

4. Rate of Return

4.1 Final Decision and Reasoning

The Commission's 30 June 2006 Final Decision requires Envestra to modify its Access Arrangement and Access Arrangement Information to reflect the WACC parameters specified by the Commission on page 80 of that Final Decision.

The Commission's parameters from its 30 June 2006 Final Decision are set out below and compared with those proposed by Envestra in its May response to the Draft Decision and in this submission:

PARAMETER VALUE	ESCOSA Final Decision (June 2006)		Envestra Revised Access Arrangement (July 2006)		Envestra Revised Access Arrangement (May 2006)	
	High	Low	High	Low	High	Low
Risk Free Rate (nominal)	5.75%		5.75%		5.28%	
Risk Free Rate (real)	2.49%		2.49%		2.43%	
Debt Margin	1.25%		1.42%	1.32%	1.48%	1.38%
Market Risk Premium	6.00%		7.00%	5.00%	7.00%	5.00%
Equity Beta (β)	1.00	0.80	1.10	0.90	1.10	0.90
Gamma (γ)	0.35	0.60	0.00	0.35	0.00	0.35
Tax Rate	30%		30%		30%	
Forecast Inflation	3.17%		3.17%		2.78%	
Real Pre-Tax WACC	6.65%	5.64%	8.67%	6.04%	8.50%	6.00%

On the basis of its parameters the Commission has determined that Envestra's real pre-tax WACC is 6.14 percent as compared to the 7.3 percent proposed by Envestra in May and the 7.4 percent proposed in this submission after further considering the evidence. These figures compare to the real pre-tax WACC under Envestra's current Access Arrangement of 7.6 percent.

The differences between the WACC derived by the Commission and that derived by Envestra reflect differences between the Commission and Envestra in respect of the determination of the following parameters:

- (a) Equity Beta;
- (b) Value of Imputation Credits (gamma);
- (c) Market Risk Premium; and
- (d) Debt Margin.

4.2 Envestra's Submission

The Commission's determination of equity beta and gamma has not changed from the Draft Decision and it remains Envestra's position that the Commission's analysis of those parameters is in error.

The Final Decision is also in error in quoting Envestra's position in respect of equity beta and market risk premium. The Final Decision states that Envestra's position is that equity beta is in the range of 1 to 1.1 when in fact Envestra's position is that the range is 0.9 to 1.1. Envestra's range for market risk premium is 5% to 7% not 6% to 7% as suggested in the Final Decision.

The errors in the Commission's analysis are explained below and in the two reports prepared for Envestra by Professor Stephen Gray of the Strategic Finance Group. The first report was provided to the Commission at the time of Envestra's submission in response to the Draft Decision ("**SFG Report No. 1**") and second report accompanies this submission ("**SFG Report No. 2**").

Further, the Commission's analysis of the debt premium is in error for the reasons explained below.

The effect of these errors is to bias the calculated rate of return down from its true value. The low rate of return proposed by the Commission will be insufficient to attract necessary funds to invest in the network. This will adversely impact Envestra's legitimate business interests and will be detrimental to both existing and potential Users of the network. Given the errors in the Commission's approach and the recognised asymmetric risk of estimating a WACC that is too low, the Commission's estimate of the real pre-tax WACC must be corrected.

4.3 Monte Carlo Technique

Envestra reiterates its logic for the use of the Monte Carlo technique as outlined in its submission on the Draft Decision.

It is accepted by Envestra and the Commission that there is an inherent uncertainty in estimating the WACC parameters. This uncertainty is best addressed by employment of the Monte Carlo technique because it:

- (a) utilises a greater amount of the available information about each parameter;
- (b) explicitly accounts for the inherent uncertainty in the parameter values;
- (c) provides a probability weighted range of WACC outcomes to quantify a WACC that is commensurate with the risks in the market for funds and the risks involved in delivering Reference Services; and
- (d) is a widely used technique in industry to transparently and objectively quantify uncertainty and risk.

