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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



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Executive Summary



EXECUTIVE SUMMARY

Introduction

- 1 This submission responds to the Commerce Commission's (Commission) paper entitled "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (Paper).
- 2 In this submission, responding to the importance of both a quality and timely outcome, we say that:
 - 2.1 The unbundled copper local loop (UCLL) service to be priced is operator and technology specific. The Commission must model the full functionality of the UCLL Standard Terms Determination (STD) service provided by Chorus.
 - 2.2 TSLRIC is required by the Telecommunications Act (Act) to be "forward-looking". There is also a high degree of international alignment that this requires a current replacement cost approach. A backward-looking historical cost approach has been ruled out by the Act.
 - 2.3 Forward-looking also means identifying the efficient costs of the service by considering replacement with modern equivalent assets (MEA). An MEA must be the lowest cost technology that is both commercially available and provides the full facilities and functions of the service being priced.
 - 2.4 Only the copper network meets the criteria of a forward-looking MEA. The all-fibre networks considered by the Commission do not.
 - 2.5 The Commission must model the full copper network. This is required in order to accurately identify the TSLRIC costs of the services subject to price review, and to meet the statutory requirement to have regard to other services provided by Chorus. It will also facilitate engagement of all stakeholders on what is required to achieve a coherent set of pricing outcomes across all services.
 - 2.6 The Commission should complete the TSLRIC modelling and make its price review decisions by 1 December 2014. The Commission is required to make its decision on UCLL as soon as practicable. Applications were filed in February 2013, and 22 months is a generous timetable. The UBA FPP applications filed in December 2013 seem to be progressing ahead of UCLL applications filed some 10 months earlier.
 - 2.7 The UCLL application should be completed by 1 December 2014 in parallel with the UBA FPP. The UBA FPP requires the calculation of the "additional costs" which means it is necessary and appropriate for the Commission to ensure the costs of UCLL are understood (to ensure there is no under or over recovery). Timely and robust outcomes of FPPs contemporaneously will also lessen the practical impact and concerns regarding the uncertainty and backdating of the TSLRIC prices. Our proposal for a full copper network hybrid modelling approach enables the Commission to proceed both in a timely way and with a high quality outcome. This modelling approach does not imply more time.

Debating how to model part of the copper network is likely to take longer to get started and consult on.

Modelling proposal

- 3 We set out a modelling proposal that is consistent with these requirements, and a timetable that could enable completion of this process by 1 December 2014. We acknowledge that this is a challenging timetable given that 12 months have passed since applications were made but it is not unachievable.
- 4 We propose a TSLRIC model with the following key features:
 - 4.1 The network that is modelled is the copper network. This network is current, it delivers the full functionality of the UCLL STD service at the lowest cost, and it is consistent with the particular demands for functionality in the New Zealand context.
 - 4.2 It uses Chorus' existing network configuration as an equivalent of the deployment of a hypothetical operator, and Chorus' actual asset counts as an equivalent of the forward-looking asset count. The advantage of this approach is that the Commission can be sure that it is possible to build and operate a copper network in New Zealand, with these quantities of assets and levels of operating costs. This allows the model to be more credible and prepared relatively quickly, and the Commission and the industry can avoid lengthy debates over how a more theoretical copper network would be designed and built.
 - 4.3 Assets are valued at current replacement cost. As noted above, this is mandated by the forward-looking requirement in the Act and supported by economics and regulatory precedents including the Commission's own views in the past.
- 5 This "hybrid" TSLRIC model, so-called because it is based on Chorus' actual network design and asset counts as an equivalent of the forward-looking copper network, is explained in more detail in this submission and is informed by Analysys Mason's report *Working paper - proposed hybrid approach to modelling the UCLL service* (the Hybrid Modelling Paper). The proposal is consistent with the requirements of the Act and addresses the challenges of timeliness, quality and understandability as requested by the Paper.
- 6 Hybrid approaches (essentially using real world data to provide calibration) are conceptually well known. Their advantages include:
 - 6.1 being practical, substantially faster to execute than alternative full bottom up approaches and easier to understand;
 - 6.2 mitigating temptations to model an impossibly efficient hypothetical that could never be matched in the real world and/or do not meet real world constraints; and

- 6.3 not affecting the selection of other modelling parameters such as unit costs, asset economic lifetimes, asset price trends, WACC and depreciation/tilted annuity considerations.
- 7 Analysys Mason are world leading experts with the capability and credibility to do this TSLRIC modelling. They have commenced work and can accelerate as soon as direction is received from the Commission. We are suggesting that the Commission require Chorus (through Analysys Mason) to continue the modelling work under the supervision of the Commission and delivery of the model under a section 45 notice. This will support the Commission's best efforts to complete this process in a robust and timely way.

The options in the Paper

- 8 Our proposal is different to the options raised in the Commission's Paper. The Paper was limited to fibre-only and fibre/wireless network options. In our view, this reflects the fact that the Paper contains a conceptual misdirection.
- 9 Instead of starting with the service which must be costed, and then determining how that service would be delivered using modern technology, the Paper speculates as to what modern technology might be deployed, even though that technology is not capable of delivering the full functionality of the UCLL STD service being costed.
- 10 However the Commission does not have a completely open choice as to the technology to model. The Act does not ask the Commission to model a comparable, competing or some other service with different or altered functionality. If that was intended, bearing in mind the degree of prescription, the Act would have said so.
- 11 The Commission must select a technology that meets all the criteria of an MEA, including the ability to deliver the full functionality of the UCLL STD service. As we explain in this submission, only the copper network does that. None of the options in the Paper would lead to a valid TSLRIC calculation, as defined in the Act.
- 12 This is not a case of the law constraining the Commission to a second best outcome, however. Compared to the proposal in this submission for modelling a copper network, the fibre only and fibre/wireless options in the Paper would be more costly and give rise to TSLRIC prices that are higher, and the modelling much more complicated and time consuming.

Implementation

- 13 When deciding on the more detailed implementation of the TSLRIC model, the Commission will need to give careful consideration to section 18 and 18(2A) at every point to discharge its obligations under s19.
- 14 There is no international comparator for how TSLRIC should be applied in the New Zealand situation, with a combination of a structurally separated UCLL operator and an ongoing migration to a FTTH network built by a Public Private Partnership (PPP) investment ahead of commercial demand. The potential impacts on migration have been well traversed in Commission and policy processes. There are also specific market

dynamics of competing FTTH/PPP networks in some parts of New Zealand and potential mobile substitution reducing fixed line demand.

- 15 TSLRIC as a pricing methodology has been subject to criticism by many experts. Australia has moved away from it after their experiences. For example, NBN Co's special access undertaking which was recently accepted by the ACCC adopts a building block model (rather than TSLRIC) as an appropriate regulatory regime for an NGN transition environment. However, the Commerce Commission has no choice but to use the TSLRIC approach.
 - 16 This new phase of TSLRIC modelling (a completely different methodology from the initial pricing principle (IPP) of international benchmarking) must keep an eye to coherency of the regime as it has been implemented through STDs by the Commission. This must be a core part of considerations and should not slow the final pricing principle (FPP) outcomes that the Commission is required to determine.
 - 17 This executive summary and the structure of our submission focuses on the second stage FPP review for the UCLL STD service addressed in the Paper. Recognising there are separate but parallel processes (due to the service by service focus of the Act), we then also comment on alignment and coherency with those other actual or potential contemporaneous processes.
- Price replacement/backdating**
- 18 We expect the TSLRIC prices to be higher than the prices that have been set by benchmarking. This reflects the shortcomings of benchmarking and the ability of cost models to identify all costs in the New Zealand market. It also accords with reality. As with other utilities, our costs have gone up and our prices need to rise too.
 - 19 This has given rise to some publicity over the backdating of the TSLRIC prices. However, the industry has been fully aware of the two step benchmarking/TSLRIC pricing process in the Act since 2001, and aware that backdating of TSLRIC prices is required since a Court of Appeal decision in 2006.
 - 20 The Court of Appeal held that backdating is required because the TSLRIC price is inherently more accurate and efficient, and the purpose of the Act is advanced if transactions during the backdating period are washed-up to the more efficient price.
 - 21 The arguments now being made against backdating ignore the clear view of the Court of Appeal and the Act. Issues like the nature of a price cap are irrelevant. The Court of Appeal required the TSLRIC price to be backdated because it is inherently more accurate and efficient.
 - 22 Arguments about what terms are in the UCLL STD instrument also miss the point. The court was of the view that the Commission needed to specify in its price review determination (not the STD) how the backdated amount would be calculated and how that financial sum would be paid. Contingencies are a normal part of commercial activity and financial reporting. We acknowledge that the significance and the uncertainty of the Commission's decisions are at great height for the whole industry and we are very open to discussing the implementation details that the Commission should

include in its price review determination to recognise real business concerns. Right now, the most important mitigator to the uncertainty for everyone is a timely and robust conclusion of the cost modelling.

Term of determination

- 23 A long regulatory period will provide pricing certainty to assist Chorus and Retail Service Providers (RSPs) to make their business plans and make investments on an informed basis. We think the Determination should last until 2025, or ten years from the date the UCLL FPP is determined. At a minimum it must last until 2020 to match the contracted period for UFB prices.
- 24 Of course, the long regulatory period might be overtaken by events. It is highly undesirable that neither the Commission nor the industry know what the regime might be from 2020 when the FTTH PPPs end. The legislated intention was that a review be held to determine this. We recognise the Commission has to operate within the framework it has been given. The importance of long-term regulatory certainty to the industry and investors at a time of generational investment and transition is significant, and there is currently no sight of how copper and the upgraded fibre built under a PPP overseen by a Crown agency might be dealt with coherently in the future.
- 25 The question of how the price might be reset at the end of the regulatory period is a matter that is best considered nearer the time as it depends very much on modelling decisions the Commission is yet to make. However at the heart of any reset methodology must be the expectation of NPV neutrality, in order to allow investors a fair chance that investments in long-lived assets will be sufficiently compensated and so preserve investment incentives.

Alignment and coherency with other processes

- 26 While an FPP price is determined for a particular service specified in a standard terms determination, there are other STD services subject to contemporaneous FPP processes or which have past pragmatic linkages that may need to be reviewed. Future processes under the Act may also open at any time on request, application or on the Commission's own initiative.
- 27 The Commission is required to run distinct processes and make FPP determinations on a service by service basis. In the real world, the overall economics for business and investment incentives are significantly impacted by any one, and the combination of, service by service pricing decisions of the Commission. The TSLRIC modelling approach proposed in this submission recognises these matters to enable coherency (a number of services are provided over infrastructure and there are interplays of pricing across Commission determinations) while following the process requirements of the Act.
- 28 The Commission will need to address the interplay of the Act and the STDs that have been implemented by the Commission. Some of these have been traversed in previous proceedings but some have not become clear due to the limitations of benchmarking processes. In particular, the UCLL service description in the Act has two STDs made under it (UCLL and sub-loop bundling (SLU)). The Commission also has to price in a parallel FPP process the uplift for the nationwide Chorus unbundled bitstream access (UBA) STD service - the additional costs incurred over and above Chorus' UCLL network.

