2 The cost of capital

2.1 Introduction

Clause 6.2.2(b)(2) of the code requires the Commission to seek to achieve a fair and reasonable rate of return on efficient investment as one of the objectives of economic regulation. Further guidance is provided in clause 6.2.4(c)(3) of the code in which it states that the Commission must have regard to the WACC of the transmission network. The Commission therefore considers the risk adjusted cash flow rate of return required by investors in commercial enterprises facing similar business risks to the transmission network.

Electricity transmission is a highly capital intensive industry, where generally, return on capital accounts for about two thirds of the MAR. Therefore, relatively small changes to the cost of capital can have a significant impact on the total revenue requirement and ultimately, end user prices. Consequently, correctly assessing the return on capital is very important.

If the return on equity is too low, the regulated network will be unable to recover the efficient (and fair) costs of service provision. Perhaps more importantly, it may not provide sufficient return to the owner, thereby reducing its incentive to re-invest in the business. Conversely, if the return on equity is too high, the network will have a strong incentive to over-capitalise ('gold plate'), thus creating inefficient investment and high cost to end-users.

2.2 The post-tax approach

In the DRP the Commission outlines its view on the appropriate expression of the return on equity that is to be achieved, and how it is to be used for deriving the regulated revenues. This view is summarised in the proposed statement 6.3:

> The Commission will apply the nominal post-tax return on equity as a benchmark. The revenues will be calculated on the basis of the cash-flows associated with the regulatory accounts necessary to deliver this return after taking into account liabilities and the assessed value of franking credits based on existing tax provisions and foreshadowed tax changes due to occur during the regulatory period.[4]

For this decision, the Commission has chosen to adopt the cash flow modelling approach as specified in the code and outlined in the DRP. This approach extracts the parameters relating to business income tax from the WACC formula. In doing so, the Commission explicitly models the impact of tax and franking credits on the required post-tax distributions in the cash flows. The remaining WACC formula, which has been termed the vanilla WACC, is merely the weighted average of the gross post-tax returns on debt and equity.

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[4] ACCC, *Draft Statement of Principles for the Regulation of Transmission Rev*enues, 27 May 1999, p. 84.

In its application, ElectraNet expressed concern regarding the Commission's preference for a post-tax nominal WACC framework. It suggested a pre-tax method, as adopted under the existing South Australian regulatory regime, is more consistent with achieving the objectives of incentive regulation.

ElectraNet also argues that the post-tax WACC approach:

- controls revenue by regulating post-tax profit thereby minimising incentives for a business to achieve further productivity gains and to minimise tax liabilities
- involves a higher degree of regulatory intrusion and scrutiny over business costs rather than focussing on outcomes such as prices, performance standards and customer satisfaction.

Despite these concerns, ElectraNet recognises the Commission's preference for a post-tax approach as demonstrated by the Commission's previous revenue cap decisions. ElectraNet presented its application in a post-tax nominal framework.

Conversely, AGL urges the Commission to adopt an approach to the ElectraNet application that is consistent with earlier decisions. The Energy Users Association of Australia (EUAA) states that the post tax approach is preferable as it:

- eliminates the need for complex treatment of taxation using 'tax wedges'
- allows easier comparison with values adopted in other regulatory decisions.

2.2.1 Commission's considerations

The Commission notes that pre-tax rates of return implicitly provide for an allowance in revenues to cover the expected tax liabilities over the life of the asset. As discussed in the context of the Commission's Victorian gas decision[5] and DRP[6], the application of a pre-tax rate of return in the regulatory framework creates a number of problems which are solved by moving to a post-tax rate of return.

The first problem is how to convert from the nominal post-tax return on equity benchmark provided by the CAPM to an equivalent real pre-tax WACC. There has been significant discussion and divided opinion on the appropriateness of the sequences, which can have a significant impact on the revenue decision. The post-tax cash flow modelling avoids this problem, as it does not attempt to convert the revenues into real terms. In addition, the cash flow modelling enables exogenous changes that may impact upon the accruing, and recovery, of income taxes.

The second problem with the pre-tax approach is related to uncertainties in making long-run forecasts of future tax liabilities, which vary with actual inflation outcomes and changes in the tax regime. By using the post-tax approach and modelling income

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[5] ACCC, *decision – Victorian Gas Final Decision*, October 1998

[6] ACCC, Supplementary Papers - *Draft Statement of Principles for the Regulation of Transmission Rev*enues, 27 May 1999.

taxes in the cash flows, the Commission can adjust for changes in the tax regime that alter the tax liabilities of a transmission network to ensure that it achieves the benchmarked return on equity over the life of the assets.

A third problem with the pre-tax approach has become known as the S-bend problem. It arises because in the pre-tax approach, the rate of return provides for a fixed proportion of the return on capital to provide compensation in the revenue stream for current and future tax liabilities. However, because of a range of tax concessions such as accelerated depreciation, there is generally little tax payable early in the life of an asset and tax liabilities increase significantly later in the life of the asset after such concessions have been fully utilised.

Theoretically, this is less of a problem since the pre-tax return is intended to assume an effective tax rate over the life of the asset just sufficient to compensate the regulated entity/investor for the net taxes that it has to pay. The regulatory problem is a practical one and a political one. The uncertainty over the long-term tax forecasts already mentioned is one issue. The second relates to the adequacy of cash flows to enable the regulated entity to sustain a level of investments adequate to maintain its level of service later in the life of the assets, when tax liabilities greatly exceed the provision for them within the then current regulatory revenue.

The regulated entity has been, in principle, already compensated for those tax liabilities in earlier cash flows so it is inappropriate to ask users to pay extra to meet the cash flow needs of the regulated entity. Nevertheless, there is likely to be significant pressure for the regulator to concede to such a measure. Again, the post-tax approach suggested by the experts provides a ready solution since taxes are assessed on an *as you go basis* and the regulated entity does not suffer tax liability uncertainty or potential shortfall.

Therefore, a methodology based on post-tax returns and assessment of near term tax liabilities using cash flow analysis readily overcomes most of the regulatory difficulties linked to a real pre-tax based framework.

2.3 The capital asset pricing model

Clause 6.2.2 of the code requires that one of the key outcomes that the revenue regulatory regime, to be administered by the Commission, must provide for is:

> a sustainable commercial revenue stream, which includes a fair and reasonable rate of return to *Transmission Network Owners* and/or *Transmission Network Service Providers* on efficient investment, given efficient operating and maintenance practices.

Schedule 6.1(2.2.2) of the code states that there are a variety of methods that can be applied to estimate the return on equity (R_e) component – for example, prices to earnings ratios, dividend growth model and arbitrage pricing theory. However, the code states that the CAPM remains the most widely accepted tool applied in practice to estimate the cost of equity.

The CAPM calculates the required return given the opportunity cost of investing in the market, the markets own volatility and the systematic risk of holding equity in the particular company. The CAPM determines the rate of return from the perspective of

the investor measured in cash flow terms. This includes the returns from year to year as well as the value to the investor accruing as the result of any net appreciation in the capital base.

The CAPM formula is:

$$R_e = R_f + \beta_e(R_m - R_f)$$

where: R_f = the risk free rate of return - usually based on government bond rates of an appropriate tenure

(R_m-R_f) = the market risk premium (MRP) - the return of the market as a whole less the risk free rate

β_e = the relative systematic risk of the individual company's equity.

The CAPM expresses the rate of return as the post-tax nominal return on equity. This can be adjusted to allow for debt to derive the corresponding return on assets, otherwise known as the WACC.

Key parameters

The key parameters relevant to WACC/CAPM analysis are:

- the risk free interest rate (R_f)
- the expected rate of inflation (F)
- the cost of debt (R_d)
- the market risk premium (MRP)
- the likely utilisation of imputation credits (γ)
- the likely level of debt funding (D/V)
- the equity beta (β_e) of the company
- the effective tax rates on equity (T_e)

2.4 Estimate of the risk free interest rate

The risk free rate measures the return an investor would expect from an asset with zero volatility and zero default risk. This rate of return can be approximated by the yield on long term Commonwealth government bonds, which are viewed as risk free assets since the government can honour all interest and debt repayments.

In the CAPM framework all information for deriving the rate of return should, in principle, be as up to date as possible at the time the decision comes into effect. In the case of interest rates and inflation expectations, the financial markets on a daily basis

set the parameters. Therefore it may be argued that there is little justification for using historical data.

On this issue Statement 6.7 of the DRP states:

> The risk free rate will be estimated from the (nominal) observable rate on five-year Commonwealth bonds.
>
> The risk free rate will be normally based on a 40 trading day moving average covering the eight weeks prior to the reset date unless there is evidence to suggest that the current rate of the day represents a transition to a new level which is expected to be maintained.

The Commission adopted the forty-day moving average in *NSW and ACT*[7]*, Snowy Mountain Hydro-Electric Authority (SMHEA)*[8] *and Queensland*[9] revenue cap decisions.

2.4.1 Submissions by interested parties

ElectraNet acknowledges the Commission's consistent approach in averaging and in its application adopted a 40-day averaging approach. In its submission, NRG Flinders (NRG) notes that ElectraNet's application includes a nominal risk free interest rate based on the 40-day moving average yield of Commonwealth bonds as at 4 March 2002. However, NRG contends that no justification has been provided for the use of this day. It presumes the relevant rate ultimately applied by the Commission would be chosen to reflect prevailing market rates over an appropriate interval prior to the commencement of the regulatory period.

2.4.2 Commission's considerations

The Commission acknowledges that the financial theory underlying the CAPM explicitly specifies the use of *ex-ante* returns. It also acknowledges the risk associated with using forecast information. The Commission recognises the inherent limitations of using both an 'on the day' rate and a 'historical average' approach in the workings of the CAPM.

By using an 'on the day' rate in the CAPM, rates may reflect short term fluctuations which differ to long term trends. Such differences could arise from market volatility. Exposure to short term volatility can be minimised by averaging rates over a short term prior to the start of the regulatory period. The average rate can then be used in the CAPM. For regulatory purposes, regulators traditionally adopt an historical average when dealing with the risk free rate.

The Commission notes that the Queensland Competition Authority (QCA), in its recent determination on regulation of electricity distribution networks[10], adopts a 20-day

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7 ACCC, *decision – NSW and ACT Transmission Network Revenue Caps 1999/00-2003/04*, January 2000.

8 ACCC, *decision – Snowy Mountains Hydro-Electric Authority Transmission Network Revenue Cap 1999/00-2003/04*, February 2001.

9 ACCC, *decision – Queensland Transmission Network Revenue Cap 2002-2006/07*, November 2001.

moving average. It concluded that whilst an 'on the day' rate is theoretically correct, it may cause distortions to the total cost of borrowing. However, the QCA also notes that whilst long-term averages may smooth the interest rate cycle, the prevailing average would not represent current market expectations.

