Annex B

Experts Report Recommendation	Telecom Comment
Regulatory Consistency – **Recommendation 1** Professor Franks recommends that the Commission strive for regulatory consistency: (a) Methods for parameter estimation should not be changed unexpectedly and (b) great care should be taken when making large changes to the real cost of capital. If large changes must occur, these could be introduced gradually, or the Commission might apply split costs of capital to new and existing investments.	Telecom is in agreement with Professor Franks' recommendations on regulatory consistency. It is noted that these issues have not been specifically addressed by the Commission in the Guidelines.
Choosing methods and adjustments – **Recommendation 2** Professor Franks recommends that the Commission not feel compelled to select one methodology or adjustment to the exclusion of all others when estimating components of the cost of capital. Instead, the Commission should carefully describe all alternatives and the implications of choosing each of these, and then using its judgment select one or a combination of methods and adjustments.	Telecom considers that the Guidelines need to be sufficiently flexible to be applicable and relevant, providing the most accurate estimate of cost of capital for a reasonable expectation of the range of regulatory situations. But they should also be sufficiently prescriptive to provide transparency and certainty with respect to how the Commission would consider cost of capital issues given the particular circumstance.
The NPV=0 principle – **Recommendation 3** The Panel agrees with the Commission's approach of allowing regulated firms to earn their cost of capital and recover the initial cost of investment, as long as the Commission ensures that the allowed regulatory return adequately covers the cost of capital. **Recommendation 4** The Panel agrees that incentive schemes that allow firms to keep profits generated over the regulatory period through efficiency savings are desirable. **Recommendation 5** One mechanism to strengthen incentives is to lengthen the regulatory period. Professor Franks prefers such a mechanism to simply raising the allowed rate of return.	Telecom is in agreement with the Panel's unanimous recommendation on incentive schemes, but the Commission has not addressed this issue in the Guidelines.

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The use of other models alongside the CAPM **Recommendation 6** Professors Myers and Franks are in favour of employing the DCF and Fama-French three-factor models as cross-checks on CAPM estimates of the cost of equity, provided that necessary data are available and that the models' assumptions are reasonably satisfied. The relative weights attached to each of these methods should be determined on a case-by-case basis. Dr Lally expresses some reservations about these alternative models, but nonetheless agrees in principle that they should not be entirely dismissed in the estimation process. **Recommendation 7** The Panel recommends that the Commission identify and review new estimation methods periodically.	Telecom sees merit in employing other models and would like to see the Guidelines clearly set out detailed formulations for these alternative models and how the Commission might assess one methodology against another.
The appropriate form of the CAPM – **Recommendation 8** Dr Lally recommends the Commission retain the simplified Brennan-Lally version of the CAPM. **Recommendation 9** Professor Myers recommends the Commission use the classical CAPM instead. **Recommendation 10** Professor Franks recommends estimating the cost of capital under each of these models, and the ICAPM, and using all the available evidence on the degree of home bias to select the appropriate form of the CAPM.	Dr Lally and the Commission's position is that by allowing for investor taxes it improves the efficacy of the CAPM, but this is in only one dimension. This ignores the fact that it degrades the efficacy of the CAPM in another dimension (its poor performance with low beta and/or high book-to-market firms, as shown by Fama and French), which point is noted by Professor Myers. This suggests, at least in those cases where very low betas are being applied, that the Commission should consider use of the classical CAPM, for example, as a cross check.
The use of two different risk-free rates in the CAPM - **Recommendation 11** Dr Lally recommends that the Commission define the MRP relative to the average interval (across investors) between portfolio reassessments and define the term of the first risk-free rate within the CAPM to match the regulatory period, even if this leads to the use of two different risk-free rates within the CAPM. **Recommendation 12** Professors Myers and Franks recommend that the Commission	Telecom considers that a single maturity risk free rate should be used in the CAPM.

