Determining the cost of capital for the UCLL and UBA price reviews

Technical consultation paper

Date: 7 March 2014

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List of defined terms and abbreviations

CAPM	Capital asset pricing model
EC	European Commission
FPP	Final pricing principle
IMs	Input methodologies, established under Part 4 of the Commerce Act
MEA	Modern equivalent asset
MRP	Market risk premium
PwC	PricewaterhouseCoopers
TAMRP	Tax-adjusted market risk premium
TCSD	Term credit spread differential
TSLRIC	Total service long run incremental cost
UBA	Unbundled bitstream access
UCLL	Unbundled copper local loop
WACC	Weighted average cost of capital

Purpose of this paper

1. This technical consultation paper invites submissions on our proposed framework for estimating the weighted average cost of capital (WACC) for the unbundled copper local loop (UCLL) and unbundled bitstream access (UBA) price reviews. Specifically, this paper:

    1.1 seeks views on the approach to estimating certain WACC parameters (specified in paragraph 14) for UCLL and UBA;

    1.2 discusses linkages with the cost of capital input methodologies (IMs) we determined under Part 4 of the Commerce Act 1986; and

    1.3 highlights issues we will be seeking independent expert advice on.

2. This paper does not contain proposed values for each of the parameters used to estimate WACC for the UCLL and UBA services. Interested parties will have a further opportunity to submit on WACC, including the specific parameter values we adopt, in response to our draft UCLL and UBA price review determinations.

Executive summary

3. We are currently conducting price reviews for the UCLL and UBA services under the Telecommunications Act 2001.[1] We are required to set cost-based access prices for UCLL and UBA using a total service long run incremental cost (TSLRIC) methodology.

4. WACC is one of the key inputs to the TSLRIC models for UCLL and UBA. Given the similarities in the process for the two pricing reviews, this consultation paper covers WACC for both the UCLL and UBA services.

5. When forming the views expressed in this document, we have considered the submissions and cross-submissions on WACC we received in response to the UCLL final pricing principle (FPP) process and issues paper.[2] That paper raised several high-level questions regarding cost of capital.

6. This paper does not address all of the WACC-related issues raised in submissions on the UCLL and UBA price reviews. It addresses only those issues which we have reached preliminary views on. We are yet to form views on other issues, including

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[1] For further information see http://www.comcom.govt.nz/regulated-industries/telecommunications/standard-terms-determinations/unbundled-copper-local-loop-service/ucll-final-pricing-principle/ and http://www.comcom.govt.nz/regulated-industries/telecommunications/standard-terms-determinations/unbundled-bitstream-access-service/uba-final-pricing-principle-price-review/.

[2] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), p. 42-45.

asset beta, leverage, and the implied long-term credit rating, which we are seeking independent expert advice on.[3]

7. We will consider any submissions, and supporting evidence, we receive in response to this paper, alongside our independent expert advice, when reaching our draft decisions on WACC for the UCLL and UBA FPPs. There will be a further opportunity to submit on WACC, including the specific parameter values we adopt, in response to the draft UCLL and UBA price review determinations.

We intend to use the cost of capital IMs as the starting point for determining WACC for UCLL and UBA

8. We intend to use the cost of capital IMs, which currently apply to regulated electricity lines services, gas pipeline services and specified airport services, as the starting point when estimating WACC for the UCLL and UBA services. The cost of capital IMs were developed through an extensive consultation process involving a range of stakeholders, and were not overturned in merits appeals to the High Court.

9. Although the cost of capital IMs and the UCLL and UBA price review determinations are set under different legislation, our view is that the approach to estimating WACC in the IMs is also appropriate for the telecommunications sector. We see no reason to take a different approach regarding the returns investors require between the relevant sectors. However, when estimating WACC for UCLL and UBA, certain parameter values will reflect differences in the telecommunications sector (eg, asset beta).

10. Consistent with the analysis and reasons in the cost of capital IMs, we intend to use the simplified Brennan-Lally capital asset pricing model (CAPM) to estimate the cost of equity. Submissions on the UCLL FPP process and issues paper generally supported this approach.

11. The cost of capital IMs require some WACC parameters to be tailored to the particular industry in question, while other parameters apply to all industries. For example:

    11.1 asset beta, leverage, and the implied long-term credit rating are sector-specific; and

    11.2 other parameters, such as the risk-free rate, tax-adjusted market risk premium (TAMRP) and debt issuance costs, apply across sectors.

We are consulting separately on whether we should review or amend the cost of capital IMs

12. We are currently consulting separately on whether we should review or amend specific aspects of the cost of capital IMs.[4] That separate consultation paper seeks

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[3] In the cost of capital IMs we estimated asset beta and leverage using a sample of comparator firms. This approach may be challenging for the UCLL and UBA FPPs, due to likely difficulties in finding suitable comparators.

views on whether we should amend the WACC percentile (eg, mid-point or 75th percentile) used in regulation under Part 4 of the Commerce Act.[5] In particular, that paper seeks views on the case for setting WACC above the mid-point estimate, to reduce the risk (arising from uncertainty in parameter estimates) that the WACC will not provide sufficient investment incentives to meet the long-term benefits of consumers.

13. Although the separate consultation referred to in paragraph 12 above is limited to our approach under the IMs, telecommunications companies are also welcome to submit. We will consider relevant submissions received in response to the cost of capital IMs consultation paper when reaching our draft decisions for the UCLL and UBA FPPs.

We invite submissions on our proposed approach to estimating WACC for UCLL and UBA

14. In response to this paper, we invite submissions, supported by evidence, on:

   14.1 the approach to estimating, and specific values for, asset beta, leverage and the implied long-term credit rating for the UCLL and UBA price reviews;

   14.2 whether we should set WACC above or below the mid-point estimate for UCLL and UBA (and if so, to what extent); and

   14.3 whether we should apply a term credit spread differential (TCSD) allowance when determining the cost of capital for UCLL and UBA.