In its DRP the Commission states that 40-day moving average would be the appropriate approximation of the risk free rate. This is seen as the appropriate period to smooth out the short-term volatility of bond rates. This position has been the Commission's approach through its regulatory decisions. Most recent examples include the *NSW and ACT, SMHEA and Queensland* revenue cap decisions, *Sydney Airports*[11], *Moomba to Adelaide Pipeline System*[12] (*MAPS*) decision and *NT Gas Pty Ltd*[13] access arrangement decisions.

The Commission remains of the view that it is appropriate to use a short-term average of the risk free rate. This affords a degree of protection from transient volatility while ensuring that the selected rate is closely reflective of the most recent market activity. Accordingly, the Commission has used a 40-day moving average of bond rates in assessing ElectraNet's revenue cap.

2.5 Selection of the bond rate

The code suggests that the risk free rate be determined by reference to the yield to maturity on long-term ten-year Commonwealth Government bonds, being the least risky debt instrument traded in the market.

However, a relevant factor influencing the selection of the risk free rate is the frequency of regulatory determinations to which the WACC is applied. If the WACC is revised at relatively short intervals, then it may be more appropriate to use a shorter-term bond rate in deriving the WACC for the regulated entity. Thus, an appropriate term for calculating the risk free interest rate in the present context is the term between regulatory reviews, in the case of ElectraNet, five and a half years.

As this decision will be for a period of five and a half years, the Commission will interpolate a five and a half-year bond rate based on the five-year and ten-year nominal bond rates. While there is considerable support for the use of bond rates with terms corresponding to the life of the assets, the Commission has stated in previous decisions that they are not the appropriate approximation of the risk free rate. The CAPM model used by the Commission is a single period model and given that investors review

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[10] Queensland Competition Authority, *final determination - Regulation of Electricity Distribution*, May 2001.

[11] ACCC, *decision - Sydney Airports Corporation Ltd. - Aeronautical Pricing Proposal*, May 2001.

[12] ACCC, *Access Arrangement Proposed by Epic Energy South Australia Pty Ltd for the Moomba to Adelaide Pipeline System*, September 2001

[13] ACCC, *Access Arrangement Proposed by NT Gas Pty Ltd. for Amadeus Basin to Darwin Pipeline*, May 2001.

investments over short periods, a shorter-term bond rate is the appropriate measure of the risk free rate.

2.5.1 Submissions by interested parties

The Commission received submissions relating to the selection of the bond rate from ElectraNet, Origin Energy (Origin), NRG, Western Mining Corporation Copper Uranium (WMC), SA Water, TransGrid, EUAA and Electricity Consumers Coalition of South Australia (ECCSA). The comments with the submission fell in two broad areas:

- the risk free rate should align the life of the asset
- consistency with other Commission decisions.

Each are in turn addressed below.

Alignment of the risk free rate with asset life.

ElectraNet argues that the proposal to utilise a shorter-term risk free instrument fails to recognise the underlying asset structure of the Transmission Network Service Provider (TNSP).

ElectraNet further contends that by aligning the risk free rate to that of the regulatory period, it does not correctly interpret CAPM.

ElectraNet supported by a submission prepared by the Network Economics Consulting Group (NECG) supports the view that the risk free rate should be aligned as far as possible with the actual life of the asset. It further adds that matching debt maturity with asset maturity suggests the use of a long trading bond of similar length and would best reflect efficient financing behaviour for a company such as ElectraNet.

TransGrid similarly argues that the use of a ten-year bond rate is more appropriate by considering the nature of the transmission business, namely its assets predominantly have long lives.

However, the ECCSA believes that it is a sensible premise that as the regulatory period is five years then a regulated rate of return should be assessed against a risk free rate of a similar duration. EUAA similarly argues that the five-year Commonwealth bond rate, which has a lower built-in premium to compensate for inflation risk and currently around 5.5 per cent, should be used as a proxy for the risk free rate. EUAA contends that this is consistent with a regulatory period of five years.

Consistency with other Commission decisions

ElectraNet argues that the Commission's use of a five and a half-year bond rate is inconsistent with past regulatory decisions, specifically the *NSW and ACT* revenue cap decision.

ElectraNet also argues that the Commission's use of a shorter-term bond rate is inconsistent with the approach taken by other regulators on this issue in Australia and overseas. ElectraNet further states that the inconsistency of the Commission's stance on

the risk free rate, in relation to its own and other regulatory decisions, would send confusing signals and thereby increase regulatory risk.

Conversely, Origin argues that ElectraNet's claim for a risk free rate of return based on a ten-year Commonwealth bond is inconsistent with the Commission's DRP and previous revenue cap decisions. Origin also argues that any significant change in approach by the Commission from its previous revenue cap decisions would increase the level of regulatory risk.

The ECCSA, WMC and NRG similarly supports the application of a five year bond rate as the proxy for a risk free rate and to maintain consistency with other recent decisions made by the Commission.

2.5.2 Commission's considerations

The Commission maintains its view that using the nominal and real bond yields with terms that correspond to the regulatory period is appropriate for two main reasons.

Firstly, the use of such bond yields will ensure that inflation rates which the asset owners are exposed, will correspond with estimated rate.

Secondly, the use of yields commensurate with the regulatory period is appropriate under the CAPM framework. The CAPM is a one period model and thus theoretically more appropriate to estimate the rate for one regulatory period, rather than over the course of numerous regulatory periods. Given that the regulatory framework seeks to return the relevant cost of capital, the regulatory asset value will at all times be supported by expected cash flows. Therefore the relevant period of the CAPM can be set to equal the immediate regulatory period without any loss of applicability.

The Commission accepts that this approach is not consistent with the approach of other Australian regulators and is not consistent with its approach in the *NSW and ACT* revenue cap decision. Nevertheless, using a bond yield with a term commensurate with the regulatory period is consistent with its approach as outlined in the DRP and with the Commission's other recent regulatory decisions, including:

- Queensland Transmission Network Revenue Cap 2002-2006/07, November 2001
- Access Arrangement Proposed by Epic Energy South Australia Pty Ltd for the Moomba to Adelaide Pipeline System, September 2001
- Access Arrangement Proposed by NT Gas Pty Ltd. for Amadeus Basin to Darwin Pipeline, May 2001
- Sydney Airports Corporation Ltd. - Aeronautical Pricing Proposal, May 2001
- Snowy Mountains Hydro-Electric Authority Transmission Network Revenue Cap 1999/00-2003/04, February 2001
- Moomba to Sydney Pipeline Draft Decision, December 2000
- Melbourne Airport - Multi-User Domestic Terminal, August 2000

- Public Switched Telephone Network (PSTN) - July 2000
- Perth Airport - Proposal to increase aeronautical charges to recover the costs of necessary new investment, April 2000
- Victorian Gas Final Decision, October 1998.

The Commission accepts that the use of the ten-year bond rate in the *NSW and ACT* revenue caps decision is different to its *Regulatory Principles* and to its current practice. However, in that early decision the Commission noted that the ten-year rate was chosen to maintain regulatory consistency with the Independent Pricing and Regulatory Tribunal's (IPART) regulatory decisions for the NSW distribution networks. It further observed that the decision did not reflect the final position of the Commission.

In light of these arguments, the Commission maintains its position that using nominal and real bond yields with terms to maturity corresponding to the regulatory period is the preferred approach. Only by using these yields will the rate exactly correspond with the expectations and the inflation-risk premium faced by the service provider over the course of the regulatory period.

At the time of this decision, the nominal five and a half year, forty day moving average for Commonwealth bond rates provided a rate of 5.41 per cent.

2.6 Expected inflation rate

While the expected inflation rate is not an explicit parameter in the return on equity calculation, it is an inherent aspect of the risk free rate and is also implicit in the cost of debt. There are two sources of information for determining inflationary expectations: financial markets and government estimates. The financial market's indicator of inflation is derived from the difference between the nominal and indexed bonds over a corresponding period. Alternatively, the Commonwealth Treasury periodically releases inflationary forecasts based on internal modelling.

Statement 6.10 of the DRP states:

> The Commission will estimate the cost of debt for a firm conforming to the financial structures implied by the regulatory accounts in consultation with relevant financial agencies.

However, maturity dates on the nominal and indexed bonds rarely correspond, requiring realignment using either interpolation or extrapolation. The process of interpolation and extrapolation performs a mathematical line of best fit, estimating an indexed bond rate at a given point in time. This approach is consistent with the *NSW and ACT*, *SMHEA* and *Queensland* revenue cap decisions.

2.6.1 Commission's considerations

The Commission believes that using a bond rate corresponding to the regulatory review period is the appropriate measure of the risk free rate because the asset owner's inflation risk is compensated exactly by an inflation risk premium implicit in the yield on the corresponding government bond. As the code specifies that the Commission

must set a revenue cap for a period of not less than five years, revenues will be re-adjusted to take account of actual inflation. Therefore the risk of actual inflation diverging from anticipated inflation is limited to a five-year period in most cases and five and a half years in the case of ElectraNet.

To compensate the asset owners exactly for this inflation risk, the return of a bond subject to similar risk must be used. The yield on five-year bonds will include a premium for inflation risk of a five-year period, making it the appropriate term to approximate the risk free rate in regulatory decisions. The Commission believes that using the ten-year or longer yield bond would over compensate the business for this inflation risk.

The Commission's method for deriving the inflation rate from the nominal and indexed bond rates is consistent with other Commission and jurisdictional regulatory decisions. For instance, in using this approach, the QCA argues that it delivers a forward-looking estimate of inflation rather than an historic measure. Furthermore, ElectraNet in its application supports the Commission's methodology in the calculation of expected inflation.

Extrapolating the nominal and real bond rates, for this decision, the Commission forecasts inflation of 2.30 per cent.

2.7 Cost of debt

The cost of debt is the debt margin over the risk free rate on commercial loans. The cost of debt varies depending on the entity's gearing, its credit rating and the term of the debt. The application of the cost of debt to the asset base, using the assumed gearing, will generate the interest costs for regulatory purposes.

Statement 6.10 of the DRP states:

> The Commission will estimate the cost of debt for a firm conforming to the financial structures implied by the regulatory accounts in consultation with relevant finance agencies.

2.7.1 Submissions by interested parties

ElectraNet proposes a cost of debt of 172 basis points above the nominal risk free rate of return, from an appropriate range of 150 basis points to 195 basis points. To support this claim, ElectraNet cites the decisions by the QCA and the Victorian Office of the Regulator-General (now the Essential Services Commission (ESC)), which adopted cost of debt margins of 165 and 150 respectively.