Envestra notes that the Allen Consulting Group ("**ACG**") and the Commission have made various criticisms of the Monte Carlo technique in the Final Decision and the supporting ACG report. For the reasons outlined in the SFG Report No 1 and SFG Report No 2, these criticisms are not valid.

In contrast to the Monte Carlo technique, the approach taken by the Commission to the determination of WACC (that is, to take a mid-point from its range on the basis this treats Envestra and Users equally) is simplistic and arbitrary. That approach pays no regard to the effects of setting Envestra's WACC on Envestra's risk profile nor pays regard to the potential

risks of under-investment through setting a WACC too low (which under-investment is also harmful to the interests of Users).

4.4 Equity Beta

The Commission's determination of a value of beta in the range of 0.8 to 1.0 is incorrect, for the reasons outlined in the SFG Report No. 1 and the SFG Report No. 2.

In previous submissions Envestra has noted the findings of ACG that an appropriate equity beta for Envestra is 1.0. The Commission has relied on ACG's advice extensively in the Final Decision and has only deviated on the issue of equity beta. The Commission's reasoning for not accepting the ACG advice on equity beta is that it (the Commission) is the legislated decision maker, not the consultant:

“The consultants do not make the decision of what value is consistent with the Code requirements; that is the Commission's task, which it undertakes after taking into account all relevant and available information (including any advice it receives from its consultants). As such, simply because ACG is of the view that (based on its economic analysis) an equity beta of around 1 is reasonable for Envestra, it does not imply that the Commission is obliged to accept this.”

While it is true that the Commission not its consultants is the decision maker, the fact remains that the Commission is acting contrary to both the expert advice of Envestra's consultant and its own consultant. No analysis is given to justify the Commission's departure from the unanimous view of the experts engaged in this review.

While in Envestra's submission 1.0 is the most appropriate value for beta, Envestra recognises the inherent uncertainty in estimating this parameter. To account for this uncertainty Envestra has used a range for beta of 0.9 to 1.1.

4.5 Value of Imputation Credits

The Commission's determination of a value of gamma in the range of 0.35 to 0.6 is incorrect, for the reasons outlined in the SFG Report No 1 and the SFG Report No 2.

As set out in the SFG Reports there are significant econometric and empirical problems with the ACG analysis, and that of the Commission. The value of gamma is most appropriately set at zero. Further, a value for gamma of zero is consistent with a market risk premium of 6 percent.

In Envestra's submission zero is the most appropriate value for gamma. However Envestra recognises the inherent uncertainty in estimating this parameter. Therefore for the purpose of the Monte Carlo simulation Envestra has used a gamma in the range of 0 to 0.35. The mode of the triangular distribution is set at zero to appropriately weight the evidence that the most likely value for gamma is zero.

4.6 Market Risk Premium

The Commission has concluded that the reasonable range for the market risk premium is in the order of 5.0 to 6.0 per cent. It has reached this conclusion on the basis that the historical averages are not a reasonable *ex ante* estimator of the market risk premium and on the basis of a forward-looking analysis using the Dividend Growth Model ('DGM').

The Commission uses a point estimate of 6 percent in calculating Envestra' real pre-tax WACC. Envestra has previously submitted that the Commission has placed too greater reliance on the fact that the value of 6 percent “is almost unanimously used” by all Australian regulators. Regulatory precedent is not the test under the Code – the test is whether the parameters for the Capital Asset Pricing Model have been calculated in accordance with sections 8.30 and 8.31.

For the reasons more fully explained in the SFG Report No. 1 and SFG Report No. 2, the Commission’s analysis, in particular its reliance on the DGM, is incorrect. The DGM analysis, which supports a lower value for the market risk premium, suffers from a methodological flaw in that it requires solving one equation where two variables are unknown. Such flaw compromises the reliability of any estimate of the market risk premium derived using DGM analysis.

For the reasons set out in the SFG Report No. 1 and SFG Report No. 2, it is necessary to have regard to historical averages; a historical average of 7 percent should be used as a valid data point in setting the reasonable range for the market risk premium.

