



# **Rate of Return for Information Disclosure Profitability Monitoring of Local Fibre Companies**

**Report to Ultrafast Fibre Limited and  
Enable Networks Limited in support  
of their Second Cross-submission on  
NZCC Fibre Regulation Emerging  
Views Technical Paper**

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## Executive Summary

Ultrafast Fibre Limited and Enable Networks Limited engaged Castalia to comment on cost of capital submissions to the Commerce Commission’s emerging views on regulating fixed fibre line access services (FFLAS). We were asked to focus on submissions on the Commission’s views for setting the Weighted Average Cost of Capital (WACC) for monitoring the profitability of Local Fibre Companies (LFCs) under the information disclosure regime.

Having reviewed the submissions, and the materials published by the Commission and its advisors, we have four main concerns:

- We disagree with Oxera’s conclusion that “*a stand-alone FFLAS will face similar demand risk from other technologies (copper, fixed wireless). As the demand risk exposure of LFC’s and Chorus FFLAS is similar, a sector-wide asset beta would be appropriate to capture the total systematic risk exposure of fibre access services in New Zealand*”.<sup>1</sup> We show how LFCs face a higher systematic risk when supplying FFLAS than Chorus, and explain why we consider that the beta for LFCs must be higher.
- We agree with the criticism by a number of submitters<sup>2</sup> of CEPA’s beta comparator set, which the Commission relies on. It is not fully transparent, and the results underestimate the FFLAS beta for Chorus; even more so for LFCs. The CEPA sample includes, and gives undue weight to, firms with low betas that are not telecommunications companies, which are not objective or relevant comparator firms. CEPA also excludes at least one good fibre service provider comparator from Australia with a relatively high asset beta.
- We agree with the submission by Black Crane Capital<sup>3</sup> that the financing term used to calculate the WACC should “*reflect the investment horizon that debt and equity investors in infrastructure assets typically have*”. Despite LFCs not being subject to regulatory periods, the Commission intends to apply the same financing term for LFCs as for Chorus when setting the risk-free rate and the debt risk premium. We consider that the financing term for LFCs must be matched to the economic life of the underlying assets. This is consistent with the Commission’s own long-standing logic on setting the financing term.
- For convenience, the Commission intends to use the WACC estimate for Chorus as a benchmark to monitor LFC profitability, even though the WACC for LFCs is clearly higher. We agree with the Northpower submission that “*ID WACC for LFCs should not necessarily be the same as that used for Chorus. LFCs have a different risk profile to Chorus ... and hence should adopt a higher asset beta estimate*”. We consider that the Commission’s proposed approach creates unnecessary incremental regulatory risk for LFCs, and will increase their actual cost of capital. In our view the Commission has a responsibility to determine a specific WACC for LFCs to reduce this unnecessary risk.

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<sup>1</sup> Oxera, *Compensation for systematic risks*, Final Report, 15 July 2019, para 3.13

<sup>2</sup> Scroders, page 1; TelstraSuper, page 2; Ubique, page 3; Paradise, page 2; Black Crane Capital, page 3; Investors Mutual, page 1; L1 Capital, page 5; Chorus, para 132ff.

<sup>3</sup> Black Crane Capital, page 4.

# **1 Introduction**

Ultrafast Fibre Limited and Enable Networks Limited engaged Castalia to comment on submissions to the Commerce Commission's emerging views on regulating fixed fibre line access services (FFLAS). We were asked to focus on submissions on the Commission's views for setting the Weighted Average Cost of Capital (WACC) for Local Fibre Companies (LFCs).

For reference, Appendix A sets out the standard framework that the Commission uses for setting a regulated return.

## 2 Castalia Comments on Submissions regarding the Commission's Emerging Views on WACC

In the following sections, we set out our comments on submissions made by interested parties regarding key aspects of the Commission's emerging views for setting the cost of capital for LFCs.

### 2.1 Equity Beta

Almost all submitters commented on the Commission's approach to estimating the equity beta. We agree with the criticisms by many submitters<sup>4</sup> that the Commission's approach has serious flaws.