15. As noted in paragraph 11 above, parameters such as the risk-free rate, tax-adjusted market risk premium (TAMRP) and debt issuance costs, apply across sectors. We intend to use the methodology and/or values specified in the IMs when estimating these parameters. If you disagree with this approach, we expect submissions to propose alternative approaches and parameter values, and explain in detail why the proposed alternative is more suited to the telecommunications sector.

16. Submissions on this consultation paper are due by **5pm Friday 28 March 2014**. Please email submissions to telco@comcom.govt.nz.

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4   Commerce Commission "Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies" (20 February 2014). http://www.comcom.govt.nz/regulated-industries/input-methodologies-2/further-work-on-wacc/.

5   This separate consultation process is intended to address uncertainty regarding our approach under Part 4, introduced by concerns raised by the High Court and several consumer groups.

WACC is a key input when modelling forward-looking costs for UCLL and UBA

17.   The cost of capital is the financial return investors require from an investment given its risk. Investors have choices, and will not invest in an asset unless the expected return is at least as good as the return they would expect to get from a different investment of similar risk. The cost of capital is an estimate of that rate of return.

18.   There are two main types of capital: debt and equity capital. Both have a cost from the perspective of the entity that is seeking funds from investors. For debt, it is future interest payments. For equity, it is the expectation of dividend payments by the firm, and where profits are retained and reinvested, the expectation of larger dividend payments by the firm sometime in the future.

19.   WACC reflects the cost of debt and the cost of equity, and the respective portion of each that is used to fund an investment.

20.   WACC is one of the key inputs to the TSLRIC cost model(s) for UCLL and UBA. WACC is used to calculate the return on capital used in setting cost-based prices for these services. When setting TSLRIC prices for UCLL and UBA, WACC is a forward-looking estimate of the cost of capital.[6]

21.   Given the similarities between the pricing reviews for UCLL and UBA, this consultation paper covers WACC for both services.

22.   Although we are consulting separately on WACC, we recognise there may be some interdependencies with other elements of TSLRIC modelling for the UCLL and UBA services.[7] Where such interdependencies exist we have highlighted them in this paper.

23.   The following sections describe our proposed framework for determining the WACC for UCLL and UBA, including how we intend to estimate specific parameters. We welcome views, supported by evidence, on our proposed approach.

The cost of capital IMs are our proposed starting point for determining WACC for UCLL and UBA

24.   We intend to use the cost of capital IMs, developed by the Commission under Part 4 of the Commerce Act 1986, as the starting point for determining WACC for the UCLL and UBA FPPs. This section briefly describes the cost of capital IMs, and the reasons why we intend to use them as the starting point when setting the WACC for UCLL and UBA.

IMs set the upfront rules applying to regulation under Part 4 of the Commerce Act

25.   In New Zealand, electricity lines services, gas pipeline services, and specified airport services are regulated under Part 4 of the Commerce Act. We are required to

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[6]   The definition of TSLRIC in Schedule 1 of the Telecommunications Act refers to "forward-looking costs".

[7]   For example, see Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 29-31.

determine 'input methodologies' to be applied when implementing regulation under Part 4.

26. The IMs set the upfront regulatory rules, processes and requirements that apply under Part 4 of the Commerce Act. The main purpose of the IMs is to promote certainty for suppliers and consumers regarding how regulation will be applied.

27. The IMs were determined in December 2010, and describe our approach to matters such as:[8]

   27.1 cost of capital;

   27.2 valuation of assets, including depreciation, and treatment of revaluations;

   27.3 allocation of common costs, including between activities, businesses, consumer classes, and geographic areas; and

   27.4 treatment of taxation.

**We intend to use the cost of capital IMs as the starting point for determining WACC for UCLL and UBA**

28. Our view is that the analysis and reasons in the cost of capital IMs provide the appropriate starting point for determining the WACC for UCLL and UBA price reviews. Submissions on the UCLL FPP process and issues paper generally supported this approach.[9]

29. The key components of the cost of capital IMs are summarised in Figure 1 below. Further information regarding our approach to cost of capital under Part 4 of the Commerce Act is available in the IMs reasons papers.[10]

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[8] The current cost of capital IMs applying to electricity distribution businesses, Transpower, gas pipeline businesses and the three main international airports are contained in the following determinations: *Electricity Distribution Services Input Methodologies Determination*, NZCC 34/12, 15 November 2012; *Transpower Input Methodologies Determination*, NZCC 17/12, 29 June 2012; *Gas Distribution Services Input Methodologies Determination 2012*, NZCC 23/13, 16 December 2013*; Gas Transmission Services Input Methodologies Determination 2012*, NZCC 3/13, 25 February 2013; and *Commerce Act (Specified Airport Services Input Methodologies) Determination 2010*, NZCC 709, 22 December 2010.

[9] Chorus "Submission in response to the Commerce Commission's process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the final pricing principle" (14 February 2014), p. 58, paragraph 288; Telecom "Process and issues paper for determining a TSLRIC UCLL price" (14 February 2014), p. 49, paragraph 172; Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 29; Vodafone "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" (14 February 2014), p. 29, paragraph I1.2.

[10] Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010); Commerce Commission "Input methodologies (airport services): Reasons paper" (22 December 2010); Commerce Commission "Input methodologies (Transpower): Reasons paper" (22 December 2010).