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employ only one risk-free rate in the CAPM.	
Selection of the risk-free rate in the CAPM - Recommendation 13 Dr Lally recommends the Commission retain its current practice of setting the intercept term in the CAPM equal to the current risk-free rate whose maturity matches the length of the regulatory cycle. The MRP should be defined relative to the average interval (across investors) between portfolio reassessments, and this could be as low as a few months or as high as several years. **Recommendation 14** Professor Myers recommends using a L-year forecast of the one year risk-free rate as the intercept term of the CAPM, with the MRP defined as a spread over one-year interest rates. Professor Myers recommends standardizing L = 5 years. If standardization is rejected, L should match the length of the regulatory cycle. If the yield on an L-year Treasury bond is used as the intercept, the MRP should be defined as a spread over L-year interest rates. **Recommendation 15** Professor Franks agrees with this recommendation, but suggests that any adjustment to the L-period forecast for the maturity risk premium should reflect current levels of interest rates and inflation and not historical averages. Further, the Commission could standardize L = 3 if regulatory cycles in New Zealand are typically three years.	Telecom is of the view that when investing in long life assets a long term risk free rate should be used in assessing the WACC, independent of the regulatory period.
Bond durations, spot rates and yields to maturity – **Recommendation 16** Dr Lally accepts that the risk-free rate should have a duration, rather than a term, equal to that of the regulatory cash flows, but he argues that the effect of using terms rather than durations is slight. **Recommendation 17** The Panel recommends that the Commission employ yields to maturity as an approximation (as it presently does), but use spot rates as a cross-check.	Telecom is in agreement with the Commission that use of term rather than duration will be acceptable in most circumstances.
Risk-free rate proxies – **Recommendation 18** Dr Lally recommends that the risk-free rate should continue to be proxied by the yield on government bonds. **Recommendation 19** Professors Franks and Myers recommend that the issue of swap rates as proxies for the risk-free rate is important and requires further consideration.	Telecom agrees that the use of a proxy, such as swap rates, should be kept under consideration.

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Recommendation 20 Professor Franks recommends that when there is significant volatility in government bond yields, and the regulatory period exceeds three years, the Commission should consider the feasibility of indexing the risk-free rate component of the cost of capital to a portfolio of government bonds whose duration matches that of the regulatory cash flows.	
Estimation of the MRP – **Recommendation 21** The Panel recommends that the Commission continue to draw on international MRP estimates. **Recommendation 22** The Panel also recommends that the Commission retain its approach of examining both forward-looking and backward-looking estimates of the MRP. **Recommendation 23** Professors Myers and Franks recommend that primary weight be placed on backward-looking approaches, but agree that backward-looking estimates may require attenuation. Professor Franks places somewhat more weight on forward-looking techniques than does Professor Myers. **Recommendation 24** Dr Lally favours equal weight over a wide range of estimation methods including forward- and backward-looking methods. **Recommendation 25** The Panel considers that the Commission's present MRP estimate of 7% (for the simplified Brennan-Lally CAPM) is reasonable.	The Panel's recommendations consider the weight to be attached to different methods for estimating the MRP, but do not address the weights to be given to estimates derived from different countries, or how to adjust for international differences.
Debt betas - **Recommendation 26** The Panel recommends that the Commission takes account of empirical estimates of debt betas. If debt betas are significant they should be included in the WACC estimation. This is particularly important for non-investment grade debt.	Neither the Panel nor the Commission have explained in any detail how debt betas would actually be estimated. Furthermore, the introduction of debt betas will increase the complexity and work required to estimate the WACC, for what is likely to be a negligible effect.
Estimation of asset betas – **Recommendation 27** Professor Myers recommends that, where possible, asset betas be estimated for industries. Industry betas should be estimated from returns on a portfolio of the sample companies, not as an average of individual company betas. Industry betas are	Conceptually Telecom considers that Recommendation 27 has several advantages over Recommendation 28. (i) It is the more sensible way to do it and is quite common in academic empirical

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useful benchmarks for estimating asset betas for individual companies. **Recommendation 28** Dr Lally recommends the Commission use individual firm data to estimate the betas for individual firms followed by averaging of the estimated (asset) betas to generate the industry estimate. **Recommendation 29** The Panel cautions the Commission to be mindful of anomaly events over the estimation period. **Recommendation 30** Professor Myers and Dr Lally recommend that for mature firms the Commission check beta estimates, for example with a plot of rolling five-year betas, to reveal any short-term anomalies. **Recommendation 31** Professor Myers recommends revising some of the discussion in the Draft Guidelines on the determinants of beta.	research. (ii) It would give a reasonably objective method for estimating the standard error of the beta estimate. (iii) It would reduce the temptation to manipulate the use of individual betas from the sample (e.g. by dropping "outliers", use of median versus mean, etc.).
Adjustments to beta for mean reversion – **Recommendation 32** Dr Lally recommends that the Commission not make Blume adjustments to equity betas; even Vasicek adjustments are undesirable if beta estimates are sought for more than one firm in an industry. **Recommendation 33** Professors Franks and Myers agree that some form of Bayesian adjustment to beta estimates may be sensible, but do not strongly recommend a specific adjustment method.	While the Panel has identified issues around beta adjustments, it has not giving any useful guidance about how to implement their suggestions.
Estimating betas for multi-divisional firms – **Recommendation 34** Professors Franks and Myers recommend that the Commission estimate betas for multi-division firms either by (a) reference to 'pure-play' comparators; (b) reference to the ratio of operating leverage and revenue sensitivity for the regulated and non-regulated aspects of the firm; or (c) econometric techniques that seek to identify the key drivers of beta in a sample of independent firms. **Recommendation 35** Dr Lally recommends approach (a) when suitable pure-play comparators exist and otherwise recommends deducing these pure-play betas from the betas	It is implicit in the Panel's discussion on betas that the sample firms will be drawn from the same industry as the regulated firm. However, in the Guidelines the Commission states that 'comparator firms' may include firms from "*..other sectors with comparable risk profiles.*" It then discusses feature of similarity. In Telecom's view the selection of comparator firms from other industries should be supported by rigorous empirical analysis (such as cluster analysis of returns, comparison of revenue

