad agreement between the stakeholders that the appropriate rate of return was above the mid-point of the range in order to encourage new investment.

ARTC's proposal

ARTC original proposal argued that IPART should set a rate of return at around the 75th percentile of the range. Its proposal determined a real pre-tax range of between 8.84 and 10.53 per cent, and based on that analysis ARTC proposed a rate of return of at least 10 per cent (as at November 2008). It argued for this based on:

▼ The costs of underinvestment that result from setting a WACC that is too low are smaller than the costs of setting a WACC that is too high. This reflects the costs of discouraging efficient investment.

▼ The asymmetric risks faced by ARTC (which ARTC argues should be incorporated by choosing an equity beta from the upper bound of a reasonable range).

▼ This is consistent with previous regulatory decisions.

ARTC updated this WACC range to reflect updated market parameters in its submission on IPART's rate of return discussion paper. This affected the value of the risk free rate and debt margin. It has also added the 60 basis points increase to the risk free rate to reflect the impact of the global financial crisis. The updated range as at 31 March 2009 was 9.3 to 11 per cent, and ARTC is seeking a rate of return towards the top of that range of 10.5 per cent.[73]

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[73] ARTC's submission, April 2009, p 4.

Stakeholder comments

QRNational Coal supported adopting a rate of return at the mid-point of the range in its submission.

The Minerals Council argues that IPART should set a single point estimate as opposed to a range. However, if IPART is inclined to choose a point within a range it is inappropriate for it to set a rate of return above the mid-point of the range. The reasons identified by the Minerals Council include:

▼ for many of the parameters a point estimate is more appropriate

▼ parameters such as the MRP, debt to total assets and gamma are determined by other regulators as single point estimates

▼ selecting a rate above the mid-point is more generous than selecting one parameter such as equity beta towards the upper end of a range of estimates and combining it with single point estimates of other parameters such as the MRP

▼ its submission is conservative in its estimate of some of the parameter values for example the level of gearing and asset beta

▼ compensating for asymmetric risk, asymmetric consequences of regulatory error, consistency with past decisions and future investment needs are not sufficient reasons to justify a rate above the mid-point.[74]

The Minerals Council submits that an appropriate rate of return is 5.25 per cent (pre-tax real).[75] With regard to the issue of providing a sufficient rate of return to enable investment in capacity, the Minerals Council provide a number of what its claims are relevant contextual matters:

▼ the equity injection of $580m ARTC received from the Australian Government to fund its capital program

▼ ARTC may have received additional support form its shareholder in relation to borrowing

▼ ARTC has low actual levels of gearing

▼ ARTC intends to require up-front, long-term take or pay commitments by all coal users for the Hunter Valley coal network to cover the capital costs of all its new investments and other fixed costs

▼ ARTC intends to require up-front capital contributions by users where necessary to fund particular investments.[76]

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74 NSW Minerals Council's submission, April 2009, p 12.
75 NSW Minerals Council's submission, April 2009, p 16.
76 Ibid, p 4.

ARTC has provided a broad response to the key issues and rate of return recommended in the Minerals Council's submission. ARTC argues strongly that a rate of return of 5.25 per cent is not a reasonable basis upon which ARTC could continue to provide access to and substantially invest in the Hunter Valley coal network.[77] ARTC's supplementary submission addresses a number of key issues it considers were raised by the Minerals Council's submission, including:

▼ Impact of rate of return will affect ARTC's ability to obtain funding for its investment program.

– ARTC claim that the Minerals Council acknowledged last year that the cost of capital had increased since it was last determined by IPART in 2005.

– ARTC also claim that when it initially sought funding for its capital investment program of $1b during 2008 financial institutions were only willing to fund about 50 per cent. ARTC therefore sought equity support from its shareholder, and that its shareholder is entitled to an appropriate rate of return.

– The capital investment program is now approaching $1.5b but it is harder to obtain credit now than 12 months ago.

– Its future gearing levels will increase.