SFG Report No. 2 demonstrates that given the uncertainty surrounding the estimation of market risk premium, it is not appropriate to use a point estimate for this parameter. Rather Envestra has used a range of 5 to 7 percent in its Monte Carlo analysis.

4.7 Debt Margin

The Commission has concluded that the reasonable range for the debt margin has changed from 142.5 basis points in the Draft Decision released in March 2006, to 124.5 basis points in the Final Decision released in June 2006.

The Commission has adjusted the debt margin downwards by 18 basis points without disclosing the details of its analysis:

“The Commission accepts the advice of ACG to not exercise that judgment afresh, but rather to commence with the margin that was used in the Draft Decision (130 basis points), and adjust this by an amount that reflects the average change in the margins that appears from the different sources of information since the Draft Decision. Such an adjustment preserves the Draft Decision, except for updating the margins to the average of the 10 day period ending 16 June 2006.”¹

The ACG advice referred to by the Commission has not been made available to Envestra (which is a breach of procedural fairness as it makes it impossible for Envestra to assess the basis for that advice).

Using CBA Spectrum, the accepted objective measure of debt margins, Envestra has analysed the change in the debt margin, applicable to the ten-year bond, averaged over the period used in the Draft and Final Decision respectively. This analysis confirms that debt margins have only changed by between –1 and –2 basis points between the Draft and Final Decision (see table below). This change is significantly less than the 18 basis point downward adjustment made by the Commission to the Draft Decision debt margin.

¹ Final Decision page 76

CBA Spectrum Debt Margin (bp)			
Credit Rating	Draft Decision	Final Decision	Change (bp)
BBB+	98.6	96.9	-1.7
BBB	107.7	106.4	-1.3

The debt margin from the CBA Spectrum for the period 2-16 June (the period used by the Commission to determine the risk free rate) was 106.4 basis points for a BBB rated entity and 96.9 basis points for a BBB+ rated entity. To account for the downward bias and under-estimation of the debt margin on the ten-year bond in CBA Spectrum Envestra has added 23 basis points to the reported debt margin. This is consistent with the Commission's position of adding between 20-25 basis points to the reported debt margin in CBA Spectrum. Debt raising transaction costs of 12.5 basis points have been added to the adjusted CBA Spectrum debt margin, which is also consistent with the Commission's position, to provide a debt margin for use in determining the WACC. Envestra calculates the debt margin from CBA Spectrum to be between 132 and 142 basis points. This margin is consistent with the risk free rate and inflation estimates adopted by the Commission in setting the WACC. Envestra believes that this range for debt margin is appropriate and is used in the Monte Carlo simulation to determine the WACC.

Debt Margin (bp)		
Components of Debt Margin	BBB+	BBB
'Raw' CBA Spectrum Debt Margin	96.9	106.4
Debt Margin Adjustment	23.0	23.0
Debt Raising Costs	12.5	12.5
Proposed Debt Margin	132.4	141.9

4.8 Other Parameters

Envestra accepts:

- (a) the Commission's approach to determination of the risk free rate;
- (b) the debt to assets and corporate tax rate set by the Commission; and
- (c) the Commission's approach to determination of inflation.

4.9 Summary of Envestra's position

For the reasons set out above, it is Envestra's position that:

- (a) the debt margin is in the range of 132 to 142 basis points and that this should be used in the Monte Carlo simulation;
- (b) the value for the market risk premium lies in the range of 5 to 7 percent;
- (c) the value of Envestra's equity beta is 1.0, but for the purposes of a Monte Carlo simulation should be set in the range of 0.9 to 1.1; and