- 29 The Commission chose to base the SLU STD price on the UCLL STD price in 2009 and again in 2011. The Act linked the UCLL and UCLFS prices in the 2011 amendments (and there has been a range of debate in recent times).
- 30 The SLU STD has not been re-benchmarked like UCLL. However it was part of the s30R review and parties raised it in their FPP applications. The Paper has not set out what the Commission's intentions are and this needs to be clarified promptly so that the industry can comment further. If the Commission is doing an FPP for the SLU STD it must occur in parallel and should not be allowed to impact on the timeline. The modelling proposals outlined in this submission do enable the Commission to determine the SLU STD price contemporaneously. A hypothetical all fibre network is less capable of producing a full portfolio of prices for the services determined.
- 31 The UCLL and UBA IPP processes concluded last year ran on different timelines and so have the FPP processes to date. We support alignment of timetabling going forward.
- 32 This has two advantages:
- 32.1 It ensures that the Commission meets its legal requirements to determine the individual prices under service by service determinations. However, it also enables the Commission to ensure that the modelling used to support each process produce coherent results across all services (with linkages on certain key parameters such as the number of exchanges and cabinets). The UBA uplift price has to capture all costs "additional" to provision of the UBA service over and above UCLL. In this new phase of TSLRIC, while separate models can be used for the distinct UCLL and UBA processes under the Act, linked parameters for the models are encouraged for coherency; and
- 32.2 It is the aggregate effect of the Commission's decisions that properly informs the industry and the market. It is less desirable for a range of draft and final determinations to be running on completely different timelines and this should be avoided where possible given the very real impacts over the last two years as determination processes rolled out.
- 33 If for any reason the UCLL and UBA processes cannot complete side by side by 1 December 2014, the potential to split the conclusion date for the two processes could be considered at a later date.
- 34 Given recent history on the linking (or de-linking) of UCLFS (that, in contrast to the UCLL STD service, uses cabinetised lines), this will arise again with the move to a TSLRIC regime. For example, if it becomes clear that the UCLFS costs are higher than UCLL this will necessarily re-open whether a Schedule 3 investigation is required for alignment.
- 35 We are all aware that RSPs (access seekers, as defined in the Act) and the Commission on its own initiative, may request and/or open new reviews or processes at any time. This reality supports the need for care on coherency considerations in this TSLRIC phase.



THE SERVICE

36 The legal starting point in a price review process is the relevant service. It is the service that is the subject of the price review application, and the TSLRIC-based price must be appropriate for – reflect the forward-looking costs of – the service.

37 The pricing principle to be applied is TSLRIC, defined in Schedule 1 of the Act as:

The forward-looking costs over the long run of the total quantity of the facilities and functions that are directly attributable to, or reasonably identifiable as incremental to, **the service**, taking into account the service provider's provision of other telecommunications services and includes a reasonable allocation of forward-looking common costs. [emphasis added]

38 The Commerce Commission in its Discussion Paper *Application of a TSLRIC Pricing Methodology*, 2 July 2002 defines forward-looking costs as: ¹

costs that will be incurred in the future in providing **the service**. This involves estimating costs on the basis of current and future prices of inputs and given the availability of modern technologies and assets. The aim is to estimate the cost of providing **the services** in the future rather than the past. [emphasis added]

39 It follows that the first step in a TSLRIC cost calculation must be the identification of the service to be costed. The Commission recognises this in its 2002 Discussion Paper: ²

Before examining the TSLRIC pricing methodology and how it should be implemented, it is important to clarify the services to which it may be applied...

40 Economists agree that this is the appropriate approach to TSLRIC modelling. The process is designed to determine the cost to: ³

produce the relevant set of outputs under analysis" ... "The first step in any TSLRIC calculation is the determination of the relevant service to be analysed.

A first step in constructing a forward looking cost model is to define the outputs being incremented – that is, to specify what it is that is being costed. This involves determining the service, or grouping of services, being incremented, and the relevant volume of that increment.⁴

41 The second important aspect of forward-looking price setting is that:

the costs used to determine access prices are based on the current cost of rebuilding facilities to provide **the existing service**, using the best available technology.⁵ [emphasis added]

¹ Commerce Commission "Application of a TSLRIC Pricing Methodology – Discussion Paper" (2 July 2002) at [32] (2002 TSLRIC Discussion Paper).

² Commerce Commission, 2002 TSLRIC Discussion Paper at [6].

³ Gans and King "Comparing TSLRIC and TELRIC" CoRE Research (23 July 2003) at [2.2] and [4.2.1].

⁴ Ergas "TSLRIC, TELRIC and Other Forms of Forward Looking Cost Models in Telecommunications: A Curmudgeon's Guide" University of Auckland (1998) at page 7.

The concept of forward looking costs requires that assets are valued the cost of replacement with the modern equivalent asset (MEA). The MEA is the lowest cost asset which **serves the same function** as the asset being valued.⁶ [emphasis added]

- 42 In summary, the Commission is required to model networks capable of providing the reach and functionality received by RSPs who purchase those services. The Commission recognised this in paragraph 85.1 of the Paper, when it said that “the hypothetical provider is assumed to supply the same scale and scope of services provided by the regulated operator.”

The UCLL STD service

- 43 The functionality of the UCLL STD service delivered by Chorus includes:⁷
- 43.1 providing access to physical medium (copper pair) for the purpose of transmitting communications signals;
 - 43.2 making available the full properties of that physical medium (within the constraints of the Interference Management Plan);
 - 43.3 permitting transmission of signals over a wide range of frequencies from DC to several MHz. This enables transmission of not only communications signals, but also DC or AC power;
 - 43.4 enabling provision of the same retail services supported by the current UCLL service, using the technologies currently used by RSPs in provision of those services;
 - 43.5 allowing use of the same CPE as is used with services based on the current UCLL service;
 - 43.6 allowing voice services to function during a power outage by means of power transmitted from the network to CPE;
 - 43.7 offering Layer 1 (physical layer access);
 - 43.8 being non-blocking;
 - 43.9 being capable of offering dedicated connectivity from the MDF site to a specific end-user at a per-user price;
 - 43.10 supporting existing service set including POTS, voice (VoIP), broadband, and voice-band data (fax, dial-up internet, alarm circuits) services, at current and forecast levels of end-user traffic demand; and

⁵ Guthrie Small & Wright “Pricing Access: Forward Looking versus Backward Looking Cost Rules” Victoria University of Wellington (October 2006) at page 2.

⁶ Ofcom, Controls and Consultation Document on BT Price Interconnection Charging, Annex D.

⁷ Taken in part from Analysys Mason “Response to Commission” (12 February 2014) at page 14.

- 43.11 being efficient to deploy and operate.
- 44 The Chorus and Telecom TSOs are also relevant to identifying the functionality of the UCLL STD service. The TSOs describe specific services which must be provided and which are currently provided over Chorus' UCLL network.
- 45 Chorus' TSO network service is defined in terms of the Baseband service, which is provided over a range of technologies including the copper local loop. For this reason it describes some but not all of the functionality of the UCLL STD service.
- 46 Telecom relies on the Chorus TSO network service to be able to meet its TSO commitment to deliver local residential telephone service. The TSO services that Telecom must provide, that are currently enabled by the functionality of the UCLL network, include:
- 46.1 the local residential voice telephone service;
- 46.2 the local residential dial up data service, which includes:
- (a) standard facsimile calls which use standard facsimile apparatus and employ the procedures for facsimile document transmission generally available before 20 December 2001; and
 - (b) standard Internet calls which are dialled by a Telecom residential customer to use Internet services of the type which were generally available before 20 December 2001, and Internet services similar to those; and
- 46.3 general quality requirements for the above services.
- 47 Therefore the TSOs identify some of (but not all of) the functionality of the UCLL STD service and must be capable of being provided by the network modelled by the Commission.
- 48 The retail services currently supported by UCLL include:
- 48.1 POTS;
- 48.2 VoIP;
- 48.3 Broadband;
- 48.4 Faxes;
- 48.5 Medical and security alarms;
- 48.6 Sky set top boxes;
- 48.7 EFTPOS (this works over VoIP but the standard is not deemed adequate by retailers as a permanent solution);

48.8 The Deaf Relay Service; and

48.9 Dial-up Internet access.

49 It follows from this discussion that paragraph 80 of the Paper is not a complete explanation of the Commission's task:

We are required to model and establish the cost of a hypothetical MEA network that is **capable of competing with** Chorus' UCLL Service. [emphasis added]

50 The Act requires more than this. The task is not to identify the forward-looking cost of providing a service capable of competing with the UCLL STD service. The task is to identify the forward-looking cost of providing the UCLL STD service. That service may be modelled as if it were provided over an equivalent technology (the MEA). As discussed in the attached Analysys Mason report *Response to Commission* (Response Paper), the MEA is the lowest cost, commercially in-use technology that meets all the characteristics of the UCLL specification.

51 For the same reason, paragraphs 101 and 102 of the Paper, which suggest the Commission might use in its model assets that are not capable of delivering all of the service attributes currently delivered under the UCLL STD service, understate the statutory task on price review.

52 Following these paragraphs, Question 22 in the Paper asks:

What, in your view, are the important characteristics of Chorus' copper local loop network that must be available from the MEA? Please outline the reasoning for your view.

53 Again, this question understates the task set by the Act on price review. The Commission must model the forward-looking costs of providing the service that is the subject of the price review application, not a different service or a competing service.

54 This conceptual misdirection leads the Commission to give an incomplete description of its statutory task. Instead of defining the service which must be costed, and then determining how that service would be delivered using modern technology, it focuses on what modern technology would be deployed, even though that technology is not capable of delivering the total service being costed.

THE FINAL PRICING PRINCIPLE – TSLRIC

55 The pricing principle to be applied is TSLRIC. TSLRIC is defined in Schedule 1 as:

The forward-looking costs over the long run of the total quantity of the facilities and functions that are directly attributable to, or reasonably identifiable as incremental to, the service, taking into account the service provider's provision of other telecommunications services and includes a reasonable allocation of forward-looking common costs.