– No take or pay contracts currently exist and ARTC's proposal to incorporate these into the access undertaking with the ACCC does not mean that ARTC would not permit access to the network without this commitment.

– Capital contributions while allowed have never been sought nor provided.[78]

▼ Costs of setting a rate of return too low as opposed to too high are substantial; for example, despite the planned capacity enhancements the system constraints in 2007 represented a potential $400m in lost exports.[79]

IPART's draft decision

IPART's draft decision is to set a rate of return above the mid-point of the WACC range. IPART's consideration of the arguments put forward by stakeholders is set out below.

A rate below the mid-point

IPART did not consider this to be an appropriate outcome. While in past decisions IPART has chosen rates below the mid-point, these decisions have been for other industries or to account for specific issues. For example, in its 2008 CityRail fare decision IPART choose a point below the mid-point as it considered that debt premiums were at the high end of the range and did not represent the cost of debt for a regulated business such as CityRail.

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[77] ARTC's supplementary submission, April 2009, p 2.
[78] Ibid, pp 4-7.
[79] Ibid, p 11.

In its past decision on the rate of return for rail access, IPART has adopted a rate above the mid-point largely because stakeholders agreed that the need for investment warranted such a decision. IPART has concerns that providing a rate of return below the mid-point of the WACC range increases the risks that the permitted rate of return is less than the actual rate of return ARTC will need to access financing over the coming years. IPART considers this to be a highly undesirable outcome given the importance of the investment in Hunter Valley coal network to the expansion in coal exports from the Hunter Valley.

IPART also considers that some of the reasons put forward by the Minerals Council as mechanisms to minimise ARTC's risks and ensure adequate investment takes place fails to take into account that IPART will be making its decision under the existing Undertaking as opposed to the proposed undertaking with the ACCC. For example, take or pay contracts are not part of the current Undertaking. While allowed, capital contributions are not currently sought nor received. IPART also agrees with ARTC's point that its shareholder is entitled to a fair market return on its equity injection.

Mid-point of the WACC range

QRNational Coal supported this option, and the Minerals Council has expressed its view that this is the highest rate of return which should be permitted. IPART acknowledges that such an option balances the interests of the stakeholders – ARTC has argued for a rate above the mid-point and the Minerals Council a rate below. It is also consistent with many of IPART's past rate of return decisions in other industries.

IPART is also mindful that the cost of accessing the required rail infrastructure is a component of the costs of both existing and new mines, and mine owners therefore have a legitimate interest in ensuring the costs they face including the rate of return component is consistent with that provided by a competitive market and that rail access prices are not excessive.

On the other hand, stakeholders have previously stated their concerns that ensuring sufficient capacity is provided by both the rail and port infrastructure in the Hunter Valley. This was a substantial issue for the last review where a rate of return above the mid-point of the range was considered necessary by stakeholders to ensure adequate investment. Given the investment program being considered by ARTC is vastly greater than that forecast at the time of the 2005 decision, and that Port Waratah is being expanded to allow additional coal export volumes, IPART expected the issue of capacity and the need for investment in rail infrastructure would have been of greater concern to stakeholders.

At the roundtable, the Minerals Council stated that the risk of underinvestment was low because of the equity injection supplied by the Australian Government and other factors listed above. While IPART considers that this equity injection could ensure much of the forward capital program goes ahead, providing a rate of return which is

below the actual cost of capital faced by ARTC could compromise its ability to debt or equity finance the remaining capital expenditure and risk future capacity enhancements for the coal supply chain in the Hunter Valley. As noted above, IPART considers that some of the reasons put forward by the Minerals Council as mechanisms to minimise ARTC's risks and ensure adequate investment takes place fails to take into account that take-or-pay contracts and capital contributions are either not included or not currently used under the existing Undertaking. Choosing the mid-point of the range does not in the IPART's view sufficiently take into account the risks of underinvestment.