Since LFCs are not listed, we cannot observe their equity beta and must estimate it. Ideally, we would find listed comparator firms facing identical systematic risks to those faced by LFCs and also maintaining similar leverage ratios. We could then simply observe the comparator's equity beta and apply it to LFCs.

In practice, however, the possible comparators never face identical risks and their leverage varies. As a result, we must adjust comparators' observed equity betas. There is a generally-accepted method for making equity beta adjustments that account for differences in leverage. Adjustments for the differences in underlying systematic risk are much more subjective.

With the leverage adjustment being relatively uncontroversial, the main areas of subjectivity lie in:

- sampling techniques applied to calculate comparator betas, such as the time period over which equity returns should be measured, and the frequency of observations to use
- selecting appropriate comparators and deciding how much weight to give to each
- potentially making adjustments for any perceived differences in systematic risks between the comparators chosen and the firm in question.

#### 2.1.1 Sampling techniques

We first address our approach to sampling techniques

##### Time period for measuring equity returns

CEPA calculate betas for each firm using a two-year and a five-year observation period to inform their recommendation. CEPA also notes that the UK telecommunications regulator focuses on two-year and five-year betas. We generally agree with this approach, and also examined betas for the most recent two and five years.

The telecommunications market is experiencing rapid change. This is evidenced by the fact that, for a number of comparator firms selected by CEPA, there is only sufficient trading history to calculate two-year, but not five-year betas. We think that it is appropriate to include good comparators that have at least a two-year trading history, even where that history does not extend to five years.

Two-year betas will more accurately reflect the current business risk faced by comparator firms, but the estimate will be subject to more volatility due to a lower number of

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<sup>4</sup> Scroders, page 1; TelstraSuper, page 2; Ubique, page 3; Paradise, page 2; Black Crane Capital, page 3; Investors Mutual, page 1; L1 Capital, page 5; Chorus, para 132ff.

observations. Five-year betas will be less reflective of current risk (as they are more reflective of longer-term historical risk), but more stable due to a higher number of observations.

Given the complementary strengths and weaknesses of the two approaches, we would recommend averaging the two-year and five-year beta observations (where both are available) to arrive at a point estimate for the asset beta of each comparator firm.

### **Frequency of observations**

CEPA calculated equity returns over daily, weekly and four-weekly frequencies, though they placed no weight on the daily figures. We have therefore focused our analysis on weekly betas. Aside from convenience, we believe that a weekly observation frequency is appropriate as a matter of principle. The main reason for increasing the observation frequency is to reduce non-trading bias. Non-trading bias is introduced when shares of the sample firm are not traded during the observation period, but other market trades take place. This would artificially drive a reduction in correlation between the market return and the return on the sample firm. Such a reduction in correlation would create an upward bias in the estimated beta. This is the main reason to not use daily observation frequencies.

A quick review of the trading history of the potential comparators shows that there are many instances of non-trading over several days. Also, the potential comparators are traded sufficiently often in the course of a week to provide robust equity return information without substantial non-trading bias. We therefore do not see the need to put any weight on longer observation intervals, like CEPA did with four-weekly observations.

### **2.1.2 Selecting Appropriate Comparators**

CEPA's approach to sample selection can be described as maximising the sample size through broadening the scope and geographic location of comparators—in many cases inappropriately so, in our view.

CEPA rely heavily on an average across multiple firms to arrive at a beta estimate for Chorus FFLAS and make no adjustment for the additional risk faced by LFCs. While we agree sample averages should inform the approach, it is useful and appropriate to begin by setting some reference points for an expected LFC WACC.

### **Chorus firm-wide beta—the absolute lower bound**

The Chorus firm-wide beta provides an excellent absolute lower bound for a Chorus FFLAS beta estimate. In turn, a robust Chorus FFLAS beta estimate would be a good lower bound estimate for the LFC asset beta.