Figure 1: Summary of cost of capital IMs
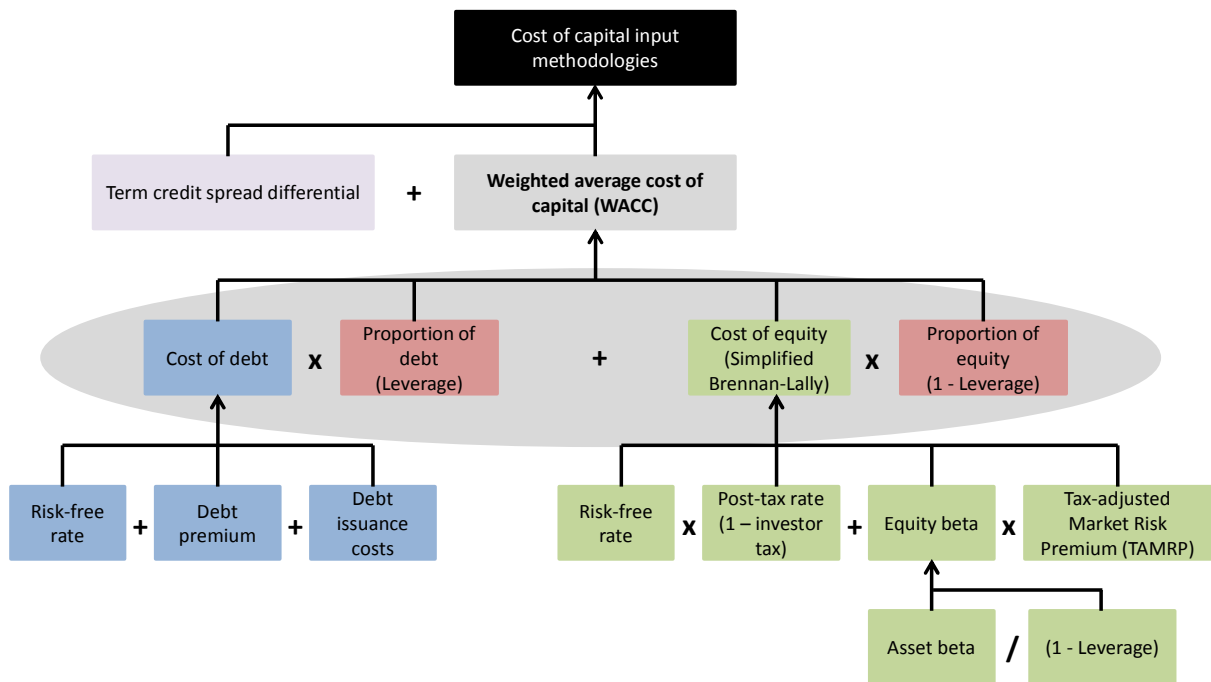
30. Although Telecom agreed that the cost of capital IMs provide the logical starting point, it submitted that different approaches to estimating the cost of capital should always be under consideration. It noted that the rate of technological change in telecommunications is much greater than the industries covered by the cost of capital IMs, so the Commission should remain open to other approaches.[11]

31. We note that the cost of capital IMs and the WACC for the UCLL and UBA price review determinations are used in different legislative contexts. The Telecommunications Act uses a TSLRIC methodology to set service-based access prices, whereas Part 4 of the Commerce Act uses a building blocks approach to setting regulated price-quality paths.

32. However, in setting a WACC for the UCLL and UBA FPPs, we do not think that anything turns on this difference. WACC is the financial return investors require from an investment given its risk. In our view, the approach to estimating this return should logically be consistent across sectors (although the specific values for some parameters are likely to differ). Nothing in the Telecommunications Act or Commerce Act frameworks alters this logic.

33. While we remain open to other approaches, we note that the cost of capital IMs were developed through a thorough consultation process involving a range of stakeholders (including Telecom, prior to structural separation). The process effectively began when we issued draft cost of capital guidelines in October 2005,

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[11] Telecom "Process and issues paper for determining a TSLRIC UCLL price" (14 February 2014), p. 50, paragraph 174.

and ended with the IMs determination in December 2010.[12] We established an expert panel, comprised of Professor Julian Franks, Dr Martin Lally and Professor Stewart Myers, to provide recommendations on our approach to cost of capital.[13]

34.   If interested parties disagree with applying certain aspects of the cost of capital IMs for the UCLL and UBA FPPs, we expect submissions to propose alternative approaches, and explain in detail why the proposed alternative is more suited to the telecommunications sector.

The cost of capital IMs were not overturned by the High Court

35.   The cost of capital IMs were recently tested in merits appeals, and were not overturned by the High Court. On 11 December 2013, the Court delivered its judgment on all the merits appeals of the IMs. The Court dismissed all the appeals against our cost of capital IMs.[14]

36.   However, the Court raised several concerns about the cost of capital IMs in its judgment, notably:

36.1   the appropriateness of using an estimate of WACC above the mid-point estimate to set price-quality paths;

36.2   whether to adopt a 'split' (or 'tiered') cost of capital;

36.3   our rationale for a TCSD allowance; and

36.4   whether to retain the simplified Brennan-Lally CAPM, given the effect of the 'leverage anomaly'.

37.   As noted in paragraph 12 above, we are currently consulting separately on the concerns raised by the Court.[15] We also note that the Major Electricity Users' Group (MEUG) has sought leave to appeal against the High Court's decision to not allow its appeal against the use of the 75th percentile.

We intend to use the simplified Brennan-Lally CAPM to estimate the cost of equity

38.   Under the cost of capital IMs, the simplified Brennan-Lally CAPM is used to estimate the cost of equity.[16] This version of the CAPM reflects New Zealand's taxation

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[12]   See http://www.comcom.govt.nz/regulated-industries/input-methodologies-2/cost-of-capital/ for further details regarding the development of the cost of capital input methodologies. The October 2005 draft cost of capital guidelines, and the June 2009 revised draft guidelines, both covered telecommunications.

[13]   J. Franks, M. Lally and S. Myers "Recommendations to the New Zealand Commerce Commission on an Appropriate Cost of Capital Methodology" (18 December 2008).

[14]   *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC (11 December 2013).

[15]   Commerce Commission "Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies" (20 February 2014). See paragraphs 99 to 100 below for further discussion.

[16]   For detailed discussion, see Appendix H2 of the IMs reasons paper for electricity distribution and gas pipeline services.

system. Specifically, it recognises the presence of dividend imputation credits and the general absence of taxes on capital gains.