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of multi-divisional firms embodying such pure-plays. **Recommendation 36** Professor Myers emphasises the importance of clearly spelling out all the steps taken in choosing comparators and in making any necessary adjustments.	beta and operating leverage etc.) that verifies that these other firms do actually have comparable risk profiles, rather than the sample selection being based on subjective views. I t is noted that Recommendation 34(a) will often be difficult to apply. Recommendation 34(b) is not helpful as it stands, since it gives no indication of how to *"…disaggregate the group beta into one for the regulated and one for the unregulated businesses"*. Any disaggregation should be supported by a reconciliation back to the firm's observable beta. Recommendation 34(c) is reasonable, but would involve a greater level of cost and analysis, which may then be disregarded by the Commission The second part of Recommendation 35 (deducing pure-play betas from the betas of multi-divisional firms embodying such pure-plays) has previously been undertaken in some considerable detail by Telecom in the past and submitted to the Commission. However, the results of this analysis were more or less ignored by the Commission. If the Commission is to invite such analysis in future Telecom would first want some assurance from the Commission that the analysis would be taken seriously.

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Leverage – **Recommendation 37** Professor Myers recommends the Commission use actual rather than 'optimal' leverage when estimating the cost of capital for firms or industries, unless firms have adopted extremely high or low debt ratios. Book values rather than market values could be used if the firm is unlisted. **Recommendation 38** Dr Lally favours actual leverage when firms' actual costs are generally employed and 'optimal' leverage when efficient costs are generally employed with the latter estimated from the average leverage of firms in the relevant industry. **Recommendation 39** Professors Franks and Myers suggest that the Commission consider ring-fencing the regulated assets of the firm to protect them from bankruptcy and minimise the costs of distress. **Recommendation 40** Professors Myers and Franks suggest that in addition the Commission consider requiring firms to maintain investment-grade credit ratings and including lock up clauses for dividends when the debt is rated non investment grade.	Telecom favours use of actual leverage (or a rolling average of the same) rather than more subjective assessments by the Commission of "optimal leverage".
Estimation of the cost of debt - **Recommendation 41** Professor Myers recommends that debt premiums should be estimated from the spreads of plain-vanilla, medium-term new-issue bond yields vs. government bond yields of similar maturity. **Recommendation 42** Dr Lally recommends that a firm's allowed debt premium should be based upon debt with a term equal to the greater of the regulatory cycle and the actual term of firms' debt. **Recommendation 43** The Panel agrees that in most situations it is appropriate for the Commission to define the cost of debt in terms of promised rather than expected yield on debt. **Recommendation 44** Dr Lally recommends that the Commission include in the cost of debt any debt issue costs incurred by the firm. **Recommendation 45** Professor Myers recommends the Commission handle debt issue costs through the regulatory cash flows and not the WACC.	Telecom notes that the thin and illiquid nature of New Zealand's debt markets may make practical implementation of Recommendation 41 problematic. Telecom strongly disagrees with the Commission's past/current practice of estimating the debt premium for the same term as the regulatory period. The debt premium should be measured for the term that is the commercial norm, having regard to cost efficiency (including minimising amortised issuance costs) and prudent management of re-financing risk. In addition there should be allowance for the cost to swap or hedge the