56 Forward-looking common costs is defined in Schedule 1 as:

- (a) Means those costs efficiently incurred by the service provider in providing the service that are not directly attributable to providing an additional unit to that service; but
- (b) Does not include any costs incurred by the service provider in relation to a TSO instrument

Network design

57 The definitions of TSLRIC and forward-looking common costs, and the requirement to start with the service delivered under a specific STD (discussed above), establish some basic starting points for the design of the network in the Commission's model:

57.1 New Zealand's geography;

57.2 the location of end-users that Chorus is required by the STD to provide a service to;

57.3 the "other telecommunications services" that Chorus provides; and

57.4 forecasts of volumes across Chorus' network.

Forward-looking costs

58 A forward-looking costing exercise such as TSLRIC involves the Commission identifying the efficient costs of providing the service rather than identifying Chorus' actual costs. However, any efficiency included in the modelled network has to be one which can be implemented in the real world (any efficiency which cannot be implemented is not actually efficient, it is impossible). As referenced earlier, the concept of the well-known "hybrid model" does ensure an appropriate degree of real world calibration.

Forward-looking costs - Technology choice

59 The MEA must be:

59.1 Capable of delivering the functionality of the service that the Commission is charged with costing; and

59.2 Commercially proven and in use.

60 Analysys Mason advises that:⁸

The consideration "best in-use" should simply mean the currently deployable technology that meets the required specification while minimising forward-looking costs for the modelled operator.

61 The UK telecommunications regulator Ofcom says⁹:

⁸ Analysys Mason "Response to Commission" (12 February 2014) at page 21.

⁹ Ofcom "Network Charges from 1997 – Consultative Document" at [3.4], accessible at: http://www.ofcom.org.uk/static/archive/oftel/publications/1995_98/pricing/netcha97/chap3.htm.

The MEA is the lowest cost asset which serves the same function as the asset being valued. It will generally incorporate the latest available and proven technology and is the asset which a new entrant might be expected to employ.

- 62 The Commission recognised the first constraint in its 2004 TSLRIC Principles Paper where it noted: ¹⁰

The MEA is the lowest cost asset, providing **at least equivalent functionality** and output as the asset being valued [emphasis added]

- 63 In the same paper, quoting the Independent Regulators Group report on FL-LRIC:

The MEA will generally incorporate the latest available and **proven** technology, and will therefore be the asset that a new entrant might be expected to employ¹¹ [emphasis added]

- 64 The application of the MEA criteria is a central issue in the Paper. As discussed below, the Commission has considered technologies that do not meet the test of an MEA of the UCLL STD service. Only copper meets the requirements of an MEA. It is also the only technology consistent with the UCLL service description.

Forward-looking costs - Asset valuation

- 65 As an abstract economic concept, TSLRIC is capable of being implemented using historic or forward-looking costs. However in the New Zealand context, the Act has specified forward-looking costs must be used.

- 66 The Commission has looked at the question of which method of valuing assets best meets the legal framework in the Act in its 2002 and 2004 TSLRIC papers. In 2004 the Commission found that (in agreement with the earlier 2002 Paper):

ORC [Optimised Replacement Cost] is the appropriate asset valuation methodology for the purposes of any determination that applies TSLRIC as the final pricing principle.¹²

[E]ven if the assets were to be replaced by the same asset, historical costs will not capture the current and future cost of purchasing and installing that equipment.¹³

- 67 In the context of modelling the appropriate compensation to Telecom for delivering TSO services, the Supreme Court has decided that an optimised replacement cost valuation methodology should not be used for "legacy assets" (essentially assets the network provider does not intend to replace).

- 68 However the historical context of TSO compensation is different. By its nature it is a backward-looking approach to identify costs that could have been avoided. The very

¹⁰ Commerce Commission "Principles Paper: Implementation of TSLRIC Pricing Methodology for Access Determinations under the Telecommunications Act 2001" (20 February 2004) at [78] (2004 TSLRIC Principles Paper).

¹¹ Commerce Commission, 2004 TSLRIC Principles Paper at [78].

¹² Commerce Commission, 2004 TSLRIC Principles Paper at [142].

¹³ Commerce Commission, 2004 TSLRIC Principles Paper at [136].

purpose of TSLRIC prices for access services, and the clear parliamentary intent and regulatory precedent, is to identify a forward-looking cost.

THE TSLRIC MODEL

69 The Commission's TSLRIC model should have the following features.

Full copper network

70 The Commission must model the full copper network. The Commission has before it price review applications for the UCLL STD service and the SLU STD service. In order to properly cost those services the Commission must build a model of the full copper network (for example that also includes the costs of the UCLFS service). This is the only way that the Commission can be sure that it is capturing all of the appropriate costs of the copper network and not double counting any costs. It is also required by the definition of TSLRIC, which requires the Commission to take into account Chorus' provision of other telecommunications services.

Technology choice

71 The starting point of identifying the functionality of the service in question informs the choice of technology in the TSLRIC model, which is one of the main subjects of the Paper. As discussed above the Commission does not have the legal ability to pick and choose between the service attributes of the UCLL STD service.

72 The legal framework requires the Commission to model a service that delivers **all** of the service attributes currently delivered by Chorus under the UCLL STD (in the case of those price review applications), and then identify the TSLRIC costs of doing so.

73 The appropriate network to model is the copper network. This network is current, it delivers the full functionality of the UCLL STD service at the lowest cost, and it is consistent with the particular demands for functionality in the New Zealand context (including supporting Telecom's retail TSO commitments and providing the full suite of prices required).

74 Modelling the copper network will also involve familiar technology and verifiable information sets. It will therefore be less contentious, less time consuming, and more credible.

Network design

75 We propose that the Commission adopt a forward-looking model based on Chorus' existing network configuration as an equivalent of the deployment of a hypothetical operator, and Chorus' actual asset counts as an equivalent of the forward-looking asset account. The proposed approach is set out in the attached Analysys Mason Hybrid Modelling Paper.

76 The advantage of this approach is that the Commission can be sure that it is possible to build and operate a copper network in New Zealand, with these quantities of assets and levels of operating costs. This is a significant advantage over a fully bottom up approach, which inevitably risks making efficiencies that cannot be implemented in the real world. In addition this modelling approach could be achieved relatively quickly and

would be cheaper to execute compared to a full bottom-up model, which would be a time-consuming and expensive calculation, and would also require a calibration process to examine network design and asset counts in great detail.

- 77 Within the overall copper network framework of the hybrid approach, the “modern equivalent asset” concept can and should be applied to individual network components such as cabinets or cables or switches or DSLAMs. While the overall network technology and design modelled should be Chorus’ existing network, individual network components within that network should be modelled as the modern equivalent. For example, cables should be modelled as modern cables, not the old lead-wrapped cables. This is an implication of the “forward-looking” requirement in the Act and ensures that the network modelled is appropriately “modern”.

Asset valuation

- 78 As discussed above at paragraphs 65 to 68, the requirement that the TSLRIC cost be forward-looking requires that assets be valued at current replacement cost. This was the conclusion reached by the Commission in 2004.

Depreciation

- 79 The Commission has outlined a number of approaches to depreciation. We believe that the economic approaches to depreciation (economic depreciation and the tilted annuity) are superior. We therefore disagree with the Commission’s preliminary conclusion that an accounting based approach should be used (albeit the Commission places tilted annuity in that category). Economic depreciation is superior to the tilted annuity where there is the possibility of migration to an alternative access technology (as there would be with either a copper model or a fibre model) and where demand is changing at a non-constant rate. The tilted annuity is in essence a simplified form of economic depreciation where constant changes in asset prices and constant demand can be assumed. The adjusted tilted annuity, where the tilted annuity is adjusted for (constant) demand changes, might be an appropriate simplification to ensure the model results are delivered by December 2014.

- 80 This is discussed in more detail in the Appendix in response to Questions 37 and 38.

Demand

- 81 When it comes to network reach, what is relevant is the scope of the UCLL STD service provided by Chorus.
- 82 Chorus’ obligations under the UCLL STD are to respond to any request from an RSP to supply service on any line in Chorus’ UCLL network that has not been disconnected. This means the regulatory obligation attaches to both active and currently inactive lines on Chorus’ network. This sets the geographic scope of the network that the Commission must model.

Trench sharing

- 83 Sharing with other utilities should be assumed only where it is a realistic proposition. Sharing should not be assumed where there is no spare capacity available or where there are other physical or regulatory constraints which would prevent sharing.

Allocation of shared assets

- 84 An element based approach should be adopted. We note an element based approach was suggested by the Commission in its 2004 Principles Paper, when it last considered this issue. Under this approach, allocations of shared assets would be based on each service's use of the asset. As Analysys Mason notes, this element-based approach is rather more practical than the "small service increment" alternative and consistent with the Commission making reasonable efforts to complete its modelling by 1 December 2014.
- 85 This is discussed in more detail in the Appendix in response to Question 36.

WACC

- 86 The cost of capital input methodologies represent an important body of regulatory precedent for the WACC. The Commission has consulted extensively on these within the electricity, gas and airport industries and they have recently been tested on appeal. However these have not been consulted on previously with the telecommunications sector. Moreover, time has passed since the Commission's IM decision. New evidence, including important international regulatory precedent, has become available. It is important that the Commission retains an open mind to the prospect of changing aspects of its cost of capital approach under the input methodologies where improvements can be identified, and where these are consistent with the recent High Court decisions.
- 87 This is discussed in more detail in the Appendix in response to Questions 39 and 41.

Operating costs

- 88 The appropriate approach to estimating operating expenditure is to use Chorus' actual operating costs, as a reasonable equivalent of the hypothetical operator's costs. A similar approach should be adopted with respect to the costs of operational and support systems. This approach is consistent with regulatory precedent: as Analysys Mason notes, local loop cost models in other countries use actual operating expenditure figures to inform their estimates to a large extent (e.g. via hybrid calibration). In any case, the potential alternative approaches are problematic, as discussed in the attached Analysys Mason Response Paper.
- 89 This is discussed in more detail in the Appendix in response to Question 43.

COMMISSION'S PROPOSALS SO FAR

- 90 The Commission's consultation documents thus far – the Paper and the material used in the 19 December 2013 workshop – are restricted to modelling an all-fibre access network. A small number of options are suggested and comments invited, but all options involve fibre.
- 91 A copper access network is not considered, and yet that best meets the criteria for selection as the MEA (as advised by Analysys Mason in its Response Paper).

