Appendix 1: Detailed Questions

Overview of the Approach

The Commission seeks comment on the choice and application of the simplified Brennan-Lally CAPM model when estimating the cost of capital.

1- Are there any adjustments required to the current CAPM methodology used by the Commission? If so, which adjustments may be warranted and on what grounds?

2- What alternative models may be considered, and on what grounds?

3- What would be the practical implementation issues of using these alternative models?

Risk-Free Rate

The Commission seeks comment on its choice of the term of risk-free rates when applying the CAPM. Specifically, comment is sought on the matching of risk-free rates to the length of regulatory periods, asset lives, or the maturity of firms' debt, and their implications in net present value terms.

4- What are the arguments against matching the term of the risk-free rate used in cost of capital calculations to the length of the regulatory period?

5- What are the implications in net present value terms of the alternatives to matching the maturity of the risk-free rates with the regulatory period?

6- Are there any criteria, either in place of, or in addition to, the NPV=0 principle that the Commission may also consider when choosing the term of the risk-free rate. How might these (alternative) criteria affect the choice of the term of the risk-free rate?

7- What are the drawbacks of the Commission's use of a risk-free rate whose term matches the regulatory period but is not consistent with firms' actual debt maturity?

Market Risk Premium (MRP)

The Commission seeks comment on its approach for estimating the MRP, and in particular, the use and limitation of foreign comparators estimates, and the issue of consistency between risk-free rates employed throughout the CAPM equation.

8- Is it appropriate for the Commission to consider foreign comparators when estimating the New Zealand MRP, given that it uses a domestic CAPM? Please elaborate.

9- What are the potential limitations of using foreign MRP estimates to estimate the MRP? What adjustments may be required to foreign MRP estimate to enhance comparability with New Zealand MRP estimates and what key factors need to be taken into consideration when making such adjustments? Should the Commission also consider 'world MRP' (i.e. average MRP across different countries) estimates?

10- Is the Commission's preference to ensure consistency between the term of the risk-free rate and the length of the investment horizon in the calculation of the MRP appropriate? Please elaborate.

11- Is the assumption that the MRP would be constant across investor horizons, reasonable given the lack of information on the way expected market returns might vary with the investor horizon, the scarcity of data, and difficulties in adjusting the MRP to the maturity of the first risk free rate term? Please elaborate.

12- What alternatives the Commission may consider to address the question of consistency between the term of the risk-free rate and the length of the investment horizon?

13- When available, should the Commission place more weight on estimates of the MRP whose characteristics, i.e., time horizon of equity returns and maturity of risk-free rate used, are close to the length of the regulatory period? Please elaborate.

14- When possible, would it be more appropriate for the Commission to derive an estimate of the MRP based on market returns and risk-free rates over a time horizon that matches the regulatory period? Please elaborate. If so, how could such estimates be derived?

Beta

The Commission seeks comment on its approach for estimating beta, and in particular, the choice of comparator estimates, and the estimation of beta of individual business units for multi-business firms.

15- Which characteristics are the most important when choosing comparator firms for the purposes of indirect estimation of firms' beta? Which adjustments may be warranted? How may such adjustments be performed?

16- Is it appropriate for the Commission to consider foreign comparators when estimating a firm's beta, given that it uses a domestic CAPM? Please elaborate.

17- When estimating the beta of one business unit/activity of a multi-product firm, what are the robust methodologies that could be used to estimate that business unit beta while achieving a broad reconciliation with the firm's overall beta? What are the practical implementation difficulties and information requirements involved with each methodology identified in the previous question?

Cost of Debt

The Commission seeks comment on its approach for estimating the cost of debt.

18- What hedging arrangements (e.g. to manage interest rate, foreign currency, or other risks) do firms typically use, and should these be accommodated in the cost of debt? If so, how?

WACC Estimates

The Commission seeks comment on its approach for estimating firms' WACC, and in particular, its approach to handling uncertainty over estimates of the individual parameters that are used to calculate WACC.

19- Is the approach used by the Commission in calculating confidence intervals around point estimates of firms' WACC sufficiently robust and suitable for the Commission's purposes? Are the assumptions underlying this approach (e.g. normally distributed point estimates of the overall WACC) reasonable? Is the data underlying the calculation and estimation of relevant parameters of sufficient quality for the purposes of deriving a WACC distribution? Please elaborate.

20- What other statistical techniques could be used?

21- What factors should the Commission consider in choosing the point in the WACC distribution or range? Is it preferable to adjust individual WACC parameters to reflect uncertainty and risk, or to choose a WACC estimate from above the 50th percentile or mid-point of the range?

Allowances for Other Issues

The Commission seeks comment on its treatment of asymmetric risks, market frictions and the costs of financial distress, and timing flexibility, when estimating the cost of capital.

Asymmetric Risks

22- Is it appropriate for the Commission to assume that all unsystematic risks can be eliminated through diversification? Please elaborate.

23- Is the Commission's preference to adjust cash flows (when accounting for unsystematic risks) rather than adding a margin to the WACC appropriate? If so, is an adjustment via the depreciation profile of the firm's capital assets implied by the tilted annuity formula an acceptable methodology? Does this approach adequately compensate for any relevant unsystematic risks? Please elaborate.

24- How could the Commission calculate ex ante adjustments for stranding, adverse events, and other asymmetric risks?

25- What reliable information is available to indicate the actual approaches used by firms in assessing and accommodating asymmetric risks?

Market Frictions and the Cost of Financial Distress

26- The Commission seeks comments on what evidence there is to suggest that businesses make ex ante adjustments to their prices to deal with market frictions and the cost of financial distress. How could the impact of market frictions or financial distress be quantified, for the purposes of calculating a firm's cost of capital?

Timing Flexibility

27- What information is available to demonstrate that timing options for regulated businesses are significant?

28- How might the value of real options be taken into account and estimated in practice?

29- Would adding an allowance for extinguished timing options ensure that investment by a regulated firm was undertaken at the optimal time? Please elaborate.

30- Generally, to what extent do timing options derive from market power? How could the Commission practically assess whether or not the exercise of such options is a manifestation of market power?

31- How could the Commission practically assess the extent to which extinguished timing options relate to some assets and not others (i.e. in multi-product firms)?

32- To what extent might the creation of growth and/or abandonment options offset or overwhelm the effect of extinguished timing options when investment takes place?