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	underlying risk free rate to the same interest reset term as the regulatory period. In Telecom's view it is not practicable, or cost effective, for the debt margin itself to be swapped or hedged from the prudent borrowing term to the term of the regulatory period. With regard to the treatment of debt issuance costs, Telecom agrees with Dr Lally's Recommendation 44, that these costs be included in the cost of debt.
Taxation – **Recommendation 46** The Panel recommends that when firms face tax complications, such as tax losses, it is cleaner to treat taxation through the regulatory cash flows rather than the cost of capital rate. **Recommendation 47** Dr Lally recommends the Commission take into account uncertainty over the tax parameter *T* in the simplified Brennan Lally CAPM model.	Telecom notes that particular care is required in correctly modelling taxes when the regulatory calculations are based on (tilted) annuities, as is the case for the TSO.
Modelling estimation errors – **Recommendation 48** Dr Lally and Professor Franks recommend that the Commission take into account both sampling error and intrinsic variation when estimating WACC parameters. Professor Franks considers that judgment in this regard is unavoidable.	Two members of the Panel acknowledges the presence of both sampling error and intrinsic variation, but give no guidance as to how it might be taken into account.
Confidence intervals around point estimates – **Recommendation 49** The Panel agrees with the Commission's current approach of estimating standard errors for each variable underlying the WACC. However, Professors Myers and Franks recommend that when the Commission combines these parameters it frame its overall WACC estimate in terms of a 'plausible range' rather than in terms of standard deviations and percentiles, in acknowledgment of the numerous (parameter and model) uncertainties in the estimation process. **Recommendation 50** Professors Myers and Franks recommend that the Commission fully	Telecom concurs with the general approach to assessing a WACC range, but stresses that it a number of areas the WACC estimate is a result of the Commission deploying its judgement and is misleading to create the impression that the resulting range is derived from rigorous statistical analysis.

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describe any adjustments used in combining individual parameter estimates and determining a plausible WACC range. **Recommendation 51** Dr Lally favours the Commission's current practice of describing the uncertainty around the WACC estimate in terms of a standard deviation but it should accompany this with some qualitative recognition of additional sources of uncertainty.	
Use of Monte Carlo simulation for estimating WACC - **Recommendation 52** Professor Myers and Dr Lally consider that there would be no significant additional benefit to the Commission (over its present approach) in employing Monte Carlo simulation techniques to estimate WACC distributions.	Telecom does not advocate the systematic use of Monte Carlo analysis, but considers that it may have a role where the WACC input parameters have differing types of distribution or have non-zero correlations. In these situations it is a tool that will be simpler to apply rather than attempting to analytically derive the distribution function for the WACC range.
Choosing an overall WACC value – **Recommendation 53** Professors Myers and Franks agree with the Commission's policy of setting the WACC equal to, or greater than, the midpoint of the estimated range, in recognition of the asymmetric costs of setting the WACC too low. **Recommendation 54** Dr Lally recommends that the Commission choose WACC values that are strictly greater than the midpoint of the range. **Recommendation 55** Professor Franks recommends that the Commission evaluate how far above the midpoint of the range it moves on a case-by-case basis.	Telecom agrees with Recommendation 55, but the crucial issue is getting a realistic estimate of the width of the 'estimated range' and having a transparent policy for selecting a point estimate within this range. It is noted that estimation error is potentially large, and that variations in the width of the 'estimated range' could potentially dwarf variations due to disagreements over individual input parameters. The Panel does not give any useful advice on how to calculate this width having regard to all sources of uncertainty, nor how to choose a point estimate above the midpoint.
Treatment of asymmetric risks – **Recommendation 56** The Panel agrees that asymmetric risks are real, potentially have large impacts on value and profitability, and therefore should not be ignored by the	A difficulty with the Panel's recommendations on asymmetric risk (both Type I and Type II) is that similar points have, in principle, been