The proposed technology

- 92 As noted above, the legal starting point for the Commission is that it must model a network that is capable of delivering the full functionality of the service provided by Chorus. This is also a mandatory criterion for use of an MEA.
- 93 The functionality of the UCLL STD service is described above in paragraphs 43 to 48.
- 94 In response to the Commission's Question 25, which asks which criteria are most important for the selection of an MEA, Analysys Mason states:¹⁴
- The criteria are not items which are more or less important to be weighted together: once selected, they are pass/fail criteria. A technology is either the lowest cost for the modelled operator or it is not; it is either non-blocking or it is not; it either allows the access seeker to install their own electronics to provide a competing layer 2 service, or it does not; it is either offering dedicated connectivity to a specific end user at a per-user price or it is not.
- 95 Analysys Mason examines each of the possible MEA options and tests whether they meet particular service requirements of the UCLL STD service. In short, none of the fibre technology options considered by the Commission have the full functionality and capability of the UCLL STD service delivered by Chorus.
- 96 This means none of the fibre options considered by the Commission are a valid MEA. The only valid MEA – the only technology that satisfies the legal requirement of delivering the full functionality of the UCLL STD service – is the copper network.
- 97 Analysys Mason also identifies well-known potential “fixes” to the functionality shortfalls of the all-fibre options. However these do not resuscitate the all-fibre options. They involve equipment changes at the end-user end and the RSP end. Even if these equipment changes were effective, and paid for by the network supplier, from the perspective of end-users and RSPs, the fact that equipment changes are needed means the functionality of this technology option is different.
- 98 Evidence of the impacts and importance of keeping the existing CPE and of the DC power path is available from the Telecom technology trial (PSTN to VoIP Migration) of December 2010 to February 2011. Some of the key findings from the related industry consultation were:¹⁵
- 98.1 Significant potential industry impact affecting up to 500,000 sky units and up to 300,000 monitored alarms (using dial-up modems);
- 98.2 Discussion on the management & overhead of batteries, highlighting some potentially major operational implications, eg: battery swap out every 5 years;

¹⁴ Analysys Mason “Response to Commission” (12 February 2014), at page 22.

¹⁵ Telecom “Low Speed Modem Trial – Initial Results Communication (24 February 2011), accessible at: <http://www.med.govt.nz/sectors-industries/technology-communication/pdf-docs-library/communications/telecom-separation/variations-4-subsections/v4-pstn-consult-appendix-v-trial-results.pdf>.

- 98.3 Some alarms require/expect power down the cable;
- 98.4 "Civil Defence expect PSTN to be working after other services drop out first e.g. power, cellular, RF";
- 98.5 Not all the codec's used in VoIP services available today support Alarms, Sky etc. "The customer isn't told except in fine print of T&C's & they don't understand the ramifications";
- 98.6 There are significant cost & time implications to aligned industries and customers with any upgrade to a VoIP/IP only environment.
- 99 In an earlier 2001 White Paper, the following costs for replacement of certain customer premises equipment was estimated at:¹⁶
- 99.1 \$125 million for Sky set top boxes;
- 99.2 \$248 million for security alarms
- 99.3 \$65 million for medical alarms
- 99.4 \$90 million for EFTPOS terminals; and
- 99.5 \$171 million for dial-up modems
- 100 We are conscious that these figures are dated but they do suggest that the costs cannot be ignored. Standing back, the available studies suggest that the issues identified with a fibre MEA are significant (and costly to remedy).
- 101 In its submission for Vodafone on the Government's Review of the Telecommunications Act 2001, Network Strategies outlines the technical capabilities of copper and how they relate to fibre:¹⁷

While the discussion document endorses the TSLRIC standard as appropriate for wholesale copper pricing in New Zealand, it proposes that fibre technology is a more suitable MEA than copper since the former would be the technology of choice for a hypothetical new entrant. However, for a number of reasons it is evident that at this point in time fibre cannot be seamlessly swapped for copper as the MEA in New Zealand:

- investment in copper infrastructure is still occurring, particularly for VDSL services
- the GPON network architecture does not deliver physical services that are the equivalent of an unbundled copper service (although virtual unbundling has been implemented in other jurisdictions)

¹⁶ Telecom New Zealand "White Paper: Telecom report to the Minister of Communications and Information Technology regarding product and technical issues relating to "Primary Line Voice" services"" (31 March 2001).

¹⁷ Network Strategies "Review of the Telecommunications Act 2001: Key issues" (13 September 2013) at pages 42 - 43.

- fibre is only available on a limited geographic basis so cannot serve as a ubiquitous MEA, even when the UFB deployment is complete
- given the early stage of fibre deployment, there is still considerable uncertainty regarding the costs while demand remains low
- many characteristics of fibre (costs, network performance) differ substantially from copper, meaning that to achieve 'equivalence' with copper it is necessary to consider introducing adjustments to the analysis – there is no consensus regarding an appropriate approach for this as few regulators have attempted implementation of a fibre MEA.

102 In the same submission process, Covec prepared a paper for the Coalition for Fair Internet Pricing which explained that fibre does not provide equivalent services to Chorus' network:¹⁸

Regarding "equivalent" there are additional challenges. The fibre network clearly does not provide equivalent services. On one hand, it can offer far higher data transmission speeds. On the other, it cannot provide existing services such as a UCLL service, into which several firms have sunk asset-specific capital investment.

Potential "fixes" for short-falls in functionality

- 103 The Analysys Mason Response Paper identifies that all-fibre technology options fail to deliver the full functionality and capability of the UCLL STD service delivered by Chorus. Analysys Mason also identifies well known potential "fixes" to these short comings. These include installing batteries at the end-user premise, installing ATA equipment at the end-user premise, exchanging DSL modems (that will no longer work) with replacement CPE and central equipment and requiring voice-only customers to buy broadband and use VoIP.
- 104 If the Commission takes the approach of considering these fixes when assessing whether a fibre-only network (or fibre/wireless network) qualifies as an MEA, both the cost and workability of these fixes must be considered.
- 105 Analysys Mason identifies the following areas where alternative technology does not deliver the functionality of the UCLL STD service, and potential fixes:¹⁹

¹⁸ Covec "Telecommunications Act Review: Economic Issues" (13 September 2013) at [141].

¹⁹ Analysys Mason "Response to Commission" (12 February 2014) at pages 26-27.

	Copper to the home	Copper from cabinet to the home (at FTTC nodes)	FTTH PON end to end	FTTH P2P	Wireless (e.g. LTE)
Uses existing voice CPE	Yes	Yes (multiple solutions possible: UCLFS, sub-loop+ sub-loop extension service, or sub-loop with PSTN line card at the cabinet)	No. May require ATA to use voice (i.e. POTS would be provided via VoBB)	No. May require ATA to use voice (i.e. POTS would be provided via VoBB)	No. Likely to need different CPE (supporting relevant wireless protocols) rather than ATA
Uses existing broadband CPE (DSL modem)	Yes	Yes	No	No	No
Allows voice services to function during a power outage	Yes	Yes if from the MDF using UCLFS or sub-loop+ sub-loop extension service; if from the cabinet, requires back-up for cabinet electronics	No (could add battery back-up)	No (could add battery back-up)	No (could add battery back-up)
Offers suitable layer 1 input for an access seeker seeking to build its own infrastructure to provide a layer 2 service	Yes, can economically build DSL on top	Yes, either at cabinet using sub-loop UCLL or at MDF using sub-loop UCLL and sub-loop extension service	No, because offers layer 2 already. Adding a further layer 2 adds cost with minimal functionality not present in the existing layer 2	Yes, can build e.g. point-to-point Ethernet	No, because offers layer 2 already. Adding a further layer 2 adds cost with minimal functionality not present in the existing layer 2

	Copper to the home	Copper from cabinet to the home (at FTTC nodes)	FTTH PON end to end	FTTH P2P	Wireless (e.g. LTE)
Non-blocking	Yes, non-blocking	Yes, non-blocking on sub-loop; sub-loop extension service is non-blocking; UCLFS is non-blocking	Although shared assets are used, in practice, likely to be non-blocking if the desired service speed is not excessive (e.g. up to 80Mbit/s per end connection)	Yes, non-blocking	No, blocking. Cell has maximum capacity and other users traffic may cause your traffic to be delayed
Dedicated connectivity from the MDF site to a specific end user at a per-user price	Yes	Yes if using sub-loop alone (but from cabinet site not MDF). Yes for using combination of sub-loop and sub-loop extension service	Shared, but in practice can provide quasi-dedicated capacity	Yes	No. Cell has maximum capacity and other users traffic may cause your traffic to be delayed
Supports existing service set including POTS, voice (VoIP), broadband, and low-speed data	Yes	Yes	Broadband yes. Voice, fax, and low-speed data can be provided using an ATA. This depends on the capabilities of the ATA and the configuration of the fax or low speed modem.	Broadband yes. Voice, fax, and low-speed data can be provided using an ATA. This depends on the capabilities of the ATA and the configuration of the fax or low speed modem.	Broadband throughput is too low for typical current fixed broadband demand. Fax and low-speed data can be an issue

106 On their face, the fixes are likely to be costly. Importantly, they also potentially impose this cost on parties other than the network operator. Installing batteries, ATA

equipment and exchanging DSL modems is no small task, and in addition voice-only customers would need to buy broadband connections.

- 107 There is enough information available to show that once these fixes are factored into the assessment of fibre only options, they are going to be too costly and too unattractive to consumers to be a realistic MEA. For example, Analysys Mason concludes:²⁰

However, once we consider the additional costs that an FTTH-P2P network would have to bear to provide a service comparable to the existing UCLL (specifically, battery back-up for every end user, ATA for voice users, and additional broadband modems – both to replace DSL modems and for voice-only users to allow the use of voice over broadband (VoBB)), it is very likely in our view that copper remains the MEA for UCLL.

- 108 Other commentators have addressed the relative costs of copper and fibre networks. For example, TERA found that fibre was likely to have higher capital costs than copper.²¹ Local Fibre Companies have found that fibre deployment costs in New Zealand are high. For example, Enable has recently increased its projected estimate of the deployment cost of its network to \$401m,²² and has stated that:²³

Actual cost information from building the fibre networks and connecting premises shows that a monthly price of \$50.50 ... is necessary to recover the cost of the fibre network.

New Zealand considerations

- 109 An immediate large scale move away from the copper network in New Zealand would at present be very challenging. It is required to support Telecom's TSO services, and at present Telecom requires that Chorus provide copper-based TSO inputs.
- 110 The reason for this is illustrated in the discussion above. Delivering the TSO functionality and services using a fibre network implies significant changes at the RSP (i.e. Telecom) and end-user premises (i.e. New Zealand homes).
- 111 In the New Zealand context, the Commission's proposed scenario where the modelled hypothetical operator serves all available end-users must take these TSO restrictions into account. Currently, there is no credible scenario in which a new entrant would not be required, by a mix of commercial and political pressure, to provide the copper network that supports Telecom's retail TSO obligations. This must be factored into any application of the MEA approach to the New Zealand context.