A rate above the mid-point

As stated above the 2005 decision provided a rate of return of 7.3 per cent, above the mid-point (6.6 per cent) of the WACC range of 5.5 to 8.0 per cent. In 1999, IPART adopted a rate of return of 8 per cent, again a rate above the mid-point of the range of 5.3 to 8.8 per cent.

While it can be argued that the costs of rail access affects the viability of some mines particularly more marginal new mines, the analysis presented in ARTC's submission and IPART's own analysis suggests that the cost of rail access to the mines is a small proportion of the export price of coal. This point is acknowledged in the Minerals Council's submission.[80] For example, a 100 basis point increase in the rate of return on the current asset base would increase the revenue ceiling by around $5m which equates to an increase in access prices of 5 cents per tonne. This compares to current market prices of around $70 per tonne for thermal coal.[81] The total difference between the rate of returns recommended by ARTC and the Minerals Council is less than 30 cents per tonne. On the other hand a 100 basis point increase in the WACC has a greater impact on ARTC's revenue. A $5m increase is around 5 per cent of ARTC's current revenues. IPART also notes that other costs faced by the coal producers are more substantial, for example the cost for using the services at Port Waratah is around $3 per tonne.[82]

IPART considers that risks of underinvestment in the Hunter Valley coal network may exceed the costs of overinvestment given the current prices of rail access compared to the export price of coal. In addition, it would seem to be an inefficient outcome if efforts to expand total coal chain capacity in the Hunter Valley through additional port infrastructure was compromised by a lack of investment in the below rail capacity. On balance, IPART is of the view that the substantial costs of underinvestment supports IPART adopting a rate of return above the mid-point of the range.

IPART also notes that the Undertaking requires that ARTC (and RailCorp) undertake consultation prior to carrying out capital expenditure. The current Undertaking and

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80 NSW Minerals Council's submission, April 2009, p 13.
81 ABARE, *Australian Mineral Statistics - December quarter 2008*, March 2009.
82 Port Waratah Coal Services Limited, *Annual Report 2007*, p 7; price from 1 January 2008.

the consultation requirements which underpin it, and the general consultative approach used by coal chain stakeholders generally means that capital projects are scoped, costed and explained to all stakeholders prior to construction. IPART understands that ARTC regularly meets with the industry to seek their views on proposed capital projects. IPART takes these consultations into account when it makes its regulatory decisions on compliance with the Undertaking each year. Therefore, IPART considers that these mechanisms reduce the risks of overinvestment in the network.

IPART has also had regard to the recent AER's decision, in particular that the AER was asked to make adjustments to two WACC parameters to reflect the ongoing impact of the global financial crisis: the risk free rate and MRP.

IPART notes that the AER rejected making adjustments to the risk free rate including for the "convenience yield" and concluded that the CGS yields were still the most appropriate proxy for the risk free rate. However, it did make an adjustment to the MRP – increasing its estimate from 6 to 6.5. The AER noted that the evidence indicated that current estimates of the MRP have declined so that the range of values is likely to be 5.7 to 6.2 per cent and the most appropriate long-term estimate of the MRP is likely to be 6 per cent. It should also be noted the AER reduced the equity beta to 0.8.

IPART considers that if the current crisis is affecting the ability of firms to raise capital and its cost which is not currently accurately reflected in the market data or in the way certain parameters are estimated then an adjustment in these circumstances is warranted. However the case for change must be clearly demonstrated. For example, regulators in Australia have generally used current market data for financial market parameters on the principle that it includes full information on past, current and future market conditions. To take a longer term average or adjust current data in the absence of a clearly identified bias suggests the regulator, or others, know better or have better information not available to the market.