This is because, while Chorus and the LFCs have some very strong similarities, there are also a number of identifiable differences that clearly make LFCs a more risky investment than Chorus. Both Chorus and the LFCs:

- own and operate telecommunications networks as their main line of business
- provide wholesale fibre services to other companies that bundle and on-sell those services to end users
- operate solely in New Zealand.

However, when we examine the key underlying business risks, it is clear that LFCs face a number of risks that are incremental to those faced by Chorus. Below we compare the key business risks faced by Chorus and LFCs:

- **Revenue risk**—This is the risk that demand for the service, and thus revenue, is different to that forecast. Demand for fibre services is likely to be similar for

Chorus and LFCs. However, a major competitor to fibre services is the existing copper network, with a sizeable proportion of customers likely to remain on the copper network due to lower cost or sheer inertia. Chorus owns the copper network nationwide, which provides a useful hedge for demand risk, thus reducing revenue risk for Chorus. LFCs, on the other hand, face competition from the Chorus copper network. Also, revenue cap regulation gives Chorus much more revenue certainty than LFCs, who are exposed to shorter-term contracting arrangements.

CEPA notes this incremental risk exposure for LFCs, but states that CEPA has not identified a robust basis to estimate a specific beta uplift to reflect this risk. In our view, it not acceptable to simply assume the uplift away.

- **Expenditure risk**—The risk that achieving the required service levels and outputs need more or less capital expenditure or operating expenditure than forecast. The risk arises from either volume or price variations on expenditure items. This risk is similar for both Chorus and LFCs.
- **Inflation risk**—The risk that that actual inflation varies from the forecast. This risk is identical for both Chorus and LFCs.
- **Stranding or bypass risks**—The risk that demand for certain services falls to zero or users switch to alternative options. This risk is greater for LFCs than for Chorus because:
  - the risk for Chorus is diversified across its fibre and copper networks; while the copper network is essentially in the process of being bypassed with fibre, it will certainly continue to be an important source of deregulated Chorus revenues for the foreseeable future; and
  - Chorus has upgraded its copper network in LFC areas to reduce migration from its copper services to LFC FFLAS services.
- **Regulatory risk**—The risk that the regulator makes an inappropriate decision, for example, on the level of costs or returns required by an efficient firm to perform the service. This risk is higher for LFCs, and is already playing out, with the Commission indicating it intends to determine an LFC WACC for information disclosure monitoring purposes that is equal to the Chorus regulatory WACC—worryingly, the Commission intends to do this in the full knowledge that the figure is lower than it should be. CEPA acknowledges this issue in their report, but erroneously notes that this is not important, as the Commission’s WACC figure will not be used to set prices.<sup>5</sup> This ignores the issue of regulatory risk signalling to the market by the Commission’s actions.
- **Political risk**—The risk that Government actions increase costs or decrease revenues. This risk is the same for Chorus and LFCs.
- **Force majeure risks**—The risk that major unforeseen events outside of the control of the service provider and customers arise, for example natural disasters. The source of the risk is identical for both firms. However, Chorus is a much bigger firm. Therefore, any force majeure issues are likely to have a proportionally smaller impact on the total business for Chorus than for an LFC.

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<sup>5</sup> CEPA, Cost of Capital for Regulated Fibre Telecommunication Services in New Zealand: Asset beta, leverage, and credit rating, 20 May 2019, page 7.

Due to Chorus's size, it is also better equipped to handle this risk, but also more likely to experience a force majeure event on at least part of its network.

In addition to being an excellent fit in terms of the lower bound of underlying business risk, Chorus is an excellent comparator from a sampling perspective. It has a long trading history in New Zealand and high trading volumes.

The starting point, therefore, must be to state the LFCs asset beta for FFLAS must be higher than that for Chorus FFLAS due to the higher risk faced by LFCs.

Another important difference between Chorus and the LFCs is scale. LFCs are relatively small businesses compared to Chorus, and to most of the firms in the CEPA sample relied on by the Commission.