²⁰ Analysys Mason "Response to Commission" (12 February 2014) at page 28.

²¹ Danish Business Authority "Modification and development of the LRAIC model for fixed networks 2012-2014 in Denmark: MEA Assessment" (May 2013) at page 20.

²² Christchurch City Holdings Limited 2013 Annual Report at page 36, accessible at: http://www.cchl.co.nz/content/library/CCHL_annual_report_2013.pdf.

²³ Enable Networks "Submission from Enable Networks Limited to the Ministry of Business, Innovation & Employment – Review of the Telecommunications Act 2001 Discussion Document" (13 September 2014) at [2.3].

- 112 A further New Zealand consideration is the need for the Commission's model to produce TSLRIC information on the cost of the UCLL STD service, the SLU STD service and the UCLFS STD service. It seems highly unlikely that the proposed all-fibre network models could produce credible prices for the full suite of copper network services.

Adjustments

- 113 The Commission's material suggests that it might assume a network operator that enters with a technology that is more costly than Chorus' copper network. The fix to assuming a more expensive technology would then be to claim that the different technology has greater capability and for this reason make an adjustment to extract a price for a service with the functionality of the UCLL STD service.
- 114 This is novel and untested. No regulator has taken this approach. Neumann and Vogelsang noted this in the paper *How to price the unbundled local loop in the transition from copper to fiber access networks*, which the Commission relies upon:²⁴

This article presents a **novel solution** to the problem mentioned above. It is to price copper access based on the modern equivalent asset of fiber access. Since fiber access is superior to copper access, the cost of fiber access (as a basis for pricing copper access) should, however, be corrected by the performance delta between copper and fiber access. [emphasis added]

- 115 The attached Analysys Mason Response Paper observes:²⁵

No [the Commission should not make an adjustment]. In our view such approaches are not consistent with the requirement of the Act for a TSLRIC approach to FPP. The performance adjustment approach does not provide correct incentives for investment by Chorus (or a hypothetical new entrant) as it does not lead to expected NPV neutrality (due to the cap of the copper prices at LRIC+ if willingness to pay is low), and the willingness to pay "delta" is likely to vary over time and be small. It is inconsistent with the existence of the LFCs selling services at negotiated prices. Finally it is also more costly to undertake.

...

The "value adjustment" approach has not been adopted by other regulators. It has been consulted on as an option in Switzerland, but in Switzerland the revised post-consultation Telecoms Ordinance is yet to be published or adopted.

PTS in Sweden do model a different technology, but does not apply a performance adjustment.

The position of DBA in Denmark and the European Commission is similar: it is to model fibre (FTTH in Denmark, FTTC for the European Commission) and then adjust for the cost difference with copper. However to do so is to model the cost of a copper network indirectly (by modelling FTTC and taking away the cost of fibre and adding the cost of copper, all you are doing is costing a copper network with the topology of a FTTC network).

²⁴ Neumann and Vogelsang "How to price the unbundled local loop in the transition from copper to fiber access networks" (20-23 October 2013) at page 2.

²⁵ Analysys Mason "Response to Commission" (12 February 2014) at page 29.

116 Our concern is that any resulting figure will lack credibility and meaning. It will be the result of an adjustment that is itself full of assumptions, approximations and very little hard data. This is unlikely to result in the regulatory and commercial certainty that the telecommunications sector needs.

Commercial-in-use technology

117 Where an MEA implementation of TSLRIC is used, technology is restricted to commercial-in-use technology. This is part of the internal logic of the method.

118 The fact that the UFB network is only occurring in New Zealand because significant government funding was made available emphasises that this point – that FTTH is not an alternative commercial-in-use technology – applies in New Zealand. In other words, the UFB project is evidence that FTTH is not a valid MEA in New Zealand.

119 The LFCs are not a reliable indicator of what the hypothetical new entrant would do. They are making their decisions constrained by the conditions attached to the subsidy, and they are not setting out to provide a service with the same functionality as the UCLL STD service.

120 In its submission on the Government Review, CallPlus made it clear that it did not consider a FTTH rollout to be a commercial-in-use MEA:²⁶

The proposed review is the wrong course of action for many reasons including: ...

- The methodology is wrong. A fibre to the home (FTTH) rollout is not the replacement cost of copper. Internationally a combination of fibre to the node (FTTN), VDSL copper and Wireless LTE are being deployed. Again, these developments will be even clearer in 2016.

PRICE REPLACEMENT / BACKDATING

121 The price review determination should require and set the terms for backdating. In summary, Chorus' position is:

121.1 the High Court and Court of Appeal decisions in *Telecom New Zealand*²⁷ make it clear that backdating a price review decision must be done, and that there is no discretion available to the Commission on this point. The courts emphasised that the TSLRIC price is more accurate and efficient and for this reason must be backdated;

121.2 the Commission has the ability to backdate prices which are upward price revisions by including in the pricing review determination terms that require wash-up payments to be made (and the fact that the STD sets a price cap does not alter this position);

²⁶ CallPlus "Submission on the MBIE Review of the Act Discussion Paper" (September 2013) at [16].

²⁷ *Telecom New Zealand v Commerce Commission and TelstraClear*, CA75/05, 25 May 2006.

121.3 the terms of the STD are irrelevant. The Commission has the power to implement backdating by setting repayment terms in the pricing review determination; and

121.4 the best way to mitigate the impacts of backdating is for the Commission to complete the FPP review in a timely and robust manner (by issuing a section 45 notice requiring Chorus, through Analysys Mason, to complete the modelling work under the supervision of the Commission). In addition, Chorus will operationalise backdating in a commercially responsible manner (as discussed in our response to Question 8).

122 This is explained in more detail in the Appendix in response to Questions 5 to 8.

TERM OF THE PRICE REVIEW DETERMINATION

123 When considering the term of the determination a relevant consideration is the government review that is timed to facilitate legislative reform by 2020. A co-ordinated and forward-looking regulatory framework is an important objective for Chorus. However we cannot know that will happen in 2020 and the Commission must work with the current legislative framework.

124 The appropriate length of the price review determination is 10 years, with the following features:

124.1 A price path that is fixed for the 10 year period. The slope of the price path should reflect the depreciation profile identified as appropriate;

124.2 This places the risk of 10 year forecasts of demand and input costs on Chorus.

125 This approach will maximise the commercial certainty for Chorus and its customers in the transition to fibre. For this reason we do not favour re-opening the TSLRIC calculation in the middle of the regulatory period and debating key modelling parameters again.

ALIGNMENT OF PROCESSES

Full copper network model

126 The Commission currently has before it price review applications for the UCLL STD service and the SLU STD service. In addition, in another pricing review, the Commission must identify the TSLRIC of the additional costs of providing the UBA STD service. As a minimum the Commission's models must be capable of identifying the TSLRIC cost of delivering those services (all core charges – monthly rental, connection, transfers).

127 The SLU STD service is part of this price review process, because:

- 127.1 The SLU price was formally part of the section 30R process commenced on 25 August 2011, and it stayed within the terms of reference as that process evolved;²⁸
- 127.2 The SLU STD price was changed as part of the 30R determination made on 3 December 2012 (the determination that also changed the UCLL STD price);
- 127.3 At least some of the price review applications accepted by the Commission relate to the SLU STD price.
- 128 As a result, the Commission must set the TSLRIC price for the SLU STD service as part of the price review process.
- 129 If it is to set these prices accurately, the Commission must model the full copper network. This is the only way that the Commission can be sure that it is capturing all of the appropriate costs of the copper network and not double counting any costs. It is also required by the definition of TSLRIC, which requires the Commission to take into account Chorus' provision of other telecommunications services.
- 130 To ensure a coherent outcome, the Commission's model should be capable of identifying the TSLRIC cost of UCLFS. While the Commission is not required to set the UCLFS price as part of this process, it will be important that the TSLRIC cost of UCLFS is made visible. Comprehensive modelling will provide full information to the Commission, Chorus and its customers, and enable parties to assess whether the de-linking of UCLL and UCLFS is required.
- 131 It is important the Commission and market participants have a clear picture of how these issues will be tackled this year. The Commission should be aiming, by December 2014, to finalise comprehensive models that enable the Commission to:
- 131.1 Set a TSLRIC based price for the services that are the subject of the applications before the Commission – UCLL, SLU and UBA;
- 131.2 Identify the TSLRIC cost of UCLFS and if UCLFS costs are different to UCLL TSLRIC costs, complete a schedule 3 investigation into delinking UCLL and UCLFS.
- 132 This is one reason why the Commission should model the copper network. The direction proposed in the Commission's materials so far – to model a hypothetical all-fibre or fibre/wireless network - will not result in a model capable of producing the full portfolio of prices needed. Modelling the full copper network will also be more time efficient than modelling the options proposed in the Paper – a matter we discuss next.

²⁸ See the draft review decision dated 9 September 2011; draft review decision dated 4 November 2011; final clause 4A review decision dated 24 November 2011; discussion document dated 17 February 2012; draft determination dated 4 May 2012.

Timetable

- 133 As the Commission is aware, there is a commercial context for these price review processes. All parties have an interest in identifying the final price for the copper access services as soon as possible.
- 134 There are also statutory indications that delay should be avoided. The Commission is aware of these. In relation to UBA:²⁹
- The Amendment Act requires us [the Commission] to make reasonable efforts to complete the price review determination by 1 December 2014.
- 135 And in relation to UCLL and price reviews in general, the Act requires a draft determination and final determination to be made as soon as practicable.³⁰
- 136 The Commission has made public statements to the effect that a TSLRIC process might be expected to take two years. This is close to the 22 month timeframe between the date when UCLL price review applications were filed and the 1 December 2014 statutory milestone.
- 137 Important features of the approach to the network model with time implications include:
- 137.1 Modelling the copper network, which is a known technology, and not a hypothetical all-fibre network which needs to be tested and verified at every step;
- 137.2 Modelling Chorus' full network rather than debating how to model a subset of the network;
- 137.3 Using the 'hybrid' approach described by Analysys Mason, which estimates the forward-looking asset count by reference to the existing asset count rather than complex, contentious and time-consuming algorithms;
- 137.4 Using the existing asset count also facilitates a consultation process with fewer steps; and
- 137.5 Using the section 45 process to require Chorus to build this model under the supervision of the Commission (which can issue binding requirements).
- 138 The Analysys Mason paper explains how, if the 'hybrid' forward-looking model is used, the modelling process can be completed in a timeframe that meets the statutory expectations, or shortly thereafter:³¹