39. We intend to use the simplified Brennan-Lally CAPM to estimate the cost of equity for the UCLL and UBA price reviews. Submissions on the UCLL FPP process and issues paper generally supported this approach.[17] For example, Telecom submitted:[18]

> While the Brennan-Lally model is not without controversy, for practical reasons, we agree that the widespread use of the Brennan-Lally model in the New Zealand market, and the Commission's use of it across regulated firms in New Zealand mean that it is a reasonable basis for use in calculating the cost of capital for the UCLL service.

40. Consistent with the analysis and reasons in the IMs decisions, we also intend to use the simplified beta leveraging formula when applying the simplified Brennan-Lally CAPM. This approach assumes a debt beta of zero.[19]

41. In developing the cost of capital IMs, we considered which model should be used to estimate the cost of equity in detail. Although the simplified Brennan-Lally CAPM has imperfections, this model best fits the particular features of the New Zealand taxation system. It also has widespread support in New Zealand.[20]

42. In its judgment on the IMs merits appeals, the High Court stated that, given the acceptance by parties of the 'leverage anomaly' in the simplified Brennan-Lally CAPM, we might give consideration to alternative models in future.[21] Other CAPM models, such as the classic CAPM, do not suffer the leverage anomaly to the same extent as the simplified Brennan-Lally model. However, alternative models are also problematic, because they do not reflect New Zealand's taxation system as well as the simplified Brennan-Lally CAPM.[22]

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[17] Chorus "Submission in response to the Commerce Commission's process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the final pricing principle" (14 February 2014), p. 63, paragraph 303; Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 32-33.

[18] Telecom "Process and issues paper for determining a TSLRIC UCLL price" (14 February 2014), p. 51, paragraph 178.

[19] Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (December 2010), p.433, paragraphs H3.61-H3.62.

[20] Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (December 2010), p.147-148, paragraph 6.4.19.

[21] *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC (11 December 2013), paragraph 1646. Under the simplified Brennan-Lally CAPM, the WACC increases linearly with leverage. This implies that, if the model is correct, firms would opt for zero leverage to minimise their cost of capital, which is inconsistent with the fact that firms do borrow.

[22] As discussed in paragraph 92 below, in the cost of capital IMs we set leverage as the average of the sample of comparator firms used to estimate asset beta. We used this approach to address the leverage anomaly.

43. Given we have proposed to complete the UBA price review by 1 December 2014, we do not propose to address the Court's comments regarding the simplified Brennan-Lally CAPM during this process.[23]

Our current views on WACC parameters for the UCLL and UBA price reviews

44. WACC can be expressed on a pre-tax or post-tax basis. A pre-tax WACC is referred to as a 'vanilla' WACC, and includes the cost of debt before tax. A post-tax WACC, on the other hand, includes the after tax cost of debt.

45. Equations for calculating vanilla and post-tax WACCs are shown below.

$$Vanilla\ WACC = Cost\ of\ debt \times Leverage + Cost\ of\ equity \times (1 - Leverage)$$

$$Post\ tax\ WACC = Cost\ of\ debt\ (after\ tax) \times Leverage + Cost\ of\ equity \times (1 - Leverage)$$

46. We have used the cost of capital IMs as the starting point for each of the WACC parameters discussed in this consultation paper. The cost of capital IMs require some parameters to be tailored to the particular industry in question, while other parameters apply to all industries. For example, when using the cost of capital IMs as the starting point to estimate WACC for UCLL and UBA:

    46.1 asset beta, leverage, and the implied long-term credit rating will need to be set specifically for the UCLL and UBA services; and

    46.2 other parameters, such as the risk-free rate, TAMRP and debt issuance costs, apply across sectors, so we will need compelling reasons to depart from the approach adopted in the IMs. For these parameters, we are open to submissions providing specific reasons (including supporting evidence) why a different approach should apply for UCLL and UBA.

47. Our current views regarding each of the parameters to be used to estimate WACC for the UCLL and UBA FPPs are described below.

Approach to estimating the cost of debt

48. The cost of debt can be expressed as the sum of the risk-free rate and the additional debt premium a firm must pay due to a lender's assessment of the firm's risk of default, compared to the risk-free rate. The cost of capital IMs also include an allowance for the costs of issuing debt.

49. The approach to estimating the cost of debt under the IMs is shown in the equation below.

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[23] The Telecommunications (TSO, Broadband, and Other Matters) Amendment Act requires us to make reasonable efforts to complete the UBA price review determination by 1 December 2014. For further details regarding our proposed process for the UBA price review determination see Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle: Process and issues paper" (7 February 2014).

$$Cost\ of\ debt = risk\ free\ rate + debt\ premium + debt\ issuance\ costs$$

Risk-free rate

50.   The risk-free rate is the rate of interest expected when there is no risk of default. Debt issued by the New Zealand Government and denominated in New Zealand dollars is generally considered to be free of default risk. The rate of interest on Government-issued debt can generally be readily observed from the trading on the debt market.

51.   To approximate the risk-free rate, we determined in the cost of capital IMs that:[24]

    51.1   New Zealand Government bonds are a good risk-free proxy;

    51.2   current interest rates will be used (eg, rates around the time the cost of capital is determined for each regulatory period), as this leads to estimated costs of debt and equity that more closely reflect changes in expectations in the financial markets;

    51.3   yields to maturity, rather than spot rates, will be used;

    51.4   a one calendar month averaging period will be adopted to strike an appropriate balance between the need to obtain a current market estimate of the risk-free rate, and the desire that the estimate be representative of its level more generally;

    51.5   the risk-free rate parameter will be updated every time we estimate the cost of capital for regulatory purposes; and

    51.6   the term of the risk-free rate will match the regulatory period.

52.   Matching the term of the risk-free rate to the regulatory period avoids under or over compensating suppliers, because it:[25]

    52.1   recognises that prices will be reset at the beginning of each regulatory period based on the then prevailing risk-free rate;

    52.2   ensures that suppliers are not compensated for risks they are not exposed to, and therefore do not bear. Suppliers are not exposed to the risk of changes in the risk-free rate beyond the term of the regulatory period.