If the case for change is demonstrated it could be incorporated through an adjustment to the risk free rate, an adjustment to the MRP, or the choice of a higher WACC within the range. As stated above, IPART has not made any specific allowance for the ongoing impact of the global financial crisis for this draft decision however its preliminary view is that if an adjustment is warranted it may be more appropriate to choose a rate of return above the mid-point of the range than make ad-hoc adjustments to individual parameters, particularly if the market data does not fully support an adjustment to individual parameters. This would involve a two stage decision process: firstly consideration of the choice of the WACC within the range in the absence of the global financial crisis; and secondly, consideration of an explicit adjustment to the WACC in light of the global financial crisis. As stated above IPART will consider the issue of the ongoing impact of the global financial crisis on ARTC's ability to raise capital for the final decision, including a full analysis of the AER's decision.

The rate of return for IPART's draft decision is 7.5 percent. IPART has made one adjustment of 60 basis points to the mid-point of the WACC range of 6.9 per cent in recognition of the investment risks imposed by setting a rate of return that is too low. This is consistent with the 2005 decision. IPART will undertake additional analysis of this issue prior to releasing its final report.

3.6   Other issues raised by stakeholders

The Minerals Council submits that the rate of return should be updated annually to reflect changes in the value of market dependent parameters.[83] IPART does not agree with such an approach. Reviewing the rate of return annually will not provide both ARTC and its customers with regulatory certainty. This is particularly a problem for ARTC in the current environment where it is planning a substantial capital investment program over the next 5 years. In addition, IPART's decision will set the rate of return for a 5-year period. Under the existing wording of the Undertaking it is not possible for IPART to set the rate of return for 12 months or review it annually. Therefore, the Minerals Council proposal is not practical without an amendment to the Undertaking.

The Minerals Council also submits that IPART should adopt a single point estimate for WACC parameters rather than identify a range of values.[84] ARTC on the other hand supports IPART's approach of identifying a range of values for those parameters where there is some uncertainty and a single point where an estimate of the parameters can be derived from a market assessment or from legislation. IPART's approach in reviews of rate of return for both rail access and other industries has been to indentify a WACC range. It does not see any reason to depart from that approach for this review.

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[83]   NSW Minerals Council's submission, April 2009, p 4.
[84]   Ibid, p 12.

4 IPART's draft decision on remaining mine life from 1 July 2009

Section 3.2(c)(iv) of Schedule 3 of the Undertaking states:

> The estimate of remaining mine life will be reviewed and if necessary revised every five years from and including 1 July 2004 by IPART or an independent consultant appointed by IPART.

The remaining mine life is used in the Undertaking as a proxy for the remaining useful life of the relevant sectors of the Hunter Valley coal network. Depreciation is calculated on a straight-line basis using this estimate of the useful life of the assets. The depreciation rate is then applied to the average RAB of the constrained network to calculate the depreciation amount for inclusion in the 'full economic cost' of the constrained network. The Undertaking's ceiling test limits the recovery of access revenue (of the constrained network) to their 'full economic cost' (Schedule 3).[85] Consequently, a reduction in the remaining mine life has the effect of increasing the annual depreciation that the infrastructure owner is able to recover over a shorter remaining life.

The Undertaking prescribes the initial estimate of the remaining mine life as 40 years from 1 July 1999 (Schedule 3, Clause 3.2(c)(iii)). This is based on IPART's Final Report *Aspects of the NSW Rail Access Regime*, dated 28 April 1999.[86] In 2004, IPART reviewed the estimate of remaining mine life under the Undertaking and decided to preserve the status quo based on consensus among stakeholders. Therefore, the remaining mine life from 1 July 2004 was held to be 35 years.[87]

IPART's draft decision is that the remaining mine life from 1 July 2009 is 30 years. The remaining parts of this chapter outlines: ARTC's proposal, stakeholder submissions, the key findings of the assessment undertaken by LECG (IPART's consultant) and the key reasons for IPART's decision.

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85 The constrained group of mines contains those situated along the mainline between the Port of Newcastle and a point near Muswellbrook. The calculation of full economic costs is on a stand alone basis. The Undertaking requires that access revenue must not exceed the ceiling specified under Schedule 3 of the Undertaking.