ElectraNet states that as of February 2002, information provided by the Commonwealth Bank of Australia indicates that for a BBB+ company, the cost of debt premium is between 148 and 195 basis points. ElectraNet argues that this is consistent with the QCA and ESC decisions.

ElectraNet and TransGrid further contend that debt margins are for the majority, measured as margins against the ten-year government bond rate. Therefore, if the risk free rate is based on a five-year government bond yield, it is necessary to make a compensatory adjustment to the debt margin for the difference between the yields on

the five versus ten-year government bond. This would put the debt margin premium on the upper end of the yield range.

However, SA Water argues that the assumption of a debt premium of 172 basis points is well in excess of industry benchmarks.

ECCSA argues that there is no evidence to support ElectraNet's claim for a debt premium of 172 basis points, which is at the high end of the range. The ECCSA further argues that debt available for the risky business with the express purpose of share acquisitions indicates that the cost of debt claimed by ElectraNet would seem to place its business activities in the same category as share acquisition. The ECCSA contends that the premise of guaranteed revenue stream, which underpins a regulated business such as electricity transmission, would be provided with a much lower debt rate than that available for share acquisitions.

EUAA proposes that a cost of debt premium between 100 to 150 basis points would be appropriate.

NRG notes that a significantly lower risk premium of 120 basis points was applied in the *Queensland* revenue cap decision.

2.7.2 Commission's considerations

The risk of an entity's debt will be a function of the amount of asset backing to the debt or equivalently the degree of leverage or gearing the entity has. The greater the debt to value or debt to equity ratio of the entity, other things being equal, the greater the risk and therefore the greater the required return or debt margin.

In considering an appropriate debt margin the Commission adopts industry wide benchmarking. This provides an incentive for minimising inefficient debt financing. The Commission has taken into consideration reports released by the Reserve Bank of Australia (RBA) indicating that a debt margin of 90-140 is attached to firms with credit ratings of A to BBB. The Commission is of the view that a benchmarked industry wide cost of debt, in the region of 90 to 160 basis points above the nominal risk free rate of return, is appropriate for ElectraNet. The Commission will continue to monitor capital markets for further evidence that the debt margin is increasing or decreasing.

Accordingly, for the purpose of this decision, the Commission will use a debt margin of 130 basis points, which lies within the appropriate range. In combination with the nominal risk-free rate of 5.41 per cent, it suggests a nominal cost of debt figure of 6.71 per cent for use in the WACC estimate.

2.8 Market risk premium

The market risk premium (MRP) is the premium above the risk free rate of return that investors expect to earn on a well-diversified portfolio. That is, the return of the market as a whole less the risk free rate:

$$MRP = R_m - R_f$$

Statement 6.8 of the DRP states:

> The Commission will adopt what it perceives to be the accepted value of the market risk premium available at the time of the regulatory decision.

Under a classical tax system, conventional thinking suggests a value for the MRP of around 6.0 per cent.

While the concept of the WACC and its application for determining regulated revenues is unambiguously forward looking, estimates of the future cost of equity are not readily available. Practical applications of the CAPM therefore rely on the analysis of historic returns to equity to estimate the MRP.

In its recent regulatory decisions, such as the *NSW and ACT*, *SMHEA* and *Queensland* revenue caps, *MAPS* and *NT Gas*, the Commission has adopted a MRP of 6.0 per cent.

2.8.1 Submissions by interested parties

ElectraNet argues that historical data and benchmarking estimates of the Australian MRP indicate a figure towards the upper end of the range of 6.0 per cent to 8.0 per cent is justified. It further argues that there is no evidence to provide support for a declining MRP. ElectraNet believes that an estimate of 6.5 per cent is conservative.

Conversely, Origin contends that recent trends in financial markets and inflation indicate the MRP should be lower. Origin cites international comparison and draw attention to the UK regulator setting a MRP of 3.5. However, this figure does not account for potential international differences.

ECCSA argues that ElectraNet is a monopoly that operates in a very low risk environment with a guaranteed revenue stream. Therefore it is absurd to assume that ElectraNet should have a MRP which is above the bottom end of the MRP range, considering its risks with other real risk taking enterprises.

EUAA believes the MRP should be within the range of 3.5 to 5.0 per cent. It notes that recent UK regulatory decisions have included MRP within that range. EUAA can see no reason why international financial markets would see Australia and the UK in significantly different terms, given Australia's financial markets have been fully open since the 1980s and international capital is highly mobile. EUAA also argues that the research cited by ElectraNet does not cover the period since 1998, in which there are indicators showing a downward trend in the MRP.

TransGrid argues that similarly as with the cost of debt margin, the MRP has conventionally been estimated as a premium over a risk free rate of return defined as the ten-year government bond rate. Therefore to maintain internal consistency between CAPM parameters, if a risk free rate based on a five-year government bond is adopted, an adjustment must be made to the MRP compensating for the difference between the yields.

2.8.2 Commission's considerations

The Commission has noted the research indicating that the MRP has fallen over recent years. However, the Commission is wary that this may only reflect short-term market

trends. Based on the more traditional views, the Commission's assessment of the MRP suggests that it lie between 5.0 per cent and 7.0 per cent. For the purpose of this decision, the Commission chooses the mid-point of this range, that is a MRP of 6.0 per cent.

Further, the Commission maintains that the current MRP of 6.0 per cent is on the high side and therefore sufficient to compensate for the difference between the five and ten year bond yields. This figure is consistent with recent Commission decisions.

The Commission notes a Jardine Fleming Capital Partners survey of professional market participants' MRP expectations, which found that on average these participants thought the historic MRP for Australia was 5.87 per cent. The survey also found the expectation for the future MRP is approximately 1.0 per cent below this figure. However, the Commission acknowledges that these expectations reflect a significant amount of uncertainty. If in the longer term, the Commission is satisfied that the MRP is trending downwards, it will adopt a lower MRP as appropriate.

2.9 Value of franking credits

As outlined in the code, under an imputation tax system, a proportion of the tax paid at the company level is, in effect, personal tax withheld at the company level. Australia has a full imputation tax system. However, the proportion of company tax paid that can be claimed as a tax credit against personal tax varies and depends on factors such as the marginal tax rate of the recipient of the franked dividend.

The analysis of imputation credits and its impact on assessed costs of capital in Australia is a developing field and some issues remain contentious. In any event, the rate of utilisation of tax credits γ (gamma), has a significant effect on the WACC.

However, there is little empirical doubt that franking credits do have some value. As stated in Schedule 6.1(5.2) of the code:

> as the ultimate owners of government business enterprises, tax payers would value their equity on exactly the same basis as they would value an investment in any other corporate tax paying entity. On this basis, it would be reasonable to assume the average franking credit value (of 50 per cent) in the calculation of the network owner's pre tax WACC.

There is considerable debate as to the precise value of franking credits. As with other parameters of the WACC and CAPM equations, selection of a value for this particular input is ultimately a matter of judgement having regard to the available empirical evidence.

2.9.1 Submissions by interested parties

ElectraNet proposes a γ to the value of 50 per cent. It argues that if the Commission takes account of the varying degrees of foreign ownership of Australian utility companies, as is the case for ElectraNet, then γ should be adjusted. ElectraNet contends that for companies with substantial foreign ownership, the value of γ is closer to zero. However, ElectraNet, in principle, agrees with the Commission that current ownership should not be the basis for setting γ. The market value of γ should be established at the market level and not the firm level.

ElectraNet also argues that, with respect to the recent taxation changes, increasing the value of γ towards one is without evidence due to:

- the uncertainty surrounding the full impact of the tax changes having particular regard to the concessional treatment of capital gains relative to income
- the limited demonstrated impact of these arrangements on the marginal investor
- other tax changes reducing the value of franking credits to investors.

2.9.2 Commission's considerations

The Commission recognises that increases in the value of the business represents a return on equity. The business will therefore capture the full value of franking credits regardless of actual distribution. It would not be appropriate to model the retained franking credits within the regulated entity as it is an equity item that would be over-ridden by the Commission's regulatory assumptions on gearing. Accordingly, the Commission believes it is more appropriate to assume that the benefits of franking credits are fully distributed as the shareholders will receive the value of franking credits either attached to dividends or via an increase in the value of their investment.

Furthermore, the Commission's regulatory regime attempts to ensure that the return on capital allowance in the revenue cap is equivalent, and only equivalent, to the risk adjusted market rate of return required to maintain investment.

The Commission also notes that it is not sufficient to support a conclusion that, for even a partly owned foreign company, foreign capital is required to finance a firm's projects. Even assuming that a significant proportion of foreign ownership is required, the Commission maintains that it does not prove the γ should be set at zero as it does not rule out overseas investors obtaining foreign tax advantages not available to local investors. The likelihood that such foreign tax benefits exist suggests that γ should lie above zero.

Moreover, the Australia's taxation legislation was modified on 30 June 2000 to accommodate the Ralph review recommendations on franking credits. The alteration to the tax law ensures that resident individuals receive the full benefit of franked dividends regardless of their tax position. Previously, resident individuals whose taxable income was not sufficient to generate tax expenses sufficient to utilise the franking rebates lost that benefit.

The change results in franking credits being treated as a refundable rebate, similar to the private heath insurance rebate, to resident individuals rather than merely a deductable rebate as it previously applied. In addition, the order of allowable deductions for tax purposes has been amended so that franking credits are deducted last when calculating taxable income. This approach ensures the optimal utilisation of tax deductions and franking credit rebates.

Therefore, in line with these changes, the Commission maintains its views that a more appropriate value for γ would be closer to one. However, the Commission recognises that further research is required in this area and no consensus has yet developed amongst Australian academics and practitioners for making an adjustment to the rate of

utilisation of tax credits. The Commission considers then that it is inappropriate for it to lead in this area and believes it would be prudent that further work is undertaken before altering its current position on γ. Accordingly, in line with recent Commission decisions, a γ of 0.5 will be used for this decision.

2.10 Gearing

A benchmark gearing ratio needs to be established for ElectraNet to identify the appropriate weighted average cost of debt and equity in the WACC.

Schedule 6.1(5.5.1) of the code states that:

> gearing should not affect a government trading enterprise's target rate of return…. For practical ranges of capital structure (say less than 80 per cent debt), the required rate of return on total assets for a government trading enterprise should not be affected by changing debt to equity ratios.

In the *NSW and ACT, SMHEA and Queensland* revenue cap decisions the Commission adopted a gearing ratio of 60 per cent based on industry wide benchmarking. Similarly, a gearing ratio of 60 per cent has been adopted by the QCA in relation to Queensland distribution companies and by the ESC in relation to the Victorian distribution companies.

2.10.1 Submissions by interested parties

ElectraNet's actual gearing is over 60 per cent. It does not believe that a 60 per cent gearing ratio would result in efficient financing. However, it has adopted the Commission's benchmark of 60 per cent in its application.