53.   Consistent with the analysis and reasons in the IMs decisions, our view is that the term of the risk-free rate for the UCLL and UBA FPPs should match the length of the

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[24]   Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), p. 434-446, paragraphs H4.1-H4.59.

[25]   Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), p. 439-446, paragraphs H4.29-H4.59.

regulatory period. However, we are yet to form a view on the appropriate length of the regulatory period for the UCLL and UBA FPPs.[26]

Debt premium

54.   The second component of the cost of debt, which is added to the risk-free rate, is the debt premium.

55.   The debt premium is the additional interest rate (above the risk-free rate) a firm must pay due to a lender's assessment of the firm's risk of default. It reflects the additional risk an investor is exposed to when lending to a borrower other than the government, plus an allowance for the inferior liquidity of corporate bonds, relative to government bonds.[27]

56.   The cost of capital IMs specify a service-specific (as opposed to supplier-specific) debt premium.[28] The cost of capital IMs are based on a notional debt premium, reflecting notional leverage and a notional credit rating.

57.   Under the IMs, the debt premium is estimated using credit rated, publicly traded corporate bonds denominated in New Zealand dollars.[29]

58.   When estimating the debt premium for the UCLL and UBA FPPs, we will need to determine an appropriate:

        58.1   long-term credit rating; and

        58.2   term to maturity.

59.   The appropriate long-term credit rating is likely to depend on our approach to asset beta and leverage. This is consistent with the submission from Frontier Economics, who noted that we should ensure that the leverage assumption supports the credit rating assumption underpinning the debt premium estimate.[30]

60.   We are seeking independent expert advice on asset beta, leverage, and the implied long-term credit rating for the UCLL and UBA FPPs. Interested parties will have an opportunity to submit on this advice, and our approach to estimating WACC, in response to our UBA and UCLL FPP draft decisions. We will consider any submissions (and evidence) that are provided, alongside our independent expert advice, when reaching a draft decision.

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[26]   Section 52 of the Telecommunications Act requires us to determine the expiry date of a pricing review determination. This means we are required to determine the length of the regulatory period for the UCLL and UBA FPPs.

[27]   Financially strong firms can borrow at a lower debt premium than weaker firms or financially distressed firms.

[28]   Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraphs H5.3, H5.27.

[29]   Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraphs H5.29, H5.42.

[30]   Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 32.

61. Consistent with the risk-free rate, our view is that the term to maturity for the debt premium should match the length of the regulatory period. This will ensure internal consistency when estimating the WACC for the UCLL and UBA services.

62. In its submission on the UCLL FPP process and issues paper, Chorus argued that the WACC in the first year of the regulatory period should be based on a cost of debt that reflects an average of debt costs over the preceding 10 years.[31] Chorus' submission implies that both the risk-free rate and debt premium should be based on 10-year trailing average.

63. Our reasoning and analysis in the cost of capital IMs concluded that:

    63.1 the term of the cost of capital should match the length of the regulatory period, to avoid under or over compensating regulated suppliers; and

    63.2 current, rather than historic interest rates should be used, to more closely reflect changes in expectations in financial markets.

64. The judgment from the High Court on the IMs merits appeals supported the principle that the term of the risk-free rate should align with the regulatory period.[32]

65. Further, we believe the forward-looking requirement for the UCLL and UBA FPPs places emphasis on incentivising efficient investment decisions.[33] This suggests that current, rather than historic, interest rates should be used to estimate the cost of capital for the UCLL and UBA FPPs.

66. Consequently, our view is that Chorus' proposed approach (referred to in paragraph 62 above) is not the correct starting point for estimating the cost of debt for the UCLL and UBA FPPs.

Debt issuance costs

67. Firms incur issuance costs when raising new debt, in addition to interest, which are not reflected in the debt premium. The IMs include debt issuance costs in the WACC for regulated suppliers.

68. The cost of capital IMs include an allowance for debt issuance costs of 0.35% per annum, based on amortising debt issuance costs over a five year period (to match the term of the debt premium). The IMs also provide for debt issuance costs of 0.44% per annum and 0.58% per annum, for regulatory periods of four years and three years, respectively. We estimated the allowance for debt issuance costs based

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[31] Chorus "Submission in response to the Commerce Commission's process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the final pricing principle" (14 February 2014), p. 59-60, paragraphs 292.1-292.4.

[32] *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC (11 December 2013), paragraphs 1268 and 1287.

[33] See the definition of TSLRIC in Schedule 1 of the Telecommunications Act.

on the cost of issuing publicly traded bonds, as this was the only publicly available data.[34]

69.   For the UCLL and UBA FPPs, we intend to estimate the allowance for debt issuance costs by amortising the cost of issuing publicly traded bonds (based on the data we relied on in the IMs) over the length of the regulatory period.[35]

Approach to estimating the cost of equity

70.   Under the simplified Brennan-Lally CAPM, the expected cost of equity is a function of the risk-free rate (after tax) plus the equity beta multiplied by the TAMRP. The approach to estimating the cost of equity under the IMs is shown in the equation below.

$$Cost\ of\ equity = Risk\ free\ rate\ \times (1 - investor\ tax\ rate) + Equity\ beta \times TAMRP$$

Risk-free rate

71.   We intend to adopt the same approach to estimating the risk-free rate for both the cost of equity and the cost of debt. This will ensure that the overall cost of capital is estimated using a consistent approach, and matches the regulatory period to which it will be applied.

Tax-adjusted market risk premium

72.   The market risk premium (MRP) represents the additional return, over and above the risk-free rate, that investors require to compensate them for holding a portfolio of average risk. Under the simplified Brennan-Lally CAPM, the MRP is adjusted for tax faced by the investor on equity returns (hence, tax-adjusted MRP, or TAMRP).