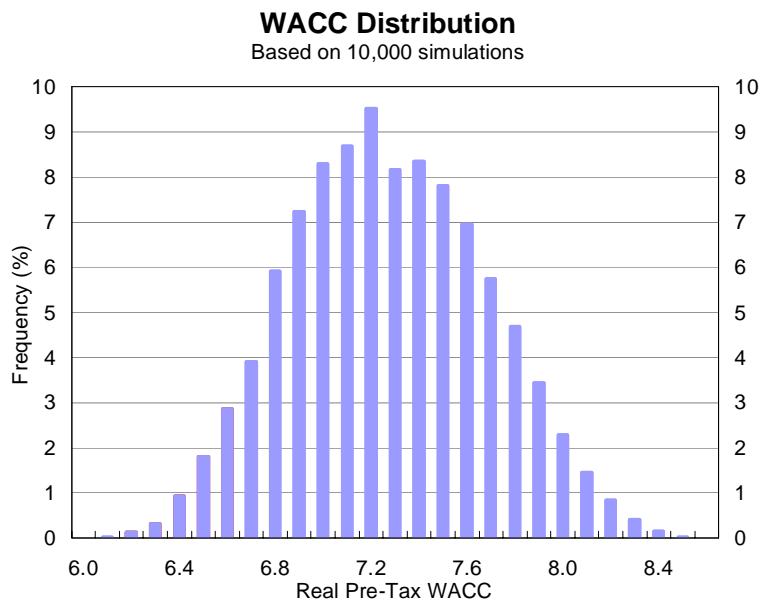
- (d) the value for gamma is zero, but for the purposes of a Monte Carlo simulation should be set in the range of zero to 0.35.

4.10 Determination of WACC

The determination of the WACC using the Monte Carlo simulation and Envestra's proposed range is set out below.

Uniform distributions have been used in the Monte Carlo simulations for the market risk premium, gamma and equity beta. A triangular distribution has been used in the Monte Carlo simulations for gamma.

<i>WACC Parameters</i>	<i>Plausible Range for Parameter Values</i>
Nominal Risk Free Rate	5.75%
Forecast Inflation	3.17%
Debt Risk Margin	1.32% to 1.42%
Market Risk Premium	5% to 7%
Equity Beta	0.9 – 1.1
Value of Imputation Credits	0.35 – 0
Corporate Tax Rate	30%



Percentiles	10th	20th	30th	40th	50th	60th	70th	80th	90th
Real Pre-Tax WACC	6.75%	6.91%	7.03%	7.15%	7.25%	7.37%	7.50%	7.63%	7.82%

The Monte Carlo analysis indicates a range for real pre-tax WACC for Envestra lies between 6.75 percent and 7.82 percent at the 10th and 90th percentile respectively. The mean of the

distribution (50th percentile) is 7.25 percent and the value at the 75th percentile is 7.6 percent². The real pre-tax WACC resulting from the Commission's analysis is 6.14 percent, which falls significantly below the 10th percentile. This means that the Commission's prescribed real pre-tax WACC of 6.14 percent has less than a 10 percent chance of being correct in terms of providing a rate of return consistent with sections 8.30 and 8.31 of the Code.

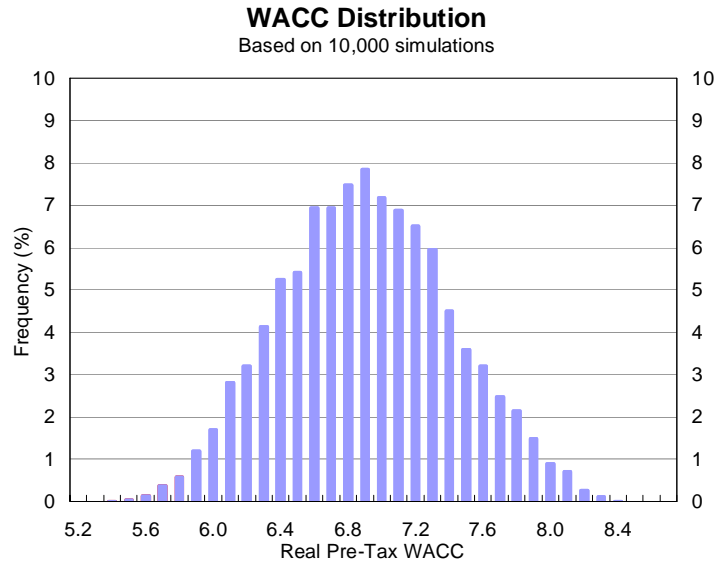
Given the widely acknowledged negative affects of under-investment caused by artificially low regulated rates of return, Envestra has determined that a point estimate of 7.4 percent should be used as the rate of return for determining revenue. This estimate is the average of the 50th and 75th percentile of plausible range of estimates of WACC identified above and is considered to mitigate the asymmetric risks associated with low regulated rates of return.