86 This was determined as a fair compromise between the 30 year life sought by the then asset owner (RAC) and the 50 year life sought by the mining industry in 1999.

87 In 2004 Booz Allen engaged by IPART, recommended a shortening of the remaining mine life. However, IPART did not accept this recommendation, given the consensus that had emerged in favour of maintaining the status quo.

4.1 Access owners proposals

4.1.1 RailCorp

RailCorp has chosen not to propose an estimate for the remaining mine life of Hunter Valley coal mines for this review.

4.1.2 ARTC

ARTC has proposed an estimate of the remaining mine life of 22.8 years from 1 July 2009. This is approximately seven years shorter than that based on the roll-forward of the mine life determined by IPART in 2004.[88] ARTC's proposal is supported by an assessment undertaken by its consultant - Booz & Co. (Booz).[89]

Booz's used a weighted average approach to estimate the remaining life of mines, taking into account the relative size of the each mine. The methodology that Booz has applied is based on the combined effect of mine production rate as well as the coal chain capacity. It gives recognition to the fact that the production rate of mines is affected by coal chain capacity constraints and mine production varies over time, in particular during startup and shutdown phases. Further, the estimates produced by Booz are based on the marketable reserves of coal at each mine in 2008 and existing capacity of the Hunter Valley coal network up to 2012. It assumes that the capacity beyond 2012 is sufficiently expanded to match the demand forecast.[90]

Table 4.1 sets out the four scenarios put forward by Booz to support its assessment of the appropriate remaining mine life that should be applied.

Table 4.1   Booz's estimates of remaining mine life

	Option A	Option B	Option C	Option D
Coal chain capacity constrained	No	Yes	No	Yes
Prospective mines (Watermark, Caroona and Maules Creek) included	No	No	Yes	Yes
Average mine life (years)	22.5	22.8	25.2	25.5

Source: Booz & Co, *Mine Life Assessment Hunter Valley Coal Network*, 28 November 2008, p 2.

Booz's analysis demonstrates that the inclusion of prospective mines would extend the remaining mine life from 22.8 to 25.5 years. If the Hunter Valley coal network capacity is not constrained the remaining mine life would be 22.5 years rather than 22.8 years.

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88 ARTC submission to IPART, 1 December 2008, p 5.
89 Booz & Co., Mine Life Assessment Hunter Valley Coal Network, 28 November 2008. (at Appendix B to ARTC 1 December 2008 submission).
90 Ibid, pp 1-2.

Booz's report concludes that Option A and Option C which assume there are no capacity constraints (2009 -2012) are irrelevant and it excludes Option D (includes prospective mines) on the basis that the production estimates and start dates for each of the prospective mines are considered extremely speculative in the light of current global demand for coal. The report recommends Option B as the most reasonable estimate for remaining mine life.[91]

In response to IPART's discussion paper on remaining mine life, ARTC submitted that:

▼ It does not consider that the depreciation rate based on the remaining mine life determined in the 2005 decision is appropriate.

▼ An improvement in the estimate of remaining mine life would result in a more appropriate incentive to invest efficiently in the Hunter Valley coal network.

▼ While ARTC recognises that falling coal prices impact on production levels it believes prices at the current level are still above the breakeven point for most mines, in particular those in the central Hunter Valley region. Therefore the impact is not expected to be significant.

▼ Production forecasts used in the Booz's assessment were developed in mid 2008 and used to develop investment strategies in the Hunter Valley. ARTC believes that these production forecasts may have already factored in reduced coal export due to the global economic downturn. It does not consider the global financial crisis will have a substantial impact on remaining mine life.

▼ ARTC considers that factors such as climate change, carbon pricing policy and development of clean alterative based energy supplies may have a greater impact on estimated mine life. Given the uncertainty surrounding these issues, they have not been reflected in ARTC's estimates.