ECCSA has received advice that ElectraNet's actual gearing is about 80 per cent. Therefore it is not surprised that ElectraNet agrees with the Commission's previous use of a 60 per cent gearing assumption, giving ElectraNet the benefit of an implied higher yield on its equity component.

ECCSA further argues that given the prevailing high levels of gearing for regulated infrastructures, there is a strong case for the Commission to review the gearing levels assumed in past decisions. The ECCSA believes that a gearing of 60 per cent is too conservative and 70 per cent gearing would appear to replicate the actual financing for regulated enterprises.

2.10.2 Commission's considerations

The capital structure can have a significant bearing on, not only the debt margin, but also the required return on equity although within 'reasonable' bounds it is unlikely to affect the asset cost of capital or the WACC. The greater the level of gearing, the greater the risk of both debt and equity, however, over reasonable ranges, the risk of the total assets does not change. This is because the change in the weighting of capital from equity to debt maintains a constant risk level for the assets as a whole even though the beta measures of both debt and equity will increase.

Table 2.1 indicates the typical capital structure assumed by regulators has been 60 per cent debt as a proportion of total assets. In theory, within the range of 40 per cent to 70 per cent the asset cost of capital should be stable. The Commission considers that in the circumstances, it would appear that a leverage of between 50 per cent and 60 per cent is a reasonable benchmark. Given that most regulators have adopted a gearing of 60 per cent, which is consistent with this benchmark, there is little compelling reason to vary from this assumption.

Table 2.1 Gearing levels adopted in regulatory decisions

Entity	Industry	Debt/Debt+Equity (%)
QCA(2001)	Electricity distribution	60
ESC (2000)	Electricity distribution	60
ACCC (2000)	Electricity transmission	60
IPART (1999)	Electricity distribution	60
OTTER (1999)	Electricity distribution	50-70
OFGEM (1999)	Electricity distribution (UK)	50
IPART (1999)	Gas distribution	60
ACCC/ESC (1998)	Gas transmission	60
ESC (1998)	Gas distribution	60

1 Net of disposals
2 Straight line depreciation less inflation

In the DRP, the Commission noted that it would not be using the actual gearing of a transmission network, instead it would utilise an appropriate benchmarked ratio. A survey conducted by Standard and Poor's[14](S&P) suggests the upper and lower band of the gearing ratio for a transmission and distribution business is given as 65 per cent to 55 per cent.

While noting the ECCSA's submission, the Commission remains of the view that an assumption of 60 per cent gearing is appropriate. Nevertheless, the Commission will continue to monitor the financial markets for any new evidence on whether a different benchmark gearing should apply to the industry.

Therefore, the Commission will adopt a gearing ratio of 60 per cent, consistent with recent regulatory decisions, ElectraNet's application and the mid-point of S&P's appropriate range.

[14] 'Standard and Poor's Rating Methodology for Global Power Companies'- 1999.

2.11 Betas and risk

The equity beta is a measure of the expected volatility of a particular stock relative to the market as a whole. It measures the systematic risk of the stock. That is, the risk that cannot be eliminated in a balanced and diversified portfolio. Generally, the Australian Stock Exchange (ASX) is used as a proxy for the whole market. An equity beta of less than one indicates the stock has a low systematic risk relative to the market as a whole (the market average being equal to one). Conversely an equity beta of more than one indicates the stock has a high risk relative to the market.

The debt beta captures the systematic default risk of a debt investment. In this regard, it is the debt analogue of equity beta. Just as equity beta represents a measure of the systematic risk of a company relative to the market as a whole, debt beta represents the extent to which the likelihood of the company defaulting on its debt obligations is correlated with movements in market returns.

For publicly listed companies, equity betas can be calculated on the basis of information on the value of their dividend stream plus the change in the capital value of the stock. Where an equity beta is calculated for a particular company, it is only applicable for the particular capital structure of the firm. A change in the gearing will change the level of financial risk borne by the equity holders and hence the equity beta. A common approach to enable betas to be compared across companies with different capital structures is to derive the beta that would apply if the firm was financed with 100 per cent equity. This is known as the 'asset' or 'unlevered beta' and can then be used to calculate the equivalent equity beta for a particular level of gearing (known as 're-levering' the asset beta).

However, where a firm is not listed, equity betas cannot be calculated directly from economic returns. In such cases, conventional practice has been to benchmark the firm's equity beta relative to other companies or sectoral averages. In the context of regulated electricity networks even this approach is problematic, as there are limited Australian reference stocks for such businesses. Nonetheless, the Commission has traditionally used the infrastructure and utilities group average. Table 2.2 highlights the average equity beta by industry listed on the ASX as at March 2002.

Table 2.2 Average equity beta by industry listed on the ASX

Industry	Average Equity Beta
Property Trusts	0.366
Alcohol and Tobacco	0.420
Food and Household	0.424
Transport	0.463
Diversified Industrials	0.719
Engineering	0.756
Building Materials	0.857
Paper and Packaging	0.953
Developers and Contractors	0.954
Banks and Finance	0.967
Infrastructure and Utilities	0.983
Tourism and Leisure	1.084
Chemicals	1.128
Investment and Financial Services	1.131
Retail	1.269
Mining and Energy	1.305
Insurance	1.394
Other Metals	1.502
Miscellaneous Industrials	1.568
Diversified resources	1.571
Gold	1.678
HealthCare and Bio-Technology	1.899
Media	2.076
Telecommunications	2.772

Source: Australian Graduate School of Management centre for research in finance; risk measurement service

The Commission also notes that it is difficult to find any conclusive evidence for a specific asset beta for electricity transmission networks. Table 2.3 outlines the approach taken in recent regulatory decisions in relation to asset betas for electricity and gas businesses.

Table 2.3 Recent regulatory decisions on asset betas for electricity and gas

Matter	Industry	Asset Beta
ESC, Price determination	Electricity Distribution	0.40
ACCC, Snowy Mountains	Electricity Transmission	0.40
ACCC, NSW and ACT	Electricity Transmission	0.35-0.50
ACCC, Queensland	Electricity Transmission	0.40
IPART, Electricity DBs	Electricity Distribution	0.35-0.50
QCA, Price Determination	Electricity Distribution	0.45

2.11.1 Submissions by interested parties

ElectraNet in its application proposes an asset beta of 0.45, which equates to an equity beta of 1.12. ElectraNet believes that the Commission should use an equity beta towards the higher end of a feasible range arguing that it faces higher risk resulting from several factors.

Firstly, ElectraNet contends that it should be allowed a higher equity beta due to the greater bypass risk facing electricity transmission companies compared to that of distribution networks, in particular from gas pipelines and new gas-fired power stations. ElectraNet argues that overall systematic risk is likely to be increased.

Secondly, ElectraNet submits that much evidence, particularly through research in financial literature, suggests the investment rate of returns for small companies are greater than would be expected based upon the measured beta of the CAPM. Therefore the equity beta would be an insufficient explanatory factor of asset returns. ElectraNet argues that it is a small electricity transmission company in terms of asset size. It is smaller than the other transmission companies in the NEM. For this reason, ElectraNet states that it would be appropriate to incorporate an increment to beta, which would reflect the adjustment required to the CAPM for the size effect ElectraNet.

In addition to undiversifiable risk, which is priced by the CAPM, ElectraNet also argues that there is evidence of asymmetric risks that are not captured by the CAPM. In ElectraNet's view, this risk should be treated as an addition to the cost of equity capital. ElectraNet states the following asymmetric risks that are unique to transmission companies:

- assets becoming stranded as customers change consumption patterns and competitors change strategies
- regulatory bodies adjusting policies or regulatory frameworks
- changes in asset valuation methodologies.

ElectraNet argues that these asymmetric risks are different to the risks compensated for in the CAPM, as they are unavoidable and cannot be diversified away by the firm. That is, insurance against such risks is not available and therefore cannot be diversified away by its investors.

ElectraNet believes it should be allowed a return that explicitly includes the actuarially fair premium for insuring against asymmetric risks. Furthermore, if insurance was available, ElectraNet states that it could take out insurance coverage. In doing so, the expense of the insurance would be fully acceptable as operations and opex in determining a revenue cap.

ElectraNet notes three ways in which the asymmetric risks can be captured in the regulatory process:

- allow the risk to be reflected as an actuarially fair insurance premium and impute the amount as an expense for the company (ie. an allowance in opex)
- the risk can be reflected in the WACC so that the result is equivalent to recovering the actuarially fair insurance premium through higher returns
- when the adverse event occurs, the cost is recoverable through prices - a pass through.

According to ElectraNet, the third approach has a major drawback in the form of moral hazard. To avoid this, ElectraNet claims that regulators will not allow full cost recovery if a significant adverse event occurs. It also points to the lumpiness in prices, which would occur if this approach were adopted.

ElectraNet believes that one of the first two approaches should be adopted. It prefers the second approach of reflecting asymmetric risks in the WACC, utilising a 'real options' framework. Based upon the real risk that it faces (ie. facing potential re-optimisation of its network in future regulatory decisions), ElectraNet estimates that to require an investor be indifferent to accepting or not accepting these asymmetric risks, it would require an increment to the cost of capital of between 0.5 per cent and 1.0 per cent. This is providing that these risks are not fully reflected in the business cash flow. ElectraNet claims a value of 0.5 per cent as an addition to cost of equity (as determined in CAPM) will be sufficient to cover these asymmetric risks.

In response to ElectraNet's claim for an equity beta of 1.12, Origin states that allowing a high beta would imply that ElectraNet is exposed to greater than average market risk. Origin argues that this would be unlikely given that ElectraNet operates in a regulated environment with stable cash flows.

Origin is also of the view that ElectraNet's claim for an asset beta of 0.45 is based, in part, on comparison with AGL. This is inappropriate given that AGL also runs a retail business, which faces additional risk.

Similarly, EUAA voices surprise at ElectraNet's claim for an equity beta of 1.12. EUAA argues that ElectraNet's claim for an equity beta of 1.12 is not credible given its status as a regulated electricity business and in a State where load growth is not expected to be high. EUAA argues that it is difficult to justify a high equity beta for

electricity transmission, as they are relatively low risk businesses and subject to a regulated income set within a well-defined regulatory framework. EUAA also notes that the revenue cap framework used by the Commission allows the transmission companies maximum revenues, which protects from the possibility of any reductions arising from general economic downturn. Consequently, EUAA regards an appropriate equity beta for ElectraNet to be in the range of 0.6 to 0.8.

In its submission, ECCSA notes that the asset beta for ElectraNet should reflect an industry where there is guaranteed revenue streams in an extraordinary and very inelastic market. Historically, electricity transmission enterprises have shown a remarkably stable cash flow from their operations. This would imply a lower asset beta.