73.   The cost of capital IMs use a TAMRP of 7.0%. In reaching this figure, we considered a range of information, including both forecast and historic estimates of the TAMRP.[36]

74.   We concluded that there is no case for changing the TAMRP estimate on a regular basis, and see no reason to take a different approach for the UCLL and UBA FPPs.[37] Stability regarding the TAMRP is consistent with the practice of many advisors (for example, PwC).[38]

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[34] Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraph 6.3.37.

[35] If the length of the regulatory period is either three, four or five years, the allowance for debt issuance costs will match the corresponding value used in the IMs.

[36] Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraph 6.5.9.

[37] Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraph H7.43.

[38] In the IMs reasons paper for electricity distribution and gas pipeline services, published in December 2010, we noted that PwC had not publicly updated its estimate of TAMRP since 2002 (see paragraph H7.43).

75. The TAMRP does not vary across sectors, so the estimate used in the cost of capital IMs is relevant to UCLL and UBA. However, the TAMRP in the IMs was set based on a five year term. If the term of the risk-free rate for the UCLL and UBA FPPs differs from five years, further analysis may be required.

76. Chorus submitted that the methodology used in the cost of capital IMs is "…inadequate in its use of a current value of the risk-free rate in combination with a historical average market risk premium":[39]

> The Commission should not assume that its cost of capital input methodologies market risk premium of 7.00% is necessarily a reasonable estimate under current market conditions or, even if it is, that it will continue to be so while the input methodologies are in force. It should instead estimate the prevailing TAMRP by reference to current estimates of the forward-looking required return on the market less the current forward-looking risk free rate. That is, the market risk premium should be regularly re-estimated (as the expected return on the market less the tax adjusted prevailing risk free rate) in the same way that the debt risk premium is regularly re-estimated.

77. We considered using a forward-looking (*ex ante*) approach to estimating TAMRP in the IMs. However, the two *ex ante* approaches to estimating TAMRP that we identified, the discounted cash flow model and results from surveys of academics and practitioners, both have significant limitations.[40] Therefore, we relied on both *ex post* and *ex ante* approaches when estimating the TAMRP.

78. We propose to use a TAMRP of 7.0% for the UCLL and UBA FPPs, subject to our decision regarding the term of the risk-free rate.

Equity beta

79. Beta is a measure of exposure to systematic risk. Systematic risk measures the extent to which the equity returns on a company fluctuate, relative to the equity returns in the stock market as a whole.

80. If an investment has no systematic risk (ie, it shows no correlation with returns on the market), its equity beta will be zero. If an investment in the equity of a company is of average risk, the equity beta will be one. An equity beta of one means that the premium over the risk-free rate that equity investors expect will be the same as the average for the overall market (the TAMRP).

81. As indicated in paragraph 40 above, we intend to use the simplified beta leveraging formula when applying the simplified Brennan-Lally CAPM for the UCLL and UBA FPPs. This means that:

    81.1   the debt beta is zero; and

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[39] Chorus "Submission in response to the Commerce Commission's process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the final pricing principle" (14 February 2014), p. 61-62, paragraphs 296 and 298.

[40] Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraphs H7.22-H7.24.

81.2   *equity beta = asset beta/(1 - leverage).*

82.   In the cost of capital IMs we estimated asset beta empirically, using a sample of relevant comparator firms. However, this approach may be challenging for the UCLL and UBA services. The multi-divisional/multi-service nature of telecommunications companies means that, when considering possible comparators, it is likely to be difficult to empirically isolate beta for services with similar exposure to systematic risk as UCLL and/or UBA.[41]

83.   Submissions on the UCLL FPP process and issues paper highlighted likely difficulties in estimating asset beta. For example:

83.1   Chorus submitted that, in order to be considered to have similar risk, any comparator should be: (i) a structurally separated fixed-line network business, (ii) face competing (subsidised) investments in fibre infrastructure, and (iii) face TSLRIC style regulation of the kind actually employed by the Commerce Commission. It stated that very few, if any, businesses are similar to Chorus in these respects.[42] Other submitters, such as Frontier Economics, referred to different criteria that could be used to identify suitable comparators.[43]

83.2   Telecom submitted that it "…has not yet been able to identify sufficiently comparable specific comparator firms that it considers would be appropriate to use in estimating beta for the UCLL service". It noted that "…there are very few direct potential listed comparators available".[44]

83.3   Telecom also submitted that choices in modelling approach, such as the modern equivalent asset (MEA), scorched node assumptions, optimisation, performance adjustments and depreciation will all have an influence on beta.[45]

83.4   Frontier Economics submitted that the approach to beta could vary depending on the scope for on-going network optimisation, uncertainty over future demand, and the choice of MEA.[46]

84.   Chorus submitted that an alternative approach (to using a sample of comparator firms) is to estimate an equity beta directly based on Chorus' market data. It stated

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[41]   A company's overall beta can be viewed as a weighted average of the betas of its component businesses. The risk attached to a company's different businesses may vary considerably, and the weighted average gives the overall risk of the firm.

[42]   Chorus "Submission in response to the Commerce Commission's process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the final pricing principle" (14 February 2014), p. 63, paragraphs 305-307.

[43]   Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 31-32.

[44]   Telecom "Process and issues paper for determining a TSLRIC UCLL price" (14 February 2014), p. 51, paragraphs 180-181.

[45]   Telecom "Process and issues paper for determining a TSLRIC UCLL price" (14 February 2014), p. 52, paragraphs 184-185.

[46]   Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 30.

that this would ensure that the beta estimate is directly comparable to Chorus, and avoid any potential issues with comparing equity beta estimates between different financial markets.[47]

85. However, Chorus' market data only dates back to late 2011, following the structural separation of Telecom.[48] Further, as noted by Frontier Economics, regulators generally prefer to rely on a sample of firms (to minimise the effect of estimation error from any single comparator) when estimating beta.[49]

86. Overseas regulators have undertaken extensive analysis of beta estimates when determining TSLRIC prices for similar services to UCLL and UBA. Therefore, decisions from overseas telecommunications regulators are likely to provide a useful reference point when estimating beta for the UCLL and UBA FPPs. For example, the Telecommunications Regulatory Authority in the Kingdom of Bahrain has published a table summarising asset beta estimates for fixed-line telecommunications companies, based on international regulatory decisions. The estimates range from 0.41 to 0.70.[50]

87. We are seeking independent expert advice to assist us in reaching a view on asset beta and leverage for the UCLL and UBA FPPs. This advice will help us determine the equity beta. Interested parties will have an opportunity to submit on this advice, and our draft approach, in response to our UCLL and UBA FPP draft decisions.