▼ Booz forecasts coal chain capacity to increase to 185m tonnes per annum by end of 2012 consistent with the capacity data of the Hunter Valley Coal Chain Logistic Team (HVCCLT). In the years prior to 2013, Booz has used estimates from ARTC investment strategy which is closely aligned with known port capacity. In relation to mines not yet in operation (Caroona, Maule's Creek and Watermark), ARTC is of the view that these should be excluded from the assessment to be consistent with the intention of the Undertaking and that this approach is consistent with that taken in previous reviews.

▼ In relation to lines joining the constrained group, ARTC supports the proposal that infrastructure owners should be allowed to recover full economic cost under-recovered prior to such lines joining the constrained group. However, this may necessitate changes to the existing Undertaking.

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91 Ibid, p 3.

On matters raised by IPART at the roundtable on 1 April 2009, ARTC submitted that:

▼ Booz's modelling indicates there is a difference of 0.3 year to the remaining life estimates with and without capacity constraint. ARTC clarifies that the small difference is due to the assumption by Booz that there would be no constraint after 2012. Prior to 2012, ARTC's strategy is to ensure capacity is expanded ahead of demand and constraints are kept to a minimum. Therefore, the application of the supply chain capacity assumptions by Booz does not have a significant impact on remaining mine life.

▼ ARTC contends that the high production levels that underpins its proposed mine life is not inconsistent with stranding risk that it uses to support its proposal for a higher rate of return. The high production levels require substantial investments in the network in the short to medium term. In the longer term, stranding risk may be caused by known factors such as climate change, carbon tax and alterative energy development.[92]

4.2 Stakeholder submissions

4.2.1 QRNational

QRNational did not make any specific comments on the remaining mine life proposed by ARTC.

The Asciano submission indicated that, owing to the imminent change in direct contracting for access between coal owners and ARTC, Asciano has not made any specific comments on ARTC's proposals concerning the mine life.[93]

The Minerals Council's initial submission, which was preliminary in nature, signalled a concern that the shortened mine life (22.8 years) proposed by ARTC would lead to increased access prices. It also sought additional information from ARTC pertaining to the mine life estimated by its consultant, Booz & Co.[94]

The Minerals Council submission of April 2009 does not comment on the issue of remaining mine life. However, at the roundtable it supported a remaining mine life of at least 30 years. It considered that the Booz & Co's approach had failed to adequately account for prospective mines and capacity constraints.[95]

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[92] Confidential submission by ARTC to IPART.
[93] Asciano submission to IPART, 30 January 2009.
[94] Minerals Council letter to IPART of 16 January 2009.
[95] Stakeholder roundtable transcript, April 2009, p 22.

4.3   LECG's findings

LECG were engaged by IPART to provide expert advice on the remaining mine life. In March 2009, IPART released an issues paper from LECG for stakeholder comment.[96] This issues paper raised a number of key issues including:

▼ Appropriateness of Booz's methodology.

▼ The impact of the changes in the coal price and global financial crisis on Booz's findings.

▼ Booz's approach to modelling infrastructure capacity constraints and prospective mines.

▼ The appropriate treatment of mines that have moved from the unconstrained to the constrained group of mines.[97]

After receiving submissions on its issues paper, including additional confidential information submitted by ARTC on Booz's approach, and conducting further analysis LECG has provided a draft report and findings. IPART has released this draft report for stakeholder comment.

The draft report provides detailed analysis of Booz's methodology in particular its treatment of capacity constraints and prospective mines. LECG also proposes an alternative methodology to Booz's approach of estimating the remaining mine life using a production-weighted average of the respective mines. LECG's alternative methodology, which it argues is more appropriate, bases the estimate not on the weighted average but on the life of the longest-lived mine of substantial size that requires that rail line. It argues that this approach is more appropriate because if a substantial mine is still operating on a line the railway line would remain operational for the balance of that mine's life.