ECCSA states that, counter to ElectraNet's claim of being a small firm, ElectraNet is not a small firm as it has assets, revenue and profit that takes it well up into the ranks of large companies listed on the ASX. While noting that ElectraNet is smaller than other transmission companies in the NEM, ECCSA contends that this in itself does not rank ElectraNet as a small firm.

ECCSA also states that it is inappropriate for ElectraNet to attempt to isolate specific risks, which are normally borne by competitive enterprises as part of their normal trading, and then to seek a risk premium of a similar magnitude to the average premiums encountered by enterprises in a competitive environment.

In particular, ECCSA notes:

- the use of gas has little impact on electricity consumption due to the inelastic market for electricity, and ElectraNet has noted that it expects electricity demand to increase over the regulatory period, therefore the likelihood of asset stranding from growth in gas demand is unlikely
- ElectraNet purchased the right to the transmission assets knowing the valuation placed on the assets as part of the South Australian Electricity Pricing Order (EPO), any review by the Commission will only impact on the next regulatory period
- ElectraNet was aware of the intrinsic characteristics of the network when it purchased the right to the assets and consumers should not be expected to underwrite any shortcomings in ElectraNet's commercial decisions.

2.11.2 Commission's considerations

In its application, ElectraNet claims greater bypass risk facing electricity transmission companies compared to that of distribution networks and the size of ElectraNet in relation to other transmission companies, as justifications for an asset beta of 0.45 and therefore an equity beta of 1.12.

Bypass or asset stranding risk

The Commission notes ElectraNet's claim of facing bypass risks, in particular from gas pipelines and new gas fired power stations, which would leave its assets stranded. However, the Commission believes that the risk of asset write downs occurring is a normal aspect of the business environment faced by competitive firms. For instance, in the market place, there is a risk that a firm's assets may become obsolete (stranded) by

the actions taken by a competitor at any time. In the case of a regulated firm, the regulator, when making a decision to optimise acts as a proxy for effects of a more competitive solution that would be available in the relevant market.

The Commission considers the industry-derived betas used to determine the regulatory asset beta would normally include an element representing stranding risk. Nevertheless, this is not to say that a regulated entity will not face additional stranding risk such that the firm bears an asymmetric risk justifying a form of compensation.

However in the DRP, the Commission states that it will permit regulated firms to adjust its depreciation allowances in response to identifiable asset stranding risks when those risks are properly assessed as being material:

> …most reductions in RAB value due to re-optimisation or redundancy will be reflected in depreciation without the need for immediate write-offs of asset values and therefore will not represent a financial loss to the TNSP. For such arrangements to work efficiently it will be important for the TNSP to advise the regulator well in advance of by-pass risk actually occurring. To the degree that the approach imposes some residual risks on the regulated entity, this is normally reflected in the return on capital.

The Commission acknowledges that there is sufficient uncertainty in the South Australian market, making it difficult for ElectraNet to identify assets subject to stranding. Nonetheless, ElectraNet at this stage has not provided the Commission with a register identifying assets facing potential redundancy. Therefore, in light of the present uncertainty, the Commission will not adjust ElectraNet's depreciation profile during this regulatory period.

Size effect and CAPM

The Commission acknowledges that recent discussions in finance theory centre on the possibility that the predictions of CAPM are not consistent with observed returns. As a result, there has been continuing research into variables which are absent from CAPM, but which may have explanatory power over expected returns.[15] There appears to be evidence showing the tendency of small firms to realise higher rates of return than that predicted by CAPM. However, the Commission notes that these results, published in various studies and based on empirical evidence, have caused considerable debate and have been criticised by the market for three reasons.

First, there is the possibility of data mining (ie. a mere coincidence) which is almost inevitable if enough explanatory variables are to be tested.

Second, there is the possibility that the results are a remnant of the market proxy that is selected. For instance, if the market proxy was changed, other variables may be able to offer a better explanation.

The third concern is the sensitivity of the results to various changes in data and methodology, including new data sets and deletion of extreme observations. This is similar to the survivorship bias argument. It revolves around the inclusion of only the

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[15] In this respect, Eugene Fama and Kenneth French have been most successful and argue that the additional factors size and book to market equity ratio, help explain expected returns.

surviving companies in tests of CAPM. The result is that only subsets of firms that have existed over a particular study period are actually included in the analysis. This causes a bias in testing and can be overcome if the sample used for analysis includes all existing companies, both failed and surviving.

Finally, there is no theory that explains why small firms may earn higher returns than large firms. Furthermore, the major problem with the research of the tendency for small firms to realise higher returns is a lack of underpinning theory.

Although ElectraNet is small relative to other transmission networks in other NEM jurisdictions, it can not be classified as a 'small' company in the context of all companies listed in the Australian market. For instance, based on ElectraNet's total assets, it would hardly qualify as a 'small' company relative to other companies listed on the ASX. Also based on its current revenues ElectraNet would rank around 860 out of the top 5000 companies in Australia.[16] Accordingly, the Commission does not consider a compensation for size effect should be incorporated into ElectraNet's asset beta.

Asymmetric risk

According to ElectraNet, regulated firms face a range of risks that are asymmetric and which are not picked up in the equity beta. It lists examples of asymmetric risks to include:

- asset stranding risk
- regulatory risk.

ElectraNet further contends that asymmetric risks contain characteristics that differentiate them from the other risks faced by the company. In ElectraNet's view:

- these risks are unavoidable and asymmetric and cannot be diversified away by the TNSP
- commercial insurance is not available for these risks so counter-parties to the risks are not public companies in which investors can invest. The counter-parties to the risks are the consumers
- these risks are not accommodated for in the CAPM and therefore the TNSP is not compensated for bearing these risks.

ElectraNet submits that it has no alternative but to bear asymmetric risks, and should therefore be permitted a return that explicitly includes the actuarially fair premium for insuring against this risk. Furthermore, since insurance coverage is not available, the TNSP is forced to self-insure.

The Commission has dealt with the issue of self-insurance in chapter 5.

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[16] The Business Who's Who of Australian, Dun and Bradstreet Marketing Pty Ltd.

Any theoretical model of asset pricing relies on the assumptions underpinning the model. The CAPM relies, *inter-alia*, on the two assumptions that returns are normally distributed and that investors' possess 'quadratic utility functions'. The evidence in the financial literature is that returns exhibit non-normal returns and quadratic utility functions do not seem plausible.

Other complex asset pricing models including state preference models, the Merton model, the Breeden model, the Cox Ingersoll Ross model and Fully Revealing Rational Expectations models may well provide conceptual rigour which the CAPM lacks. However, the Commission considers CAPM's simplicity in explaining asset returns simply through its correlation with the market portfolio, coupled with its ease of application, provides a 'fair and reasonable' rate of return for a regulated entity.

The Commission is also aware of current research incorporating 'real options' and of the application of this theory in practice. However, it is the Commission's view that the use of the CAPM in determining a 'fair and reasonable' rate of return is appropriate at this time.

Therefore, the Commission does not believe that it should provide additional compensation to ElectraNet through the CAPM framework. If it is demonstrated that extraordinary contingencies have arisen, then the Commission will consider these on a case by case basis and will address them by way of a pass-through.

ElectraNet will be required to obtain the Commission's approval prior to incorporating any pass-through charge, in relation to the size of the adjustment and demonstrate the materiality and reasonableness of such an adjustment.

Conclusion

As highlighted in Table 2.2, ElectraNet's proposed equity beta of 1.12 lies closer to the equity beta expected in the chemicals and investment/financial services sectors. The Commission traditionally used the infrastructure and utilities group average, which at present time lies just below 1.0. The Commission does not propose to compensate ElectraNet for the other risks (eg. small company, asymmetric) identified in its application. Therefore, for the purposes of this draft decision, the Commission will adopt an asset beta of 0.4, which equates to an equity beta of approximately 1.0.

2.12 Treatment of taxation

In recent decisions, the Commission applied the existing statutory company tax rate of 30 per cent. This was within the context of difficulties in determining a satisfactorily accurate long-term effective tax rate as part of the pre-tax real framework being used at the time. The capital-intensive nature of electricity utilities has historically meant that the effective tax rate for such networks has been less than the statutory tax rate.[17]

[17] According to IPART calculations, the average effective tax rate paid by the NSW distributors amounted to 25 per cent in 1996/97 (see IPART, The Rate of Return of Electricity Distribution Networks, Discussion Paper, November 1998, p. 9).

As noted previously, the Commission considers that moving to the post-tax nominal framework which uses that effective tax rate has the potential to generate more appropriate and cost reflective revenue cap outcomes. Furthermore, the Commission's WACC calculations require deriving a value for the effective tax rate.[18]

The effective tax rate is defined as the difference between pre-tax and post-tax rates of return. It is sensitive to a number of factors, which include the corporate tax rate and the range of available tax concessions that serve to lessen tax liabilities or defer them to a later period. Although the tax rate on accounting income is always at the corporate tax rate, in any year the income assessable for tax purposes can be quite different from the net revenues available to the business.

The timing aspect and the fact that taxes are assessed on the basis of nominal income means that the prevailing inflation rate also has a significant impact on the effective tax rate. The effect that deferral of tax has on the timing of cash flows does not generally cause administrative difficulties for a corporate entity that are well accustomed with uneven cash flows.

2.12.1 Commission's considerations

Based on the Commission's approach to modelling the effective tax rate, the Commission has derived an effective tax rate of 35.77 per cent.

2.13 Conclusion

The Commission has given careful consideration to the values that should be assigned to ElectraNet's cost of equity given the nature of its business and current financial circumstances. Accordingly, the parameter values used are those considered most appropriate.

The Commission has decided to adopt a nominal risk free interest rate of 5.41 per cent, reflecting the forty-day moving average on an interpolated five and a half-year government bond. Based on its benchmarking, the Commission has arrived at a debt margin of 1.30 per cent above the nominal risk free interest rate. This provides a cost of debt of 6.71 per cent.

The Commission has looked at market evidence and accepted the traditional view of financial experts in determining a market risk premium of 6.00 per cent.

The Commission has examined the risks faced by ElectraNet and the betas of similar businesses in arriving at an asset beta of 0.4. This figure is above the current average asset beta for the infrastructure and utilities industry group listed on the ASX. This asset beta converts to an equity beta of around 1.0.

In line with the Commission's current position on the value of franking credits, the Commission will allow an utilisation ratio of 50 per cent. The Commission's modelling of ElectraNet's tax payments provides an effective tax rate of 35.77 per cent.