It is true that there is no clear consensus among academics or regulators on whether, in the CAPM framework, it is appropriate to make some adjustment for scale—by adjusting the beta upwards or by applying an  $\alpha$  term to the cost of equity. However, firm size clearly does have an impact on risk profile and expected investment returns.

This is why practitioners often adjust the cost of equity for small firms upwards when using the CAPM, typically using an  $\alpha$  term. Outside of the CAPM, the Fama-French three and five factor models—co-developed by an economics Nobel prize laureate—explicitly take into account the impact of scale on expected returns, and are demonstrably better at explaining the variability in stock returns than the CAPM.

As CEPA point out, there is no simple way to quantify the beta premium that should apply to LFCs relative to Chorus. However, it is clear that a beta premium is warranted. We consider that the simplest way for the Commission to make the adjustment is by adopting a beta range for LFCs that is higher than that for Chorus FFLAS.

### **Market return—likely upper bound**

Infrastructure network utilities with natural monopoly characteristics usually provide relatively stable returns, which tend to be less variable than the market. As a result, asset betas for such firms are typically below 1. LFCs do not exhibit the normal characteristics of natural monopolies, because they face competition from competing copper and fixed wireless access technologies, and in the case of Enable, from Vodafone's cable network. We would therefore expect that LFC asset betas would be higher than a typical natural monopoly asset beta, but would still not exceed 1.

### **Selecting appropriate comparators for Chorus FFLAS beta estimate**

We have a number of concerns with the comparator set relied on by CEPA to develop their estimate of the Chorus FFLAS beta.

While CEPA provide a high-level explanation of how they selected comparators, they provide no data for the firms that they removed from the sample through the various steps of the selection process.

We think that interested parties should be given the opportunity to scrutinise the application of CEPA's selection process. For example, we would like to understand the reasons why the Australian-listed firm Superloop was excluded from the sample.

Superloop appears to be as valid a comparator as many of the others that are included in the CEPA sample—Superloop owns and operates over 670kms of carrier-grade metropolitan fibre networks in Australia, Singapore and Hong Kong, including a backhaul network that links to all NBN points of interconnect across Australia. The Australian network also integrates subsea cables and fixed wireless networks. Approximately half of

Superloop’s revenue comes from wholesaling fibre and fixed wireless services. We note that Superloop’s beta is materially higher than the average beta of CEPA’s sample.

Having applied its selection process, CEPA comes up with two types of firms—“wholesalers” and “integrated service providers”. CEPA then gives equal weight to betas from “wholesalers”, even though the “wholesaler” sample is much smaller than the sample of “integrated service providers”.

CEPA’s “wholesaler” sample comprises:

- **Chorus**—Which, as noted above, we consider should be a lower bound for any beta estimate for FFLAS purposes.
- **Tower Companies**—firms that are in the business of owning real estate with basic tower structures that provide fittings to which telecommunications equipment can be attached. These firms do not own any telecommunications network equipment, and derive almost all of their revenue from leasing space on their towers to actual telecommunications companies.
- **Satellite Companies**—firms that derive the overwhelming majority of their revenues from satellite television services.

In our view, betas for tower and satellite companies are entirely irrelevant to establishing the beta for FFLAS. Therefore, the only appropriate “wholesaler” datapoint is Chorus. With the Chorus observed firm-wide beta clearly being a useful lower bound for the FFLAS beta, it would be inappropriate to give this observation a 50 percent weighting—on par with the average of the large “integrated service provider” sample.

Our view is that the Commission should provide more transparency on CEPA’s comparator selection process, to enable interested parties to provide more meaningful input on the appropriate range and point estimate of the Chorus FFLAS asset beta. Once a robust estimate for Chorus is set, the Commission will be in a better position to determine the appropriate higher beta that must apply to LFCs, given the higher risks they face and the impact of their smaller scale.

## 2.2 Financing Term for WACC estimate

We agree with the submission by Black Crane Capital<sup>6</sup> that the financing term used to calculate the WACC should “*reflect the investment horizon that debt and equity investors in infrastructure assets typically have*”

When estimating terms like the risk-free rate and the debt risk premium, we need to make an assumption about the term over which capital (debt or equity) is provided by investors to the firm.