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Commission. **Recommendation 57** The Panel recommends that a reserve fund could be established to compensate firms for type I risk, with ex post top-ups (or redistributions) if the fund proves inadequate (runs into surplus). **Recommendation 58** Professor Myers recommends that the burden of proving asymmetric risks should not fall entirely on the firm, as argued in the Draft Guidelines. **Recommendation 59** Dr Lally recommends that since firms are best placed to assess the degree of type II asymmetric risk they face, they should be invited to submit an estimate of the allowance for the Commission's consideration. **Recommendation 60** Dr Lally and Professor Myers agree that the WACC distribution simply reflects uncertainty over the true WACC value, and therefore should not be used to deal with the unrelated issue of an appropriate allowance for asymmetric risk. **Recommendation 61** Professor Franks agrees in principle with Recommendation 60 but would not exclude such an adjustment if alternative provisions for type I asymmetric risk cannot be agreed.	acknowledged by the Commission. However, the Commission has imposed (and proposes to continue imposing) such a high 'burden of proof' on regulated firms that no explicit allowance or recognition is ever actually made. This 'burden of proof' is inconsistent with the approach the Commission itself adopts is determining other WACC inputs (for example, in proposing that growth options created offset the value of timing options forgone and in identifying and selecting 'comparable' firms for beta analysis).
Type II risk and timing options – **Recommendation 62** Professor Myers recommends that the Commission only compensate firms for timing options extinguished in response to type II risk (asymmetric options); timing options exercised in the face of symmetric risk are a manifestation of market power, and regulators should not provide compensation for these. **Recommendation 63** Professor Myers suggests that the Commission provide ex ante compensation for type II asymmetric risk via the firm's allowed cash flows. **Recommendation 64** Dr Lally agrees that timing options exercised in the face of symmetric risk are a manifestation of market power and regulators should not provide compensation for these. He also agrees that type II asymmetric risk potentially warrants compensation. However, he considers that the crucial feature of the latter case is the asymmetry in the cash flows rather than the presence of a timing option. **Recommendation 65** Professor Franks recommends that any allowances for extinguished	

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timing options be made through the regulatory cash flows. **Recommendation 66** Professor Franks recommends that the Commission seek impartial advice when assessing the size of any claimed option values. Further, he suggests the Commission could initiate, or encourage industry groups to commission, academic studies into the importance of type II asymmetric risk and timing options in specific industries; precedent from other regulators on the treatment of such issues may also be instructive.	
Other real options – **Recommendation 67** Dr Lally recommends that the Commission should not make any deductions for growth options, but should take into account the offsetting effect of abandonment options when making an assessment of type II asymmetric risk. **Recommendation 68** Professors Myers and Franks acknowledge that abandonment options can mitigate type II asymmetric risk, but Professor Franks sees no way of quantifying this offset without conducting a detailed study of the issue. **Recommendation 69** Professor Myers recommends the Commission may wish to reward firms for exercising (ex ante) optimal flexibility.	It is not at all certain that the Commission would apply the same evidential rigour in quantifying these 'offsetting deductions' as it expects affected firms to undergo in arguing for real option 'increments' to allowed returns.
Costs of financial distress – **Recommendation 70** The Panel recommends that, in general, the Commission not provide any explicit adjustment for financial distress costs, provided: (a) regulated firms operate at reasonable gearing levels; (b) the Commission does not claw back all the tax benefits of leverage; and (c) an investment grade debt rating is maintained by firms. **Recommendation 71** Dr Lally notes that the use of promised rather than expected yields on debt within the WACC implicitly represents some recognition of financial distress costs. **Recommendation 72** The Panel considers that the Commission could make adjustments for distress costs in exceptional circumstances, on a case-by-case basis.	Telecom notes that in the Guidelines the Commission is silent on the Panel's Recommendation 70(b), that the Commission not claw back all of the tax benefits of leverage.
Resource constraints – **Recommendation 73** Professor Franks and Dr Lally recommend that the Commission not adjust the cost of capital for resource constraints.	

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Recommendation 74 Professor Myers recommends that the Commission not give any extra allowance for capital constraints, but considers compensation could be warranted for constraints on intangible assets with a real opportunity cost, such as constraints on the time of skilled technical staff.	
Overall cost of capital sanity check - **Recommendation 75** Professor Franks recommends that the Commission examine the long term funds flow position of the regulated firm to see if it can finance its investment program and pay reasonable dividends, assuming reasonable gearing, as a sanity check on the allowed cost of capital. In the event of a financeability problem other mechanisms should be explored that are NPV-neutral, e.g. re-phasing prices before any adjustment is made to the cost of capital. **Recommendation 76** Dr Lally favours a reduction in the notional leverage level to resolve any financeability concerns, because significant re-phasing of prices affects the relative burden on the various cohorts of consumers over the life of the assets.	Recommendation 76 in effect proposes that if the regulated firm can't service its debt using the calculated WACC then the 'answer' is simply to assume that it has less debt (which for practical purposes would mean a firm would need to issue new equity in order to reduce its debt). However, if financeability is a problem then a higher WACC might still be expected by investors, even for an all equity finance firm. Recommendation 76 avoids addressing the underlying issue of why the regulated firm might have a financeability problem. On the other hand Recommendation 75, to consider re-phasing prices, is a sensible solution to the financeabiulity problems that can arise in the early years of long life assets partly (and prudently) funded by debt.