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[18] The Monkhouse formula is $\beta_e = \beta_a + (\beta_a - \beta_d) \{1 - [r_d/(1+r_d)](1-\gamma)T_e\}$ D/E

The Commission has estimated a feasible range for the cost of capital parameters, which are illustrated in Table 2.4. Within that range, and consistent with the discussion above, the Commission has adopted a post-tax nominal return on equity of 11.40 per cent for the purposes of this decision. This translates to a nominal vanilla WACC of 8.59 per cent or post-tax nominal WACC of 6.39 per cent, and a pre-tax real WACC of 7.12 per cent.

Table 2.4 Comparison of cost of capital parameters proposed by the Commission

Parameter	ElectraNet's proposal	Draft decision
Nominal Risk Free Interest Rate (R_f) %	5.90%	5.41%
Expected Inflation Rate (F) %	2.34%	2.30%
Debt margin (over R_f) %	1.72%	1.30%
Cost of debt R_d = R_f + debt margin %	7.62%	6.71%
Market Risk Premium (R_m-R_f) %	6.50%	6.00%
Debt Funding (D/V) %	60%	60%
Value of imputation credits γ	50%	50%
Asset Beta β_a	0.45	0.40
Debt Beta	0.00	0.00
Equity Beta	1.12	1.00
Nominal Post Tax Return on Equity	13.66%	11.40%
Post Tax Nominal WACC	8.66%	6.39%
Pre Tax Real WACC	8.46%	7.12%
Nominal Vanilla WACC	10.03%	8.59%

3 Opening asset base

3.1 Introduction

The revenue cap set by the Commission for ElectraNet commences from 1 January 2003. At this time, the Commission must reach a view as to the value of ElectraNet's non-contestable transmission assets as a part of its decision.

The Commission's discretion in this regard is constrained by the code. The principal limitations set out in the code are:

- where a judgment was made by the jurisdiction in establishing the regulatory asset base (RAB), and where that judgment is still applicable, the Commission cannot substitute its own judgment for that which was made by the jurisdiction
- the value provided to the Commission must not exceed the deprival value of those assets, where deprival value is generally defined as being the lesser of an asset's optimised depreciated replacement cost (ODRC) or economic cost.

To assist the Commission in assessing the opening value of ElectraNet's assets the Commission engaged Meritec to undertake a review of the 1999 jurisdictional valuation, and ElectraNet's proposed adjustments to that valuation and its asset roll forward proposal. The main findings of the Meritec review are outlined in section 3.4.

The remainder of this chapter:

- sets out the code requirements associated with valuing ElectraNet's opening asset base
- summarises the Commission's draft decision concerning the opening asset base as well as other relevant information including
  - ElectraNet's proposal
  - the views of interested parties
  - a summary of the major findings of Meritec review.

3.2 Code requirement

The code places limits on the ability of the Commission to exercise its regulatory discretion in arriving at an opening value for the existing asset base. Clause 6.2.3(d)(4) of the code states that the Commission is to regulate transmission network revenues according to the principles (amongst others) that:

> provide a fair and reasonable risk-adjusted cash flow rate of return to Transmission Network Owners and/or Transmission Network Service Providers (as appropriate) on efficient investment given efficient operating and maintenance practices on the part of the Transmission Network Owners and/or Transmission Network Service Providers (as appropriate) where:

(i) assets created at any time under a take or pay contract are valued in a manner consistent with the provisions of that contract;

(ii) assets created at any time under a network augmentation determination made by NEMMCO under clause 5.6.5 are valued in a manner which is consistent with that determination;

(iii) subject to clauses 6.2.3(d)(4)(i) and (ii), assets (also known as "sunk assets") in existence and generally in service on 1 July 1999 are valued at the value determined by the Jurisdictional Regulator or consistent with the regulatory asset base established in the participating jurisdiction provided that the value of these existing assets must not exceed the deprival value of the assets and the ACCC may require the opening asset values to be independently verified through a process agreed to by the National Competition Commission;

(iv) subject to clauses 6.2.3(d)(4)(i) and (ii), valuation of assets brought into service after 1 July 1999 ('new assets'), any subsequent revaluation of any new assets and any subsequent revaluation of assets existing and generally in service on 1 July 1999 is to be undertaken on a basis to be determined by the ACCC and in determining the basis of asset valuation to be used, the ACCC must have regard to:

(A) the agreement of the Council of Australian Governments of 19 August 1994, that deprival value should be the preferred approach to valuing network assets;

(B) any subsequent decisions of the Council of Australian Governments; and

(C) such other matters reasonably required to ensure consistency with the objectives specified in clause 6.2.2.

3.3 ElectraNet's proposal

3.3.1 Setting the opening asset valuation

ElectraNet's application details its proposed opening asset value for the period commencing 1 January 2003, which is derived from:

- a detailed valuation conducted for ETSA Corporation in 1995 by Hill Michael and Associates (HMA)
- a 1998 high-level review of this valuation by Sinclair Knight Merz (SKM) (SKM 1998 Review) for the South Australian Government
- the State Government's subsequent adjustment of the SKM 1998 Review figures for actual capital expenditure, depreciation and CPI revaluation for the financial year ending 30 June 1999
- the inclusion of critical omissions and the introduction of previously optimised out assets
- the roll-forward of the asset base to 1 January 2003.

3.3.2 Adjustments to the jurisdictional valuation

ElectraNet, while accepting the jurisdictional asset base as the recorded basis for determining the opening asset value, argues that adjustments need to be made to recognise significant omissions.

ElectraNet believes that the jurisdictional asset base is significantly under valued, as there was no allowance made for easements and interest during construction (IDC). It argues that the jurisdictional asset base must be amended to provide a consistent treatment with other regulatory decisions made by the Commission.

Easements

The South Australian jurisdictional valuation included $3.1m for easements. However, ElectraNet contend that the $3.1m was attributed as part of the disaggreation of the vertically integrated ETSA Corporation and does not represent the value or actual cost of easements.

This view is supported by the South Australian Government who acknowledge a proper valuation was not undertaken:

> "as asset valuations consistent with the approach set out in the ACCC's draft Statement of Principles for the Regulation of Transmission Revenues dated 27 May 1999 had not been undertaken".

Further, in report for the Commission National Economic Research Associates (NERA) stated that:

> "The valuation of easements in the ERSU submission is not consistent with the ACCC's proposed approach, as outlined in the SORP, which suggests that easements should be valued at cost and revised in line with their DORC value… SA's advisers have indicated that the SORP was released too late to incorporate the proposed methodology into ElectraNet's valuation".

ElectraNet acquired the South Australian transmission business from the South Australian Government in October 2000. As part of the acquisition, ElectraNet argue that fair market value was paid for line easements.

Therefore, ElectraNet argues easement value included in the jurisdictional asset base is inadequate and an adjustment must be made to include a fair and reasonable value for easements in the regulated asset base. ElectraNet notes that easement valuations are derived from the consideration of two specific cost components:

- compensation paid to land holders
- acquisition, establishment or transaction costs.

Maloney Field Services (MFS) and SKM conducted independent reviews to determine the appropriate value for these two easement components.

Maloney Field Services deprival valuation

MFS to conducted a review of the deprival value of ElectraNet's easement as at 1997. The valuation included the cost of compensation to landowners, along with transaction (or acquisition) costs. The MFS assessed the total value of ElectraNet's transmission line easements as $131.7m as at February 1997. This value represents the cost of compensation to landowners and establishment or transaction costs involved in acquiring those easements.

ElectraNet argues that since the 1997 MFS valuation is the oldest available valuation it provides a sufficient proxy for historical costs. Which is consistent with approach adopted by the Commission in the *NSW and ACT* and *Queensland* revenue cap decisions.

Using this proxy ElectraNet argue that a value of $111m should be included in its RAB to cover the compensation paid for easements. It also argues that such a proxy of historical cost should only be applied to cost of compensation and acquisition costs should be valued on a replacement cost basis.

SKM acquisition costs

ElectraNet claims that the MFS' assessment of easement acquisition cost was significantly understated. It engaged SKM to determine the typical acquisition costs for easements within South Australia. ElectraNet claims that SKM's assessment of acquisition values is more comprehensive and detailed and lodged a supplementary submission titled 'Regulated Costs of Easement Acquisition' to the Commission on 9 May 2002.

The SKM study considered the following cost components:

- route selection
- environmental impact study
- cultural heritage/native title assessment
- public consultation
- acquisition of easements.

SKM assessed the cost for each of the above components by identifying the fixed costs and those costs that are dependent on the length of the easement or the number properties through which an easement traverses.

Based on the SKM report, ElectraNet claims that $104.3m is an appropriate assessment of easement acquisition costs and should be included in the regulatory asset base as at 1 July 1999.

Interest during construction

ElectraNet claims that the jurisdictional asset base did not make a fair and reasonable allowance for IDC. IDC was only included on projects valued at over $50m. This meant that IDC was only included on the construction of one transmission line, the double circuit Tailem Bend to South East 275 kV line.

PricewaterhouseCoopers was engaged by ElectraNet to analyse the construction projects that were carried out at that time and determine an appropriate allowance for IDC.

This analysis concluded that 7.5 per cent should be added to the construction costs of system assets.

ElectraNet argues that the value of system assets in the jurisdictional asset base (with the exception of the Tailem Bend to South East 275 kV line) was undervalued and consequently needs an increase of $44.6m, as of 1 July 1998.

Optimisation

ElectraNet claims that at the time of determining the jurisdictional asset base a number of assets with the South Australian system were optimised. However some of those assets have now become necessary due to significant changes in generation and the increase in peak load growth.

ElectraNet engaged SKM to conduct an updated optimisation review as of 1 July 2001. SKM identified a number of previously optimised assets, which should now be readmitted to the regulatory asset base. The depreciated value of such assets is $13m.

Table 3.1: ElectraNet's proposed roll forward schedule from 1998-99 to 1 Jan 2003

	1998-99 ($m)	1999-00 ($m)	2000-01 ($m)	2001-02 ($m)	Jul-Dec 2002 ($m)
Opening asset base	678.922	731.572	794.684	1,029.878	1,064.285
Capital expenditure [1]	24.016	64.921	7.798	41.169	26.372
Economic depreciation [2]	15.953	1.809	0.557	6.762	4.259
Readmitted assets			12.953		
IDC	44.587				
Easements			215.000		
Closing asset base	731.572	794.684	1,029.878	1,064.285	1,086.398

1 Net of disposals
2 Straight line depreciation less inflation

3.4 Consultant's reports

3.4.1 Main findings

The Commission engaged Meritec to undertake a review to identify the appropriateness of the assumptions, methodologies and findings of the most recent valuation of ElectraNet's transmission asset base in terms of meeting the requirements of the code.

Meritec employed Urbis Property Consultants (Urbis) to advise on easement value.

The main findings of the Meritec review follow.