The Commission’s normal practice is to use a term that matches the regulatory price-setting periods. The main logic in adopting this approach for the risk-free rate is that:

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<sup>6</sup> Black Crane Capital, page 4.

*“Regulated suppliers can reset their prices at the end of each regulatory period to reflect, among other things, changes in the risk-free rate if this has altered the cost of capital. Through the regular resetting of prices the uncertainty over the level of long-term interest rates is borne by users, rather than suppliers. Accordingly, suppliers’ prices should not reflect a premium for the uncertainty of risk-free rates beyond the length of the pricing period”*<sup>7</sup>

For the debt risk premium, the Commission adopts the same approach for consistency with the risk-free rate<sup>8</sup>

The Commission has signalled it intends to apply this same practice to setting the WACC for Chorus, and to then use that same WACC to monitor LFC profitability. However, LFCs are not subject to price regulation and have no regulatory price-setting periods. As a result, the Commission’s usual logic simply does not apply. The appropriate financing term should, to the extent possible, match the useful lives of the underlying assets. This would suggest a term in excess of 10 years.

Furthermore, there are strong arguments against the Commission’s long-established approach even for firms that are subject to regulatory periods. The main alternative approach is to try to match the financing term to the actual term of the investment. For long-lived infrastructure assets, that term is usually well in excess of 10 years. With government and corporate bond terms rarely exceeding 10 years, 10-year risk-free rates and debt risk premia are often used by overseas regulators, notably including the Australian Competition and Consumer Commission (ACCC) and the Australian Energy Regulator (AER), even when setting prices over 5-year regulatory periods.

It is also common practice for investment advisors to use 10-year (or longer term, if available) bonds when estimating  $r_f$  and  $DRP$  for firms with long-lived assets.

### **2.3 The Need for a Separate LFC WACC**

We agree with Northpower’s suggestion that the *“ID WACC for LFCs should not necessarily be the same as that used for Chorus. LFCs have a different risk profile to Chorus ... and hence should adopt a higher asset beta estimate”*.

As discussed earlier in this report, there are important differences between Chorus and the LFCs that should result in different assumptions for the asset beta, the risk-free rate, and the debt risk premium (the last two, due to a longer financing term).

The Commission’s emerging view is that the relevant differences are hard to justify and not sufficiently important, since the LFC WACC will only be used for monitoring LFCs’ profitability under information disclosure. The Commission therefore intends to set a WACC for Chorus and to then also use that WACC as a profitability benchmark for LFCs.

The Commission’s proposed approach ignores the important function that the regulated WACC serves in forming investor expectations. The Commission’s view on an efficient WACC for LFCs provides an important market signal.

Investors providing equity or debt to LFCs do so on the basis of expected future cash-flows. Therefore, given a credible threat of future price regulation, the WACC that the

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<sup>7</sup> Commerce Commission, Input Methodologies (Electricity Distribution and Gas Pipelines Services) Reasons Paper, 22 December 2010, Para 6.3.10

<sup>8</sup> Commerce Commission, Input Methodologies (Electricity Distribution and Gas Pipelines Services) Reasons Paper, 22 December 2010, para H5.7

Commission might apply to LFCs in future regulation is an important factor investors will take into account in forecasting future LFC revenues.

If the Commission maintains its emerging view, investors may infer that the Commission may apply the same, or materially the same, WACC to LFCs as to Chorus under any future possible direct price regulation. Such an expectation would lead to inefficiently low valuations and a higher cost of capital for LFCs now, even though LFCs will not at this stage, and may never, be subject to price regulation. This would create an inefficient and unfair outcome for LFCs.

Given the above, in our view, it would be prudent for the Commission to take the approach of setting a separate WACC range for LFCs.

# Appendix A: Framework for Setting a Regulated Return

## Framework for Setting a Regulated Return

The conventional approach adopted by the Commission to setting a regulated return is to determine a Weighted Average Cost of Capital (WACC) for the capital employed in the relevant investment.