LECG's key finding is that the methodology adopted by Booz is not appropriate in a number of important respects. LECG's draft conclusions are:

1. The Booz approach to modelling the effect of coal chain capacity constraints on mine life understates the likely influence of these constraints and therefore underestimates the mine life. Imposing a more realistic constraint on capacity would increase the mine life to 27 years. This result is an increase of 4.2 years over the preferred Booz scenario involving capacity constraints, making no other changes to the Booz methodology.

2. The exclusion of large new mine projects in the Gunnedah basin, such as Maules Creek, Caroona, and Watermark is justified by Booz on an basis that appears inappropriate for an estimate of the rail infrastructure's economic life. Including these mines would add 2.7 years to the mine life, under the Booz methodology.

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96 LECG, *Issues Paper – Remaining Mine Life Hunter Valley coal network*, March 2009.
97 It is important to note that the term "constrained" does not refer in this context to infrastructure capacity constraints but rather the group of mines that pay access charges at the regulatory ceiling.

3. The weighted average mine life would be 33.9 years if both the alternative, more realistic capacity constraints were applied, and the post-2015 prospective mines were included. This result, 11.1 years more than the ARTC-recommended mine life, is obtained without modifying the Booz production-weighted average methodology.

4. The production-weighted average mine life methodology employed by Booz has some inherent weaknesses. In a range of plausible situations it could yield results that may be incorrect.

5. An alternative methodology, determining the rail infrastructure's economic life with reference to the life of the longest-lived substantial mine on the line, would be more appropriate.

6. Employing this alternative methodology yields a mine life of approximately 30 years from 2009, even when the new large mine projects in the Gunnedah basin are excluded from the calculation.

7. The Booz assumption of no impact on coal extraction rates or reserves of future coal price changes does not appear reasonable in light of the magnitude of the output expansions contemplated in their mine life model. While future price changes could either lengthen or shorten mine life, it seems more probable that the large supply increases contemplated would serve to extend the mine life.

8. In light of these points, LECG conclude that a 30-year mine life from 2009, implying a terminal date of 2039, would be the most reasonable central estimate for the purposes of the Undertaking.

4.4 Issues and IPART considerations

4.4.1 Impact of capacity constraints

LECG queries Booz's treatment of capacity constraints, in particular its assumption that the NSW Government and the coal industry will ensure that the Hunter Valley coal chain capacity will expand such that it will be capable of meeting demand from 2012 onward.

LECG identifies an alternative capacity constraint path which when used in the Booz mine life calculation, increases the mine life to 27 years.[98]

4.4.2 Prospective mines excluded by Booz

LECG also queries Booz's treatment of prospective mines. In particular, it is critical of Booz decision to apply a zero probability to uncertain future events is statistically invalid because it introduces a downward bias to the mine life estimate.

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98 LECG, *Draft Report – Remaining Mine Life Hunter Valley coal network,* May 2009, p 13.

LECG concludes that it seems inappropriate to discount Booz estimates that exclude prospective mines. Therefore, Options C and D proposed by Booz, which include best estimates for these post-2015 prospective mines should be preferred to the Option B that was eventually selected. Relative to Option B, Option D (which also applies capacity constraints) adds 2.7 years to the mine life.[99]

4.4.3 Booz or LECG's methodology

While LECG find that the production-weighted averaging methodology has some positive features it also finds that it has some inherent weaknesses. LECG outlines two examples which highlight these weaknesses. It considers a situation in which there are two mines: one which has a 5-year remaining life and one which has a 75-year remaining life. If these mines had equal reserves, then the weighted average life would be 40 years. However, the railway line serving these mines would need to be in use for 75 years, not 40. The weighted average life would be an inappropriate proxy for the rail infrastructure life in this case. It further considers this example to show how the weighted-average mine life differs depending on the ownership arrangements. As shown above if the two mines where under separate ownership, the weighted average life would be 40 years. If, however, the two mines were situated on the same loading loop and were owned by the same company, then the life of this combined "mine" would be 75 years. [100]