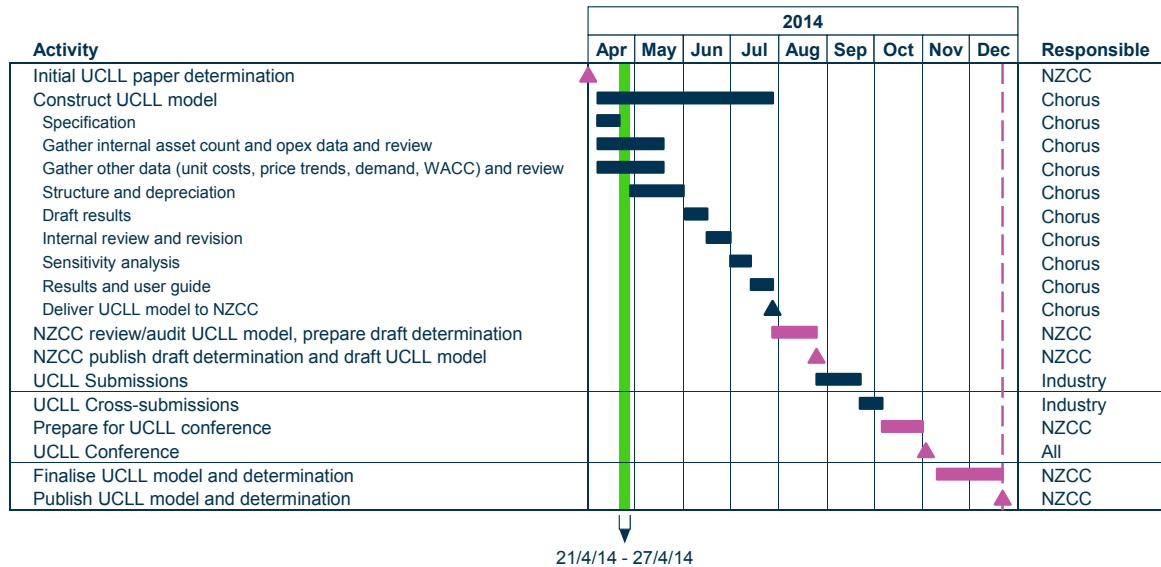
²⁹ Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle: Process and issues paper" (7 February 2014) at [9].

³⁰ Telecommunications Act 2001, sections 47 and 51.

³¹ Analysys Mason "Working paper – proposed hybrid approach to modelling the UCLL service" (12 February 2014) at page 4.

We believe that our proposed hybrid approach can be relatively rapidly implemented, allowing a full consultation in sufficient time to complete the UCLL process in December 2014.

Figure 0.1: Possible timetable [Source: Analysys Mason, 2014]



139 The local loop network model and the UBA model should continue to be run in parallel, but clearly require co-ordination. There will be common issues and therefore efficiencies to be gained in the consultation process.

Section 45 request

140 To assist with meeting this timetable Chorus suggests that the Commission should use the statutory power it has under section 45 of the Act to require Chorus to produce the TSLRIC cost models. This process sets up a division of labour that makes the most of the strengths of the Commission and Chorus:

140.1 The Commission can issue requirements that guide the cost modelling. This means the Commission can focus on making decisions that promote the purpose of the Act rather than building a cost model. It also means the Commission can address any concerns about "capture" or information advantage that might ordinarily attach to a cost model built by a regulated supplier; and

140.2 Chorus is motivated to apply the resources and engage the international expertise to build the cost model as quickly as is feasible.

141 We welcome the opportunity to discuss with the Commission how the section 45 process can be used to complete the TSLRIC modelling this year.

COSTS

- 142 Chorus' proposals seek to balance time, quality and cost as requested by the Commission. We have also borne in mind that, in addition to each party bearing its own costs of participation, the parties/industry will also bear the costs of the Commission (and its experts). This is through either a levy, direction choice by the Commission as to the proportion of the cost each party will bear or a combination of the two.
- 143 A number of parties have requested FPP processes. As the focus of the regulation and bearing significant impacts from the IPP determinations, Chorus' engagement will be obviously be high. We propose that Analysys Mason builds the model at Chorus' cost for use in this (and other) processes and request that this be taken into account if any distribution of the Commission's costs are to be determined.
- 144 For completeness, we note that the Commission may also require a party to meet some or all of another party's costs if, in the opinion of the Commission, the party has materially contributed to any costs or unreasonable delay.

APPENDIX 1: RESPONSES TO COMMISSION PAPER AND QUESTIONS

145 This appendix uses headings and sections as per the Commission's Paper.

We need to determine how long our UCLL FPP pricing determination will have effect

Question 1: We are interested in your views on the appropriate length of the regulatory period for a UCLL FPP price.

146 We agree that the Act requires that a pricing review determination have an end date. We consider that should be 2025, or ten years from the date the UCLL FPP is determined.

147 Chorus considers regulatory certainty to be the overriding priority in setting the length of the regulatory period. In particular:

147.1 A ten year price path would enable effective business planning for both Chorus and RSPs, and allow industry participants to put greater focus into innovation and investments in retail markets, rather than on regulatory disputes.

147.2 A regulatory period which encompassed the UFB build and a substantial part of the migration from copper to fibre would enable decisions around migration to occur against a backdrop of relative price certainty.

147.3 Cost recovery for telecommunications network investment can only be achieved over the very long term.

148 These considerations support a long term pricing determination. We propose an end date of 2025.

149 The price review determination can provide for a price path. Chorus' view is that the Commission should set a price path for the period to 2025 based on the depreciation profile (tilted annuity or economic depreciation) and adjusted for changes in demand. For example, if a simple tilted annuity were used the price path would follow that tilt. This can be achieved by:

149.1 a nominal annualised cost trend from a nominal tilted annuity (which includes nominal input cost trends and nominal WACC); or

149.2 a real annualised cost trend from a real tilted annuity (which includes real input cost trends and real WACC). These real dollars would be based on the first year of the regulatory period in which the current replacement cost of the assets is being established.

150 If the second is chosen, there would need to be a CPI adjustment to the real annualised costs for each year to compensate for expected inflation between the base year and the year of the regulatory period. Alternatively, a real price path could be set and then the most contemporaneously reported CPI be used to set prices at the beginning of the year

(rather than a forecast from the start of the regulatory period). This alternative would lower exposure to an uncertain forecast of inflation.

- 151 Beyond this, a ten year price path would involve Chorus taking the risks associated with ten year forecasts of demand, operating costs, capital expenditure etc.

Supplementary Question on Process at the End of the Regulatory Period

Question 1A: We seek your views on the issues raised in this paper.

- 152 We understand the Commission's proposal to mean that:

152.1 The Commission will set an expiry date for the price review determination, and that determination will set the maximum price payable for the UCLL STD service until the expiry date (the "PRD price").

152.2 The Commission intends to amend the STD using section 30R of the Act, to set a new price to come into effect on the day of the expiry of the price review determination (the "updated price"). The updated price will not be the PRD price, but rather will be a price calculated using the UCLL model, run with updated data.

152.3 The updated price, by dint of being in the STD, will have no expiry date.

152.4 If the Commission is not able to set an updated price in the STD before the expiry of the price review determination, the Commission will amend the STD, again using section 30R, to reflect the PRD price (a "temporary price", equal to the PRD price) until such a time as the Commission can calculate and amend the STD to the updated price.

- 153 Chorus seeks clarification on whether this understanding is correct.

Question 2: To what extent should the Commission update the assumptions of the cost based prices at each reset?

Question 3: Which considerations are relevant in resetting a TSLRIC based price?

Question 4: What role should NPV neutrality play in price resets?

- 154 The Commission has indicated its high level thinking about what may happen at the end of the regulatory period. The detail of any reset is a matter that is best considered nearer the time as it depends very much on modelling decisions the Commission is yet to make. However at the heart of any reset methodology must be the expectation of NPV neutrality. Importantly, this is not a matter that can be left to a potential reset.

- 155 Expected NPV neutrality is an essential element of a regulatory regime. If investors do not think that the regulator is committed to an expectation of NPV neutrality they will be reluctant to invest further. This means that when the Commission sets a TSLRIC price path for Chorus it should ensure that it does not later change the price path in a

manner that is not NPV neutral in expectation. In practice, this means that if in the future the Commission thinks it might adopt a lower TSLRIC price path (due to, say, change in technology) it must allow for that in a fair manner in prices today (by adjusting the depreciation profile).

We also need to determine whether the UCLL price will be backdated

156 The price review determination should require and set the terms for backdating. In summary (and as detailed in the answers to the Commission's questions below), Chorus' position is:

156.1 the High Court and Court of Appeal decisions in *Telecom New Zealand*³² make it clear that backdating a price review decision must be done, and that there is no discretion available to the Commission on this point;

156.2 the court was of the view that the Commission would meet this legal requirement by setting repayment terms in the pricing review determination;

156.3 this means the Commission has the ability to backdate prices which are upward price revisions (and the terms of the STD, including the fact that it sets a price cap and time limits on invoices issued under the STD does not alter this position); and

156.4 the best way to mitigate the impacts of backdating is for the Commission to complete the FPP review in a timely and robust manner (by issuing a section 45 notice requiring Chorus, through Analysys Mason, to complete the modelling work under the supervision of the Commission).

Question 5: Does the Commission have discretion to depart from a backdating of the FPP price?

157 No. The *Telecom New Zealand* decision is clear that backdating is required, in particular in order to achieve the purpose in section 18. Essentially, the final price is more "efficient" than the initial price, and should be backdated in order to avoid those relative inefficiencies.

158 In particular, the Court notes that:

158.1 "the s 18 purpose is better served by substituting the revised price for the initial price *ab initio* rather than only after a period of relatively less efficient pricing"³³;

158.2 a s 51 determination "must be regarded as more efficient by reason of its more sophisticated methodology"³⁴;

³² *Telecom New Zealand v Commerce Commission and TelstraClear*, CA75/05, 25 May 2006 (*Telecom New Zealand*).

³³ *Telecom New Zealand*, CA at [44].

³⁴ *Telecom New Zealand*, CA at [15].

158.3 “if a revised price were not to relate back that would in itself result in inefficiencies. That is because the revised price must be more efficient than the initial price”³⁵;

158.4 inefficiencies in relation to end-users (for having been charged inefficiently too little or too much) are unavoidable, but backdating can achieve “the establishment of the most efficient price as between the access provider and the access seeker”³⁶;

158.5 “any efficiencies of certainty” are offset by “inefficiencies in the lengthy operation of a less efficient price” on the other hand³⁷; and

158.6 the High Court was right to uphold that a price review determination be backdated, since that “is consistent with the substitutionary nature of reviewing or appellate decisions which vary an original decision.”³⁸

159 Based on this reasoning Chorus considers the Commission is required to backdate the TSLRIC UCLL price. For the same reasons, we consider the intermediate date considered in paragraph 45.1 of the Paper to be inappropriate.