4.11 Alternative WACC Calculation

Envestra notes that the range proposed by the Commission differs to Envestra's range as set out in section 4.9 and 4.10 above. Envestra has performed another set of Monte Carlo simulations with the range expanded to take into account the variables proposed by both the Commission and Envestra. The alternative Monte Carlo analysis indicates that, using these assumptions, a range for real pre-tax WACC for the Network of between 5.3 percent and 8.7 percent. The mean of the distribution (50th percentile) is 6.9 percent and the value at the 75th percentile is 77.3 percent.

<i>Combined Commission & Envestra range of WACC Parameters</i>	<i>Plausible Range for Parameter Values</i>
Nominal Risk Free Rate	5.75%
Forecast Inflation	3.17%
Debt Risk Margin	1.25% to 1.42%
Market Risk Premium	5% to 7%
Equity Beta	0.8 – 1.1
Value of Imputation Credits	0.6 – 0
Corporate Tax Rate	30%

² For completeness we have also calculated the WACC point estimate using Envestra's best estimate of each WACC parameter. The real pre-tax WACC resulting from the point estimate approach is 7.7 percent, which is above the 80th percentile using Envestra's ranges for WACC parameters ie there is a less than a 20 percent chance of the estimate being incorrect (see Attachment 1).



Percentiles	10th	20th	30th	40th	50th	60th	70th	80th	90th
Real Pre-Tax WACC	6.25%	6.46%	6.62%	6.77%	6.90%	7.03%	7.18%	7.34%	7.59%

That is, the alternative Monte Carlo analysis shows that even taking into account the Commission's component variables, a WACC of 7.3 percent is justified, which is slightly above the 50th percentile using the parameters in Envestra's proposed range and below the 75th percentile using the combined parameter range proposed by the Commission and Envestra.

Envestra has used this WACC of 7.3 percent in its Access Arrangement.

4.12 Summary of Envestra's position

- (a) Envestra submits that the best estimate of WACC should be calculated using the values noted in section 4.9 and by use of the Monte Carlo simulation. Such an approach produces a WACC within the reasonable range of values and which value the Commission must therefore approve.
- (b) The value for WACC derived under paragraph (a) above is 7.4 percent.
- (c) The analysis in section 4.11 shows that even taking into account the Commission's variables, the value of WACC is at least 7.3%.
- (d) Even if Envestra's ranges for WACC parameters were not reasonable, Envestra submits that Monte Carlo simulation should be applied to the range of variables suggested by the Commission and those submitted by Envestra as calculated in section 4.11.
- (e) Envestra also submits that were it the case that the Monte Carlo simulation is not a reasonable methodology, the range of parameters used to calculate the WACC should be those values noted in section 4.9.

ATTACHMENT 1

ESTIMATE OF WACC USING ENVESTRA'S POINT ESTIMATES OF WACC PARAMETERS

	POINT
SA PARAMETERS	ESTIMATE
Risk Free Rate (Real)	2.49%
Risk Free Rate	5.75%
Debt Premium*	1.370%
Equity Premium	6.00%
Equity Beta	1.00
Gamma	zero
Tax Rate	30%
Forecast Inflation	3.17%
Real Pre-Tax WACC	7.67%

* mid-point of range from adjusted CBA Spectrum estimates