LECG therefore propose an alternative methodology where the economic life of a section of rail infrastructure would be established by the life of the longest-lived mine of substantial size that requires that rail line. LECG's report provides the detail on its proposed methodology and why it is more appropriate. [101]

4.4.4 Treatment of mines which moves from the unconstrained to constrained group

In both its draft report and issues paper LECG raises the issue of how to treat mines that move from the unconstrained to the constrained group of mines. This issue is relevant at the moment as the Ulan and Wilpingjong sectors may have shifted to the constrained group in 2007/08. For both sectors the past access prices under-recovered the full economic costs. Therefore, the expected return of capital for the value of the initial investment was not fully returned to the asset owner. LECG's suggested approach to overcome this problem is to delay depreciation of the RAB for the unconstrained sectors until the access revenue is sufficient to recover the depreciation charge. Such an approach would ensure financial capital maintenance for the asset owner.[102]

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[99] Ibid, p 15.
[100] Ibid, p 16.
[101] Ibid, pp 19-21.
[102] Ibid, pp 23-25.

ARTC considers that this issue deserves further analysis and notes that its draft Hunter Valley access undertaking adopts a loss capitalisation approach to dealing with situations where investments are made but full cost recovery is not achieved in the early years of the assets life.[103]

IPART considers that there may be some merit in LECG's approach. Ensuring financial capital maintenance is maintained is in an important element of regulatory regimes. However, given that ARTC has now submitted its draft Hunter Valley Coal Network Access Undertaking with the ACCC and LECG's suggested approach is likely to require an amendment to the existing Undertaking, IPART is of the view that this matter is better pursued by stakeholders as part of the consultation on the new access undertaking. Therefore, IPART does not propose to pursue this matter further as part of its review.

4.5   IPART's draft decision

IPART draft decision is that the appropriate remaining mine life from 1 July is 30 years. This implies a terminal date of 2039, the year which was implied by IPART original decision in 1999 which set the remaining mine at 40 years. IPART's 2005 decision implied the same terminal year by setting a remaining mine life of 35 years.

IPART's draft decision has considered the views of stakeholders, in particular ARTC's proposal to shorten the remaining mine life utilising Booz's analysis and the Minerals Council's view that a remaining mine of at least 30 years is appropriate. In determining that 30 years is the appropriate remaining mine life IPART has considered and agrees with the advice provided by LECG, in particular its key conclusions that:

1. The Booz approach to modelling the effect of coal chain capacity constraints on mine life understates the likely influence of these constraints and therefore underestimates the mine life. Imposing a more realistic constraint on capacity would increase the mine life to 27 years.

2. The exclusion of large new mine projects in the Gunnedah basin, such as Maules Creek, Caroona, and Watermark is justified by Booz may not be reasonable and that including these mines would add an additional 2.7 years to the mine life, under the Booz methodology.

3. The weighted average mine life would be 33.9 years if both the alternative, more realistic capacity constraints were applied, and the post-2015 prospective mines were included. This result, 11.1 years more than the ARTC-recommended mine life, is obtained without modifying the Booz production-weighted average methodology.

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[103] ARTC's submission on IPART 's issue paper, *2009 Hunter Valley Mine Life Review*, April 2009, pp 22-23.

IPART's has also considered the weaknesses of Booz's production-weighted average mine life methodology which underpinned ARTC's proposal to shorten the remaining mine life. IPART's considers that the concerns highlighted by LECG at the minimum suggest that caution should be used in relying on Booz's results. Indeed, IPART considers that LECG's alternative methodology may provide more appropriate estimates of the likely remaining mine life for the purpose of determining the useful life and the rate of depreciation of the associated rail infrastructure.

IPART has also considered the context of this review, in particular that ARTC has now submitted its Hunter Valley access undertaking with the ACCC for its approval. This has obvious implications for the current Undertaking. Therefore, now may not be the appropriate time to undertake a substantial revisions to the current regulatory approach such as the substantial revision to the remaining mine life proposed by ARTC.