Question 6: If so, are there section 18 factors (or other factors) relevant to the UCLL FPP which tell against backdating?

160 There are no section 18 factors (or other factors) relevant to the UCLL FPP which tell against backdating. The Court of Appeal was of the clear view that section 18 required backdating for pricing review determinations.

Question 7: To what extent is the impact of any backdating of prices likely to be limited to downward price revisions given the price determination sets a price cap from which Chorus has the ability to levy charges at a lower level?

161 Backdating should apply equally to both downward and upward price revisions.

162 It makes no difference whether the final TSLRIC price is higher or lower than the initial benchmarked price. According to the Court’s reasoning (discussed above for Question 5), efficiency dictates that the final price should relate back because it is based on a “more sophisticated methodology”³⁹ and it will establish the “most efficient price as between the access provider and the access seeker” regardless of whether the reviewed price is higher or lower than the initial price.⁴⁰

³⁵ *Telecom New Zealand*, CA at [35].

³⁶ *Telecom New Zealand*, CA at [41].

³⁷ *Telecom New Zealand*, CA at [43].

³⁸ *Telecom New Zealand*, CA at [44].

³⁹ *Telecom New Zealand*, CA at [15].

⁴⁰ *Telecom New Zealand*, CA at [41].

- 163 It is also not relevant that the UCLL STD sets a “price cap” that Chorus could theoretically agree to price under on commercial terms. Chorus has made clear its view that the UCLL price set by benchmarking is not reflective of forward-looking costs, and we have filed our price review application to address this situation. It is simply incorrect to suggest that, had the Commission set a higher price, Chorus would have voluntarily agreed to the benchmark price. It is also beside the point. As discussed above, the court has made a clear decision that section 18 requires a financial wash up so that RSPs are in the position they would have been in if the more sophisticated TSLRIC price had applied. This is implemented by including terms in the price review determination which prescribe how the wash up amounts are identified and paid.
- 164 It is not relevant that the UCLL STD General Terms do not allow Chorus to invoice RSPs for charges for a service it has provided beyond the period of 100 days from the supply of the service. While *Chorus* cannot charge or invoice for backdated prices, the *Commission* has the power to change the payment and invoicing terms as part of a pricing review determination.
- 165 The Commission has the power to backdate a price which is higher than the price set by benchmarking, and which relates to a service provided beyond 100 days before a determination, because:
- 165.1 Section 52(d) of the Act specifies that a final pricing review determination must include “the terms and conditions (if any) on which the pricing review determination... is made”.
- 165.2 The Commission has the power to set price-related terms in the pricing review determination other than simply the TSLRIC UCLL price, through section 52(d) of the Act.
- 165.3 The Court of Appeal in *Telecom New Zealand* did not disagree with the finding of Harrison J, that section 52(d) allows for the setting of terms which require payment:⁴¹
- However, s 52(d) may well authorise the Commission to impose a term stipulating repayment, as Harrison J held.
- 165.4 So, for example, if the Commission found that the TSLRIC price for the UCLL service was higher than the price set by benchmarking:
- (a) The Commission could amend the UCLL STD under section 52(a) to set the TSLRIC price cap.
- (b) It could then declare terms and conditions on which the pricing review determination is being made, under section 52(d), which provide that despite clause 15.12 of the STD (which covers general Chorus invoices for past services), Chorus may reissue invoices for the period of the

⁴¹ *Telecom New Zealand*, CA at [39].

backdating, for the amount of differential between the originally invoiced amounts and the TSLRIC UCLL price.

- (c) The UCLL STD is enforceable on its terms, which include terms addressing non-payment by RSPs, suspension of services. The pricing review determination will also be enforceable on its terms (which could continue the STD enforcement terms, or put in place additional enforcement terms using section 52(d)). Chorus could use these terms if an RSP failed to pay an invoice for the differential.

Question 8: If we backdate the UCLL FPP price, can we consider ways to mitigate the impacts of backdating, and if so, how should we do this and what practical considerations should we take in to account?

- 166 The Commission should make a determination providing for an immediate payment to or by Chorus (depending on whether the TSLRIC price is higher or lower) of the wash up amount calculated by multiplying the change in the UCLL price over the volume of UCLL purchased by each RSP during the backdating period. We do not think there are significant detrimental impacts to backdating. As the Court of Appeal in *Telecom New Zealand* discusses, inefficiencies in relation to end-users (for having been charged inefficiently too little or too much) is unavoidable, but backdating can achieve “the establishment of the most efficient price as between the access provider and the access seeker.”⁴²
- 167 Chorus will act in a commercially responsible manner in cases where backdating could be burdensome for our customers. While RSPs ought to be making provision for the possibility of UCLL backdating in their pricing decisions, we understand that in some cases back-dated sums could be significant and for some parties, immediate payment might therefore represent a payment challenge. In these cases (and on a case by case basis) we are willing to work with our customers on a payment schedule for any (positive) backdated sums that represent a significant burden to our customers. In these instances Chorus would use its existing processes for longer-term credit recovery to allow the back-dated sums to be recovered over a longer time frame in order to reduce any financial burden.
- 168 The best way to mitigate any impacts of backdating is to complete the FPP review in a timely and robust manner. We have proposed in this submission an approach to TSLRIC modelling that can be completed by 1 December 2014.
- 169 We do not support the approach, discussed at paragraph 45.2 of the Paper, which allows parties to recover backdated price changes through discounts or additional charges to future payments for a period of time, because:
- 169.1 the solution is contrary to the court’s logic of requiring backdating in the first place, which is to establish the most efficient wholesale price;

169.2 the Court of Appeal in *Telecom New Zealand* supports immediate settlement by noting that:

- (a) the later price must be considered more efficient than the earlier price⁴³; and
- (b) "if a revised price were not to relate back that would in itself result in inefficiencies"⁴⁴; and

169.3 there will be differences in the customers and consumption levels during the backdating period and the forward-looking period. It is not rational to explicitly set an inefficient price for forward-looking consumption decisions in order to correct for the price used in a past, different, set of consumption decisions.

Application of section 18

Question 9: What role should section 18 play in an FPP TSLRIC modelling exercise?

Question 10: What section 18 considerations should we take into account in the following respects: model design and approach; the determination or selection of individual parameters in the TSLRIC cost model; and in selecting a UCLL FPP price?

Question 11: What differences in the UCLL and UBA services support different section 18 considerations?

Section 18

170 Some of the modelling decisions are determined by the Act. As discussed in this submission, the Act requires a TSLRIC model that:

170.1 replicates the full functionality of the service being costed; and

170.2 identifies forward-looking costs. This requires current replacement costs, not historic costs.

171 Where the Commission strikes implementation issues requiring judgment, Chorus agrees with the observation in the Paper that section 18 will influence a number of aspects of the TSLRIC cost modelling process (paragraph 53).

172 The Paper raises a question about the potential cumulative effect of using the section 18 framework when making modelling choices. Paragraph 53 of the Paper states:

Given that section 18 will influence a number of aspects of the UCLL FPP cost modelling process, we will need to consider the cumulative effect of applying section 18 considerations at different stages.

⁴³ *Telecom New Zealand*, CA at [15].

⁴⁴ *Telecom New Zealand*, CA at [35].

- 173 The Commission is right to consider this issue, but the language of cumulative effect may ultimately be unhelpful. In developing the TSLRIC model the Commission faces something of a decision tree. Applying the section 18 framework to the choices in that decision tree will help the Commission identify the series of decisions that best promote the statutory objectives.

Application of section 18 - relativity

- 174 The Schedule 1 service description for UCLL includes the following:

Additional matters that must be considered regarding application of s18	The Commission must consider relativity between this service and Chorus' unbundled bitstream access service (to the extent that terms and conditions have been determined for that service)
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- 175 A similar "additional matter" is included in the service description for UBA.

The Commission's position

- 176 The Commission has interpreted this relativity consideration:

176.1 To be motivated by the ladder of investment, whereby RSPs are encouraged to migrate from the UBA access service to the UCLL access service; and

176.2 To be satisfied by setting each of the UCLL and UBA prices at the Commission's best interpretation of forward-looking cost (applying the applicable pricing principle).

- 177 From the Commission's 2013 UBA Decision:⁴⁵

Professor Vogelsang is of the view that relativity occurs if the same cost-based methodology is used. Our starting presumption is, therefore, that the relativity requirement is likely to be maintained given that both the UCLL and UBA prices are now set in accordance with similar TSLRIC-based forward-looking cost-based pricing methodologies.

Having considered the relativity between the cost of the UBA and UCLL services, we are satisfied that the forward-looking cost for the UBA service is likely to provide incentives to unbundle where efficient to do so.

- 178 Professor Vogelsang's statement is a reasonable starting point for a discussion of relativity, however it is only a starting point and further consideration of this matter is required. The quality of the engagement on this point would be enhanced if the Commission expanded further on its thinking about how it intends to ensure that the relativity requirement will be met.

- 179 The relativity requirement will be discussed further in Chorus' UBA submission.

⁴⁵ Commerce Commission "Decision [2013] NZCC 20: Unbundled Bitstream Access Service Price Review" (5 November 2013) at [275 – 276].

The outcomes a TSLRIC price may promote

Question 12: Having considered section 18 and international approaches to TSLRIC cost modelling, what outcomes should a TSLRIC model selection for UCLL promote in the New Zealand context and why?

Question 13: Should any of these outcomes be afforded a greater weight and, if so, why?

180 The Paper highlights a list of possible TSLRIC outcomes developed by the ACCC under different legislation 16 years ago. They reflect the Australian legislative requirements at the time. Chorus agrees that as a general matter, regulation should:

180.1 Promote efficient entry and exit in dependent markets;

180.2 Encourage efficient investment in infrastructure;

180.3 Promote efficient use of current infrastructure;

180.4 Incentivise efficient cost minimisation;

180.5 Promote the legitimate business interests of the service provider; and

180.6 Protect the interests of access users (of particular importance when the network owner is vertically integrated).

181 However we are conscious this is simply one list of appropriate outcomes, developed under a different statutory framework 16 years ago. It is not clear that this list should be definitive in the New Zealand context, nor that a discussion about how to weight the items on this list is the best way forward. The New Zealand legal framework is clear that outcomes to be promoted are the ones described in section 18.

182 The better approach is that the Commission should develop and apply a single, section 18, framework. Any other approach risks confusion and drifting away from the Act. The list of possible outcomes proposed by the ACCC in 1997 are only relevant to the extent they inform the section 18 framework.