88. We invite submissions on possible approaches, and any relevant evidence, to assist us in estimating asset beta for the UCLL and UBA FPPs. We will consider any submissions (and evidence) that are provided, alongside our independent expert advice, when reaching a draft decision.

Tax rates

89. The tax rates used to calculate the cost of capital for the UCLL and UBA FPPs will mirror the statutory tax rates. The corporate and investor tax rates we propose to use are both currently 28%.

Leverage

90. Leverage refers to the mix of debt and equity capital that is used to fund an investment.

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[47] Chorus "Submission in response to the Commerce Commission's process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the final pricing principle" (14 February 2014), p. 63-64, paragraphs 308-309.

[48] PwC currently lists Chorus' equity beta as "NM" (not meaningful) in its regular cost of capital reports. PwC states that "where a company has been listed for less than three years … there is insufficient trading history for calculation of Beta used in the calculation of WACC". PwC "Appreciating value New Zealand: Edition four" (September 2013), p. 13 and 16.

[49] Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 31.

[50] Telecommunications Regulatory Authority "Cost of capital: Draft determination" (5 November 2012), Table 14, p. 59 (https://www.tra.org.bh/EN/pdf/MCD1112138CostofCapitalDraftDetermination.pdf).

91.   Leverage is used in two places when estimating the cost of capital. One use is to re-lever the asset beta into an equity beta (and vice versa). The second is to derive a WACC from the estimates of the cost of debt and the cost of equity.

92.   In the IMs we estimated leverage based on the sample of comparator firms used to estimate the asset beta. This was in response to the well-known counterintuitive characteristic of the simplified Brennan-Lally CAPM that WACC increases with increasing leverage (referred to as the 'leverage anomaly').[51]

   92.1   We set leverage as the average of the sample of comparator firms to address the leverage anomaly. Using the average leverage of the comparator sample means that WACC is the same regardless of whether the debt beta is set at zero, or at a level to make the estimated cost of capital invariant to leverage.[52]

   92.2   We rejected using suppliers' actual leverage because this would create an incentive for regulated suppliers to increase their leverage to obtain a higher WACC. Increasing leverage for this reason could be detrimental to the long-term interests of consumers, by raising suppliers' risk of bankruptcy.[53] The High Court judgment on the IMs merits appeals supported not using suppliers' actual leverage.[54]

93.   For the same reasons, our view is that Chorus' actual leverage should not be used when estimating WACC for the UCLL and UBA FPPs. Chorus' actual proportion of debt is likely to be relatively high at present, because it is financing its ultra-fast broadband deployment.

94.   As discussed in paragraph 87 above, we are seeking independent expert advice to assist us in reaching a view on leverage for the UCLL and UBA FPPs. Interested parties will have an opportunity to submit on this advice, and our draft approach, in response to our UCLL and UBA FPP draft decisions.

95.   In the meantime, we invite submissions on possible approaches, and any relevant evidence, to assist us in estimating leverage for the UCLL and UBA FPPs.

Other cost of capital issues for the UCLL and UBA price reviews

96.   We also invite views on two other issues related to the cost of capital for the UCLL and UBA FPPs. These issues are described below.

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[51]   Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraphs 6.6.1-6.6.16 and H3.1-H3.64.

[52]   Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraphs 6.6.13.

[53]   Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraphs 6.6.5.

[54]   *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC (11 December 2013), paragraphs 1643-1645.

96.1   Should we set WACC above or below the mid-point estimate for the UCLL and UBA FPPs? (And if so, to what extent?)

96.2   Should we consider applying a TCSD allowance when determining the cost of capital for UCLL and UBA?

Should we set WACC above or below the mid-point estimate for the UCLL and UBA FPPs?

97.   The WACC must be estimated since its components, for example the cost of equity, cannot be observed directly.

98.   We currently use a WACC above the mid-point estimate when setting price-quality paths under Part 4 of the Commerce Act. Specifically, we chose to use the 75th percentile WACC in the IMs because "…the costs from the point of view of consumers associated with underestimation of the cost of capital in the Part 4 regulatory setting, are likely to outweigh the short-term costs of overestimation".[55]

99.   On 11 December 2013, the High Court delivered its judgment on the merits appeals of the IMs we set in December 2010. Although it dismissed all the appeals against our cost of capital IMs, the Court questioned whether empirical evidence and theoretical results justify our use of the 75th percentile estimate of WACC to set price-quality paths.[56]

100.   As noted in paragraph 12 above, in response to the Court's judgment, and requests from several consumer groups, we are currently consulting on whether we should consider reviewing or amending specific aspects of the cost of capital IMs.[57] Submissions on that separate consultation paper are due on Thursday, 13 March 2014.[58] We will consider any relevant submissions we receive in response to the cost of capital IMs consultation paper when reaching our draft decisions on WACC for the UCLL and UBA FPPs.

101.   Different considerations are relevant for UCLL and UBA, compared to services regulated under Part 4 of the Commerce Act. For example, we will need to consider the purpose statement of the Telecommunications Act (section 18) when deciding whether it is appropriate to deviate from the mid-point WACC estimate.[59] In particular, the efficiencies that will result, or will be likely to result, from deviating from the mid-point will need be considered when setting WACC for the UCLL and UBA FPPs.[60]

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[55]   Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraph H11.62.

[56]   Wellington International Airport Ltd & Ors v Commerce Commission [2013] NZHC (11 December 2013), paragraphs 1448-1487.