### A.1 Calculating the WACC

The formula for Calculating the WACC is provided below.

$$WACC = \frac{D}{D + E} k_d + \frac{E}{D + E} k_e$$

Where:

- $D$  is the total debt
- $E$  is shareholders' equity
- $k_d$  is cost of debt, and
- $k_e$  is cost equity

Both  $k_e$  and  $k_d$  calculate the return premium that investors should demand when providing capital to fund risky assets (like a firm building and operating fibre networks) compared to the return expected of a relatively risk-free investment (like investing in the government bonds of a country with minimal risk of default). The term  $r_f$  signifies the risk-free rate of return.

Because the risks inherent in providing debt financing and equity financing for an investment are different, so too are the risk premiums above  $r_f$  for debt and equity. The company is contractually obliged to repay its debts, and debt holders have priority over equity holders when seeking to recover debts. As a result, the cost of debt is almost always lower than the cost of equity.

### A.2 Cost of Debt

We can estimate the cost of debt as:

$$E(k_d) = r_f + DRP + DIC$$

Where:

- $E(k_d)$  is the expected cost of debt
- $r_f$  is the risk free rate estimated using the yield to maturity on government bonds
- $DRP$  is the debt risk premium, calculated by subtracting  $r_f$  from the yield to maturity on corporate bonds for firms with similar risk characteristics to the firm in question. The terms of the government and corporate bonds used need to match, or be adjusted to ensure they are comparable
- $DIC$  are the expected debt issuance costs for a firm with similar risk and size characteristics to the firm in question

### A.3 Cost of Equity

We cannot observe the cost of equity and have to estimate it, usually by employing a version of the Capital Asset Pricing Model (CAPM). The Commission uses a simplified version of the Brennan-Lally CAPM is most common. The formula for this version is provided below.

$$E(k_e) = r_f \times (1 - T) + \beta_e \times MRP + \alpha$$

Where:

- $E(k_e)$  is the expected cost of equity
- $r_f$  is the risk free rate (defined in the same way as for the cost of debt)
- $T$  is the income tax rate applicable to investors. We assume that investors are a corporate entity and hence apply a tax rate of 28 percent
- $\beta_e$  is the equity beta of the investment. Beta is a measure of the variability of the returns from the investment in question relative to the returns of a fully diversified portfolio that includes all possible market investments. Betas for listed firms can be observed by calculating the covariance of a firm's stock price relative to a market portfolio. Betas for non-listed firms need to be estimated by finding suitable listed comparators and adjusting for the difference in the leverage of the comparators and the firm in question
- $MRP$  is the tax-adjusted market risk premium

$\alpha$  is a measure of the firm-specific non-systematic risk, a concept can be difficult to quantify and is rarely used by regulators. In practice, the  $\alpha$  term is sometimes used to make subjective adjustments to the cost of equity for risks that are perceived to not be captured by the  $\beta_e$  term



T: +1 (202) 466-6790  
F: +1 (202) 466-6797  
1747 Pennsylvania Avenue  
NW 12th Floor  
WASHINGTON DC 20006  
United States of America

T: +1 (646) 632-3770  
F: +1 (212) 682-0278  
200 Park Avenue Suite 1744  
NEW YORK NY 10166  
United States of America

T: +61 (2) 9231 6862  
Level 1, 27-31 Macquarie Place  
SYDNEY NSW 2000  
Australia

T: +64 (4) 913 2800  
F: +64 (4) 913 2808  
Level 2, 88 The Terrace  
PO Box 10-225  
WELLINGTON 6143  
New Zealand

T: +57 (1) 646 6626  
F: +57 (1) 646 6850  
Calle 100 No. 7-33  
Torre 1, Piso 14  
BOGOTÁ  
Colombia

T: +33 (1) 73 44 26 97  
F: +33 (1) 73 44 26 01  
6, Rue Duret  
PARIS 75116  
France

----- [www.castalia-advisors.com](http://www.castalia-advisors.com)