- In 1995 HMA valued the assets for the ETSA Corporation. In 1998, SKM, on behalf of the South Australian government conducted a high level review of the HMA valuation. The resulting amount of $678.9m in 1 July 1998 was rolled-forward to 30 June 1999 by the South Australian government for the purpose of establishing the EPO. ElectraNet used this amount to establish the RAB in its application.

- ElectraNet increased the value of RAB by the including easements, readmitting previously optimised assets and including IDC.

- The easement value in the RAB was not based on any factual valuation. Meritec therefore recommends a value of $173m at December 2002 for the easements. This is made up of compensation cost$137m and acquisition costs $36m.

- Meritec recommends the Commission adopt an opening asset base value of $997m as at 1 January 2003.

3.4.2 Easements

In Meritec's view, the most appropriate valuation method is to use the MFS valuation and index the values to 1 January 2003, using:

- easement/ownership compensation - on the basis of market movements in underlying land values

- procurement costs – by a CPI based index that would be representative of the increase in costs of this nature.

The MFS valuation represented and valued the total number of easements/ownerships on a transmission line system on a 'degree of difficulty' basis. MFS determined the dollar value of compensation payable for each class of easements and the dollar value of procurement costs, and derived the total deprival value as at 1997 and 2000.

Meritec believes that the broad band of land values adopted by MFS is not unreasonable. Further, Meritec is generally satisfied that the methodology employed is reasonable based upon established valuation principles and practise.

The cost of compensation

Meritec acknowledged that the Commission has sound reasons for adopting a historic cost roll forward as preferred approach, as it removes:

- potential negative depreciation that may result from any land/easement value growth

- potential price shocks that may arise from easement valuations at the beginning of each regulatory period.

However, Meritec believes that a deprival value methodology based on current market conditions is the best approach. But admits that application of such principles would yield unacceptable values at this time.

Meritec notes that easements for a transmission line network such as ElectraNet's are rarely traded. Hence valuing them is not easy.

Meritec considered the MFS valuation of 1997 as appropriate. ElectraNet's easement/ownerships in the existing network were examined using the latest Mapinfo data provided by ElectraNet. The assessments relied upon the number of easements/ownerships per system and estimations of likely easement compensation

costs payable to affected owners in the network based on a 'degree of difficulty'. Consistent with the MFS valuation, easements were divided into three separate classes:

- rural
- outer urban / inner rural
- fringe urban

Meritec assigned an estimated average land value increment relevant to each class based on their experience in similar situations, advice received from property professionals and South Australian government data.

Meritec recommend that the Commission adopt a jurisdictional valuation for easement compensation rolled forward to 1 January 2003 of $137m.

The cost of acquisition

The jurisdictional valuation made a provision for easement compensation costs but did not mention easement acquisition costs, therefore it is unclear whether there was an allowance in the unit replacement costs.

Meritec notes that the replacement cost valuation approach requires the establishment of the true cost of replacing assets incorporating all costs to provide a new asset including planning, design, construction, commission and corporate overheads.

However, during the review of the HMA report Meritec noted that easement acquisition costs were excluded from the HMA valuation at the request of ETSA Corporation. Further testing of the database suggests that only easement survey, acquisition, registration and compensation were excluded but route selection costs incorporating environmental impact assessment and approvals were retained. However, Meritec is of the opinion that an allowance for the route selection, environmental impact assessment and approvals has been incorporated in the HMA valuations and retained through the SKM 1998 review.

SKM stated in the 1998 valuation review that they agreed with the gross line replacement rates used by HMA and saw no reason to adjust them for this valuation review. Further, SKM indicate that some of their transmission line replacement rates were actually lower than those used by HMA, which may be result of HMA's inclusion of route selection cost.

SKM 1998 conducted a comparison of the unit rates adopted by HMA, which indicated no significant provision for route selection or easement acquisition, but Meritec assert that SKM was not definitive about that fact.

Meritec believes that route selection costs have already been captured in the HMA valuation and SKM agreed with those valuation amounts. Therefore, Meritec assert that there should be no additions for route selection, environmental impact studies and public consultation.

MFS estimated the number of ownerships requiring negotiation of easements, however advice from ElectraNet suggests these numbers were too low. Upon assessment of

reliable data, Meritec recommends a figure of $36m for easement acquisition costs be included in the opening asset base.

3.4.3 Interest during construction

Meritec conducted a high level review of the validity of the inclusion of IDC to the jurisdictional asset base. IDC recognises the cost of capital outlaid over a construction period generally longer than 12 months. Typical assets as provided by ElectraNet generally have construction periods beyond 12 months when planning and design lead times are added to actual construction times.

Meritec noted that HMA and SKM excluded IDC at the request of the ETSA Corporation, with the exception of a single asset that alone cost more than $50m. The rationale for the exclusion is no longer available but has the impact of not adequately reflecting the true cost of replacement.

ElectraNet commissioned PricewaterhouseCoopers to determine the impact of the exclusion of IDC to the jurisdictional asset base ($40.9m). Meritec's review of this report suggests that an adjustment $40.9m would be considered reasonable.

Recent work conducted by Meritec also suggests that IDC should be included as a legitimate cost incurred in developing an asset and therefore should be included in any replacement cost modelling.

However, Meritec recognise that the Commission is constrained from allowing additional IDC as a judgment was made by the jurisdiction in establishing the regulated asset base. Therefore, no provision for additional IDC can be applied and consequently Meritec have excluded IDC from the asset roll forward.

3.4.4 Optimisation

Meritec examined the optimisation applied to the asset base since the jurisdictional valuation and considered that the allowance of $12.9m was appropriate.

The SKM optimisation review was based on the HMA valuation 1995, and the subsequent revaluation conducted by SKM, 1998. Further load flow analysis was conducted by ElectraNet's network planning personnel, following on from the extensive scenario development work conducted by ROAM Consulting (ROAM) Optimisation studies considered the interconnectors, Heywood and Murraylink.

Meritec's notes that:

> In general there was little in the way of justifications given in the SKM report for the optimisations suggested, apart from broad comments such as 'increased load', or that the South Australian maximum demand has increased from 2132 MW when the HMA report was completed to a projected 4188 MW in 2012-13. Such broad comments could apply to any network element.

However, Meritec still believed that the proposed optimisation was appropriate.

3.4.5 Roll Forward

Starting from an opening asset base as at July 1998 of $676m, Meritec adopted a process of annual indexing of the asset base value with an annual adjustment for inclusions and deletions. Meritec has examined the actual capital additions for each period from July 1998 to July 2000. For the period July 2001 to December 2002 the capital additions were estimated from ElectraNet's financial records and works in progress. Meritec considered these cost were reasonable. Meritec notes that ElectraNet expects to adjust the capital expenditure for the period 1 July 2001 to 1 July 2002 to reflect actual expenditure before the release of the Commission's final decision.

Depreciation has been calculated on a straight-line basis using the useful lives as defined in material provided by ElectraNet. Meritec consider these figures reasonable.

Meritec adopted an indexation of the asset base in the roll forward through to January 2003 by adopting the CPI weighted average eight capital cities index. The index was modified downwards in the June 2000 to December 2000 period by 2.5 per cent to discount the effect of the Goods and Services Tax (GST) introduction This approach is a consistent to the process applied to other roll forwards and was accepted in the recent *Queensland* revenue cap decision.

Indices were only available for the period July 1997 to July 2001. The period July 2001 to December 2002 has been estimated on the historical trends, which is believed to result in a conservative outcome.

The roll forward has be adjusted to reflect:

- omitted assets relating to re-optimisation have been included at appropriate times
- alteration to the asset base value has been made with reference to easement acquisition indexed from 2000 and easement compensation introduced at December 2002.

Meritec recommend the Commission adopt an opening asset base value of $997m as at 1 January 2003.

3.5 Submissions from interested parties

The submissions have been classified under general, easements and IDC and are discussed below.

3.5.1 General

The majority of the submissions recommend the Commission do no more than roll forward the existing jurisdictional asset valuation. As these costs are by nature sunk costs, there appears to be little basis any revaluation.

SA Water expressed concern that the replacement cost used in the jurisdictional asset base may be significantly higher than necessary and that rolling forward the regulatory asset base would lock in such anomalies over the regulatory period.

TXU believe that while there are provisions under section. 6.2.(d) (4) (iv) of the code that allow for a revaluation of the asset base, the code restricts the Commission to revaluing the asset base on the basis that any revaluation is consistent with section 6.2.3 (4) (iv) c. Any revaluation must comply with the broad principles of section 6.2.2 (b) (2).

In addition, TXU contends that the windfall gain, which would result from a revaluation, contravenes section 6.2.2 (b) (2) of the code by allowing the TNPS to derive a return above that which could be considered fair and reasonable.

TXU also believes that any revaluation undertaken by the Commission contravenes section 6.2.2 (g), which requires the reasonable recognition of pre-existing policies of governments in establishing transmission asset values.

TXU, EAG, ECCSA and NRG argue that ElectraNet should take into account the jurisdictional asset valuation and the regulatory earning capacity of those assets based on both the EPO and DRP. Accordingly, it should recognise that the asset base and its earning capacity have already been reflected in the purchase price of the business, absorbing any historical omissions of asset value. Any variations or omissions should have been addressed in negotiations with the South Australia Government as part of the sale process.

A step increase in the historic costs included in the asset base with regards to easement and IDC would result in ElectraNet's provided with a windfall gain at consumers' expense.

NRG also expressed concern over the re-introduction of previously optimised assets, specially:

- the methodology adopted in calculating the rolled forward asset value at 1 January 2003
- the consideration of any downward optimisation of assets that have been identified for removal from the asset base.

3.5.2 Easements

TransGrid:

- notes that with any new easement acquisition there are significant transaction costs incurred such as route selection, environmental impact statement, cultural and heritage assessment, and public consultation processes
- asserts that these are genuine costs that need be recognised by the Commission, and should rightly be valued at replacement cost in the subsequent regulatory reset
- is supportive of ElectraNet's position that the Commission has no grounds to value easement rights, other than at deprival or replacement value in accordance with the code
- however, it recognises from the DRP and previous revenue decisions that the Commission prefers a historical cost approach to valuing easements.

EUAA and SA Water recommend that the Commission disallow the claimed additional valuation of easements and request the relevant documentation for the historical actual costs of acquisition for those easements. The EUAA further argues that any notional value or estimate is unacceptable for regulatory purposes and would expose customers to considerable over-charging.

NRG:

- questions the use of replacement cost methodology as easements are generally granted in perpetuity
- argues that the Commission must recognise that many of these costs would not be applicable as half of the existing assets were established over 30 years ago (and quarter, over 40 years ago)
- suggests that the jurisdiction may have made a judgement to explicitly not include easement acquisition costs in the initial asset
- urges the Commission to adopt a conservative approach, in light of the considerable uncertainty surrounding the valuation of easement acquisition costs.