[57]   Commerce Commission "Invitation to have your say on whether the Commerce Commission should review or amend the cost of capital input methodologies" (20 February 2014).

[58]   For further information see: http://www.comcom.govt.nz/regulated-industries/input-methodologies-2/further-work-on-wacc/

[59]   Any submissions regarding section 18 in response to this paper should be clearly linked to the approach to estimating WACC. Wider section 18 considerations will be addressed separately.

[60]   See section 18(2) of the Telecommunications Act.

102. When setting regulated access prices, investment incentives faced by both the access provider and access seekers are relevant. Although setting a WACC above the mid-point may help ensure the access provider faces sufficient investment incentives, this may dis-incentivise investment by access seekers.

103. When submitting on the UCLL FPP process and issues paper, Frontier Economics noted that the European Commission (EC) has highlighted additional risks associated with fibre investment (compared to investment in existing copper networks), due to uncertainty over future demand for fibre-based services.[61] It noted that the EC recommends that "investment risk should be rewarded by means of a risk premium incorporated in the cost of capital".[62]

104. However, when discussing asset beta, Frontier Economics noted that "...the key factor that would give rise to any risk premium is uncertainty over the rate of future uptake of services". It argued that "...if demand is assumed to be roughly in steady state then, regardless of the MEA adopted ... no premium for investment risks should be imputed...".[63]

105. Under the standard corporate finance approach, demand uncertainty is more appropriately addressed when estimating cash flows, rather than the WACC, except to the extent that the uncertainty is correlated with the overall market. Uncertainty that is correlated with the overall market will be reflected in beta by definition.

106. We invite submissions, supported by evidence, on whether it is appropriate to use a WACC above or below the mid-point estimate for the UCLL and UBA FPPs (and if so, the extent of any adjustment).

Should we apply a TCSD allowance for the UCLL and UBA FPPs?

107. As discussed earlier, the cost of capital IMs use a risk-free rate and debt premium estimated over a term which matches the regulatory period (generally five years).

108. However, the cost of capital IMs recognise the additional debt premium and interest rate swap execution costs that can be incurred from issuing longer term debt, to the extent that such debt is actually issued by regulated suppliers. This is achieved through an allowance known as the TCSD.

109. Under the IMs, TCSD does not apply to all regulated suppliers, so is not part of the WACC. It applies only to regulated suppliers whose debt portfolio, as of the date of the most recent audited financial statements, has a weighted average tenor greater than five years.[64]

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[61] Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 30.
[62] European Commission "Commission recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA)" (22 September 2010), p. 45.
[63] Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service" (February 2014), p. 30-31.
[64] Commerce Commission "Input methodologies (electricity distribution and gas pipeline services): Reasons paper" (22 December 2010), paragraphs H6.3-H6.5.

110. Regarding the TCSD, Chorus submitted that:[65]

    110.1 "the observed efficient practice of regulated infrastructure companies is to issue debt that has an average term in excess of the term of the regulatory period and, generally, in excess of 10 years";

    110.2 the TCSD allowance under the IMs provides "…some limited additional compensation if the business can demonstrate that its practice is to issue longer than 5 year debt";

    110.3 "the TCSD allowance is capped at 60bp and, in any event, its calculation does not accurately compensate for the costs of issuing longer term debt"; and

    110.4 "a revised TCSD could potentially be made consistent with compensating a business on the basis of a staggered portfolio issuance".

111. Chorus referred to the High Court judgment regarding the IMs merits appeals when suggesting that a revised TCSD could potentially be used to compensate businesses for staggered portfolio issuance.[66]

112. However, the High Court's main concern was whether the TCSD is required at all, rather than whether a revised version could be used to provide additional compensation to regulated suppliers. The Court stated (emphasis added):[67]

> Given the view we take of the basic issue of principle (that to avoid under and over compensation the risk-free rate should be matched to the regulatory period), **the material before us has not persuaded us of the need for a TCSD at all**.

113. Significantly, the Court supported the principle that, to avoid under or over compensating regulated suppliers, the term of the risk-free rate should match the length of the regulatory period.[68]

114. We invite submissions on whether the TCSD should be applied when determining the cost of capital for the UCLL and UBA FPPs. We note that the TCSD is not required to estimate the WACC. If the TCSD is to be applied, we will need to determine the appropriate weighted average tenor of debt to use.[69]

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[65] Chorus "Submission in response to the Commerce Commission's process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the final pricing principle" (14 February 2014), p. 59-61, paragraphs 292-295.

[66] Chorus "Submission in response to the Commerce Commission's process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the final pricing principle" (14 February 2014), p. 61, paragraph 294.

[67] *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC (11 December 2013), paragraph 1285.

[68] *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC (11 December 2013), paragraphs 1268 and 1287.

[69] Under the cost of capital IMs, the TCSD allowance applies only to regulated suppliers whose actual debt portfolio, as of the date of the most recent audited financial statements, has a weighted-average tenor greater than five years (the length of the regulatory period). For such suppliers, the allowance applies in respect of individual bond issues which have a tenor exceeding five years.

Timeline for determining WACC for the UCLL and UBA price reviews

115. The following table shows a timeline of how we intend to proceed with estimating the cost of capital for the UCLL and UBA FPPs.

Process step	Indicative date
WACC consultation paper released	7 March 2014
Submissions on WACC consultation paper due	28 March 2014
Cross-submissions on WACC consultation paper due	11 April 2014
Draft determination for UBA FPP (including WACC) released	19 August 2014

116. Submissions on this consultation paper are due by **5pm Friday 28 March 2014**. Please email submissions to telco@comcom.govt.nz.

117. There will be a further chance to submit on WACC, including the specific parameter values we adopt, in response to our UCLL and UBA FPP draft determinations. The UBA FPP draft determination is currently scheduled to be released on 19 August 2014, subject to considering the submissions and cross-submissions we received on the UBA FPP process and issues paper.[70]

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[70] Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle: Process and issues paper" (7 February 2014).