3.5.3 Interest during construction

ECCSA and NRG acknowledge that ElectraNet has an argument for an IDC allowance to apply to new assets over forthcoming regulatory period to provide for a reasonable return, and provide incentive for efficient investment. However, they consider it unreasonable that such an allowance be applied historically to the entire asset base.

3.6 Commission's considerations

3.6.1 Analysis of adjustments to the jurisdiction regulator's valuation

Easements

The Commission considers that there are four options to value easements.

Table 3.2: Options in valuing easements

Details	Compensation [1] ($'m)	Acquisition [2] ($'m)	Total [3] ($'m)	Year [4]
Jurisdictional valuation	3.1		3.1	1999
ElectraNet's application	111.0	104.3	215.3	1997- 99
Meritec's recommend	137.0	36.0	173.0	2000
According to the DRP			Not Available	

1 Compensation costs, actual payments made to landowners to acquire easement rights
2 Acquisition costs are transaction costs incurred in the process of acquiring easement rights, such as costs of property survey, negotiations, registration of easements and legal services.
3 The sum of compensation and acquisition costs
4 Year in which the values were developed

These valuations are discussed in more detail in the following subsections.

Jurisdictional valuation $3.1m

As stated earlier, the Commission is constrained by the jurisdictional valuation in establishing the opening asset base. In this instance, easements were included at $3.1m in the jurisdictional asset base by the South Australian authorities.

However, the Department of Treasury and Finance of South Australia qualified this value by writing to the Commission on 10 August 2001.

> Easements were incorporated into the RAB at book value (i.e. $3.1m) as asset valuations consistent with the approach set out in the ACCC's draft Statement of Principles for the Regulation of Transmission Revenues dated 27 May 1999 had not been undertaken. Independent valuations of the transmission easement suggest a substantially higher value than $3.1m.

The letter further stated

> Treasury and Finance agrees [with the belief of ElectraNet] that the ACCC has some discretion to amend the RAB from 1 December 2002 (sic). Clause 6.2.3(d)(1)(iii) of the code allows for the assets to be valued at a value '…**consistent with** the regulatory asset base established in the participating jurisdiction…'
>
> (Emphasis by Treasury and Finance.)

The Commissions' legal officers considered the matter and sought expert legal advice. As a result, ElectraNet was advised in March 2002 that the Commission proposed to decide on the value of easements in the light of the information provided by ElectraNet in its revenue cap application.

ElectraNet's application $215m

ElectraNet's claims are explained in section 3.3. The amount claimed is a hybrid, consisting of MFS's estimate of compensation costs based on deprival value and SKM's estimate of acquisition costs based on replacement value.

The code stipulates that assets should not be valued above their deprival value. Thus the code imposes an upper limit on asset values. However the Commission considers that it would be inappropriate to value easements at this maximum limit, ie. deprival value. This view is based on theoretical considerations such as the appropriateness of the method given the special characteristics of easements, and practical considerations such as the reasonableness of returns to TNSPs.

The Commission explained its views in the DRP and maintained that in its subsequent *NSW and ACT* and *Queensland* revenue cap decisions. The Commission still holds the same view and the main reasons for this follow.

- Unlike system assets, easements rights have a strong link with real estate values. Hence it is likely that these values could increase over and above the rate of inflation. Such gains would have to be treated as negative depreciation. This would result in a decrease in cash flows affecting the ability of a transmission business to operate efficiently.

- The valuation of easements is highly subjective. There is no methodology that is generally accepted.

The Commission's preferred view, as explained in the DRP, is historical costs indexed to current values.

The easement value claimed by ElectraNet is quite high compared to the Commission's previous decisions.

In 1997 MFS valued easements compensation costs at $111m based on deprival value. It valued the acquisition costs at $21m. The total value for easements of $132m was available to the Department of Treasury and Finance of South Australia at the time the regulatory asset base was established. If the department accepted that valuation, it would have included that value in the asset base. Instead the department used the book value of $3.1m. The department in its letter of 10 August 2001, continued to quote the value of $3.1m but qualified it, and wrote to the Commission that it was unable to apply the DRP due to insufficient time available.

Therefore it is reasonable to infer that the jurisdictional authorities preferred the easements to be valued according to the DRP.

Meritec's recommendation $173m

Meritec accepted the MFS's valuation of easement compensation costs. It considers that it is appropriate to value easements based on deprival value. Meritec indexed MFS valuation of $111m in 1997 to arrive at $137m in 2002.

Meritec did not accept SKM's estimate of acquisition costs. It considered that the costs were on the high side. It also considered that some of the acquisition costs would have been capitalised with the transmission line costs.

Meritec, however, considered that MFS' assessment of acquisition costs were reasonable. Based on this Meritec recommended acquisition costs of $36m in 2000. Meritec recommended that these costs be added to easement compensation values and be rolled forward with indexation and retained without depreciation.

Previous decisions

Table 3.3 shows the value of easements in previous revenue cap decisions. As easements are based on the length of the route, the value of easements per route-km is shown to facilitate comparison

Table 3.3: Easement values per route-km (based on the previous decisions)

Decision		Value ($m)	Route length Km	Easement/Route $/Km
TransGrid	Jan 2000	313.0	11,000	28,433
Powerlink	Nov 2001	114.0	10,300	11,107

The easement value included in the opening asset base of Powerlink was based on a previous valuation rolled forward and accepted by the Queensland's jurisdictional authority. Hence the Commission had limited say in determining the value. That said, *Queensland* revenue cap decision, specifically mentioned that establishment costs amounting to $84m were not included in the (jurisdictional) valuation.

In the *NSW and ACT* revenue cap decision of January 2000 the Commission stated the following.

> Commission considers it appropriate to include TransGrid's existing easements in the regulated asset base at their historic purchase cost rolled-forward to 1 July 1999. In the absence of properly documented historic cost records, the Commission has used the values identified in the oldest available valuation as a proxy for those costs, being the ODRC value determined during the 1996 SKM valuation.

The legal context of easement valuation in the *NSW and ACT* revenue cap decision is different to that of ElectraNet. In the case of ElectraNet the Commission has to value easement consistent with the jurisdictional valuation, whereas in the *NSW and ACT* revenue cap decision it did not have such a constraint (as a result of a derogation).

3.6.2 Conclusion regarding easements

Under normal circumstances, the Commission would have used the $3.1m as the value jurisdictional value of easements. However given the explicit written qualifications by the South Australian Treasury and Finance Department the Commission may have to exercise the discretion to consider other options.

The Commission does not believe that the valuing easements using deprival value (used by MFS, Meritec and ElectraNet) is appropriate.

Moreover it considers that using deprival value results in very high easement valuations compared to the Commission's previous decisions regarding other revenue caps (refer table 3.3). For example, Meritec valuation of compensation costs $111m (1997), disallowing all transaction costs, would result in a rate of about $20,000 per route-km. This is almost twice the rate given to Powerlink.

Therefore the Commission does not accept the easement values in requested by ElectraNet. Nor does it accept the values recommended by Meritec.

The South Australian authorities stated that they were unable to apply the DRP owing to inadequate time. Hence it is reasonable to suggest that they would have valued easements on the basis suggested by the DRP, if they had the time.

In the DRP the Commission stated that a consistent approach to easement valuation would be to provide compensation for actual amounts paid. The Commission therefore

asked ElectraNet to submit actual amounts paid for easements. But ElectraNet claimed that it was impossible get the figures.

It is not the role of the Commission to calculate the easement value for ElectraNet. It is up to ElectraNet to do so. Given the inability of ElectraNet to provide with actual costs relating to easements, Commission prefers to use $3.1m rolled forward to 1 January 2003. Resulting in an easement figure of $3.4m.

3.6.3 Conclusion regarding interest during construction

The principal limitation set out in the code are that where a judgment was made by the jurisdiction in establishing the regulatory asset base, and where that judgment is still applicable, the Commission cannot substitute its own judgment for that which was made by the jurisdiction.

The Commission is satisfied that a judgement was made by the South Australian Government not to include IDC in projects lower than $50m. Therefore the Commission in constrained to adopt the jurisdictional valuation and no additional allowance for IDC can made.

3.6.4 Conclusion regarding optimisation

In determining the jurisdictional asset base SKM was required to conduct and an optimisation review, which resulted in reduction of $25m in depreciated replacement cost. Further work commissioned by ElectraNet suggests that some of those assets are now necessary in systems operations. Consequently ElectraNet have requested an adjustment of $13m to recognise these assets.

As previously mentioned, the Commission has limited discretion in revaluing the jurisdictional asset base. That where a judgment was made by the jurisdiction in establishing the RAB, and where that judgment is still applicable, the Commission cannot substitute its own judgment for that which was made by the jurisdiction. Therefore, the Commission is unable to make any adjustment to the RAB in regards to optimisation as a judgement was made by the jurisdiction.

3.6.5 Asset roll forward

ElectraNet proposed a roll-forward resulting in an opening asset base as at 1 July 2002 of $1,0789m. However, this includes an allowance of $45m for IDC, $215m for easements and $13m for assets to be readmitted.

The Meritec review recommends the Commission adopt a roll-forward resulting in an opening asset base of $975,417m. This figure includes Meritec's assessment of easement compensation and acquisition costs, along with the readmission of previously optimised assets. However, an IDC allowance was not included.

As noted above the Commission believes that the easements presented are inconsistent with the Commission's DRP. In the absence of any other valuation the Commission prefers to use the jurisdictional value of $3.1m rolled forward.

As the Commission anticipates that ElectraNet will revise its acquisition, depreciation and write offs replacing their predicted values with the actual values for the period 1 July 2001 to 30 June 2002. In its final decision the Commission will apply the updated actual figures in setting ElectraNet's opening asset base.

3.6.6 Draft decision regarding the opening asset base

The Commission has determined that the value to be attributed to ElectraNet's opening asset base as at 1 January 2003 is $805m, being the value established by the jurisdiction as at 1 July 1999 rolled forward.

The Commission notes apart from indexation no other changes have been made to the RAB established by the jurisdictional authorities.

Table 3.5: ElectraNet's proposed roll forward schedule from 1998-99 to 1 January 2003

	1998-99 ($m)	1999-00 ($m)	2000-01 ($m)	2001-02 ($m)	Jul-Dec 2002 ($m)
Opening asset base	675.848	683.241	744.755	751.887	784.645
Capital expenditure [1]	24.016	64.921	7.798	41.169	26.372
Economic depreciation [2]	16.623	3.408	0.666	8.411	5.624
Closing asset base	683.241	744.755	751.887	784.645	805.393

1 Net of disposals
2 Straight line depreciation less inflation