A closer look at the fundamentals of TSLRIC

TSLRIC definition

Question 14: Do you agree with our interpretation of the components that make up the TSLRIC definition in the Act and if not, what interpretation is more appropriate?

183 At a high level, we do not disagree with the Commission's interpretation of the TSLRIC definition. However we have identified in this submission where the Paper has erred in applying the TSLRIC definition. In particular, the Paper has asked the wrong question – what is the TSLRIC of a competing service. The question to be answered is a price

review process is what is the TSLRIC of replicating the full functionality of the service in question.

184 We also do not agree that the term forward-looking costs necessarily implies the use of assets that are different to the assets in use. This point is discussed further below in our answers to Questions 22 to 27.

185 Below we make some further observations about the interpretation of an important aspect of the TSLRIC concept (forward-looking cost), and propose an element-based approach to the allocation of shared costs.

Forward-looking cost and Replacement cost

186 As Analysys Mason outlines in its Response Paper, the following aspects all need to be forward-looking:⁴⁶

- Technology deployed
- Style of deployment (e.g. buried/ducted underground)
- Demand
- Asset counts (specific quantities of each asset type needed)
- Asset unit costs
- Depreciation

187 The requirement for forward-looking costs means that the unit costs of building the network which are incorporated into the model should reflect the current costs of that deployment. That is, the costs that would be incurred today in digging the trenches, and the current cost of purchasing and laying copper cable.

188 We do not believe that use of historic costs is an option open to the Commission when building a TSLRIC model. The definition of TSLRIC in the Act squarely requires the estimation of “forward-looking costs”. On any ordinary application of the concept of forward-looking costs, these costs cannot be historic.

Elements based approach

189 One important issue that needs to be resolved here is whether an elements-based approach is an appropriate way to model TSLRIC costs. This was addressed by the Commission in 2004 when considering how to model interconnection costs. We agree with the conclusion the Commission reached then:⁴⁷

⁴⁶ Analysys Mason “Response to Commission” (12 February 2014) at page 2.

⁴⁷ Commerce Commission, 2004 TSLRIC Principles Paper at [104].

The Commission considers that an elements-based approach is the most appropriate for TSLRIC modelling, and is the approach most likely to produce interconnection charges that are consistent with the definition of TSLRIC in Schedule 1 of the Act.

190 The attached Analysys Mason Response Paper explains the difficulties of a service by service approach with a separate increment for each service. This approach would:⁴⁸

190.1 add complexity to the model; and

190.2 be much more costly and time-consuming given the number of calculations; and

190.3 only allow limited “hybrid” calibration.

191 The net effect of this additional complexity and cost is that modelling multi-service networks with service-specific increments is not usually undertaken. Instead, an element-based approach is usually adopted.

192 The total incremental costs are then allocated to the services (e.g. UCLL) reflecting the services use of network elements, and service volumes. So, for example, services that do not use distribution duct do not get allocated any of the costs of distribution duct; services using twice the number of pairs get allocated twice the cable costs.

Question 15: Is it reasonable for us to account for costs shared with other utilities such as electricity poles?

193 Yes. All forward-looking costs which are incurred in providing the UCLL STD service must be included in calculating the TSLRIC price for UCLL. This includes the costs of assets shared with other utilities, such as poles.

194 Where cost sharing would occur, the Commission should derive the appropriate cost to be apportioned to the TSLRIC of the UCLL STD service either:

194.1 by the market price for sharing those assets, if shown to be robust; or

194.2 by modelling the cost of those assets and making appropriate sharing assumptions.

195 In both cases the cost of this asset is likely to be an opex rather than capex cost. Care needs to be taken that this opex cost is explicitly accounted for in the operating cost calculation.

196 The degree of cost sharing between other utilities depends on what the Commission is modelling. It is important that any assumptions made are realistic (as noted in the attached Analysys Mason Response Paper). For example, the Commission cannot model shared costs where:

⁴⁸ Analysys Mason “Response to Commission” (12 February 2014) at pages 5-6.

196.1 there is no spare capacity on the other utilities, or there are some other constraints which prevent sharing from occurring (for example, in the case of electricity poles, where a pole would require strengthening before it could facilitate an extra telecommunications line); or

196.2 local authorities or other bodies and regulations prevent shared facilities from being built.

Relevance of TSLRIC-based copper prices in a fibre transition

Question 16: Is it appropriate to model demand for a single efficient next generation access network which includes end-users that may migrate to Chorus' fibre network?

197 This proposal is not appropriate for a number of reasons. These issues are discussed in the attached Analysys Mason Response Paper. For clarity's sake, it is important to remember that:⁴⁹

The level of demand serves two purposes:

- It determines the dimensioning of the network - sets the quantity of assets required to be built. This should be based on current and expected future demand for the assets being deployed.
- It determines the denominator in the unit cost calculation.

198 The demand which is relevant to this question is the demand which determines the denominator – the changing copper demand relevant to recovering the TSLRIC costs of the UCLL network.

199 First, it is not appropriate that a next generation access network should be modelled. As discussed in this submission, we think the MEA is copper, and that the model should use the current network configuration (location of exchanges, cabinets and customers) and current technology mix at replacement cost.

200 Second, it is not appropriate that demand is constant over time at the current level; demand is likely to decline over time due to competition from alternative fixed access networks (including Vodafone's HFC network and other LFC networks) and mobile substitution. Total demand for fixed connections is slowly falling over time in many countries.

201 Third, it is not appropriate that end-users who have migrated to Chorus' fibre network should be included in the demand for the UCLL STD service. This approach incorrectly assumes that these end-users are still taking copper services and thereby contributing to the recovery of the forward-looking copper costs. They are not, and their demand is irrelevant to the calculation of the TSLRIC of copper services.

⁴⁹ Analysys Mason "Response to Commission" (12 February 2014) at page 9.

202 To make the calculation required by the Act, the model should include all sources of demand for the network elements being modelled, and no other demand. In other words, all relevant demand and no irrelevant demand. As the Commission notes in its Paper at paragraph 65, the term 'total service' refers to the total amount **of the service** provided by the network operator. It follows that demand in a TSLRIC calculation for a copper based service is the total forecast copper end-users. Clearly fibre end-users are irrelevant and cannot be included.

203 Over time the demand over the copper network will decline as customers shift to UFB. This needs to be allowed for in the unit costing to ensure all copper network costs are recovered. If the decline in demand for the copper service is not allowed for, then the copper assets will be stranded and the cost will not be able to be recovered, and incentives to invest will be destroyed. This can be corrected for either by using an additional tilt in the tilted annuity ("adjusted tilted annuity") – which works if the assumed demand changes are small and act with a constant annual percentage rate of decline, or by using economic depreciation.

204 Analysys Mason supports this point:⁵⁰

The second of these [two possible] uses of demand (as the denominator in the unit cost calculation) is critically dependent on the value of the demand for the modelled assets. If modelling a copper network, but some of the demand will be moving to fibre, then the unit cost of the UCLL service needs to be based on the future level of demand for UCLL (and other services sharing the same network assets). In other words, there are network utilisation effects caused by migration from one technology to another.

205 We comment more on these points under the depreciation questions.

206 We infer that the Commission's concern is that, as the users on the copper network dwindle, the cost per customer of the copper network will increase very rapidly. This concern is understandable, however the Commission does not have discretion to ignore the decreasing utilisation of the network and the resulting unit cost increase (it is charged with calculating the TSLRIC of UCLL). In any case, there are well established ways to address this issue which will resolve the Commission's concerns. The correct way of dealing with that is through the use of economic depreciation with an appropriate demand profile. This is described in more detail in the attached Analysys Mason Response Paper.

Question 17: Are there any circumstances specific to New Zealand that we should have regard to when deciding whether this modelling choice is appropriate?

207 Yes. We believe that only New Zealand circumstances (including the Act, the STD, and Chorus' network) are appropriate when making modelling choices. As discussed above, any other approach will result in the inclusion of legally irrelevant matters.

⁵⁰ Analysys Mason "Response to Commission" (12 February 2014) at page 10.

- 208 The Commission’s consideration of European policy discussions about TSLRIC from paragraphs 73 – 79 focuses on the arguments in favour of, or opposed to, TSLRIC as a cost principle of TSLRIC, and ways to modify it to advance the European policy on fibre transition. However TSLRIC is fixed in the New Zealand framework, including the requirement to start with the UCLL STD service and identify all TSLRIC costs involved in the supply of that service. Importantly, the New Zealand legislation requires a forward-looking approach, whereas other jurisdictions have different constraints.
- 209 Another circumstance specific to New Zealand is the TSO. As discussed in paragraphs 43 to 48 of the body of this submission, the TSO Deeds describe some of the functionality currently provided by the UCLL STD service.
- 210 Any MEA must be capable of providing the TSO functionality, since that functionality is part of the functionality experienced on the UCLL STD service. In that sense, the TSO services are a subset of the services which the hypothetical entrant must be capable of providing over its network.
- 211 In any hypothetical new entrant scenario, a similar obligation would apply. Otherwise Telecom would not be able to deliver its TSO obligations.
- 212 Another relevant circumstance is that New Zealand is fortunate to have an efficient and modern copper network. Our network is fast: over 84% of lines can get at least 10Mbps broadband over our copper network. Chorus has completed a significant four-year programme to upgrade the local broadband equipment in 340 exchanges and install 3,600 new fibre-fed broadband cabinets across the country. The benefits of investment in New Zealand’s network are evident from the Commission’s own Annual Telecommunications Monitoring report (2012), the key findings of which point to a competitive and rapidly evolving telecommunications market, which is being supported by a dynamic, modern and efficient network. With this background in mind, we disagree with any suggestion that the need to model a “modern” network counts against a copper MEA.

What are the different approaches to TSLRIC modelling?

Question 18: Should we use a modified scorched node approach in the TSLRIC model for UCLL? What are the advantages and disadvantages of this approach compared to alternative approaches?

Question 19: What forms of modification should be adopted? What are the advantages and disadvantages of your modification suggestions?

- 213 As explained in our submission, we think that the Commission should adopt a hybrid cost modelling approach: a forward-looking model based on Chorus’ actual network configuration and asset counts as an equivalent of a full bottom up asset account. This proposal (which is set out in the attached Analysys Mason Hybrid Modelling Paper) is consistent with our view that the MEA is copper, and Chorus’ existing network configuration is equivalent to the deployment of a copper network by a hypothetical operator.

- 214 If the Commission adopts a hybrid cost modelling approach as we propose, this question does not arise (since the network design phase of the modelling is eliminated).
- 215 If the Commission decides against modelling the existing network configuration, then in the alternative we consider that a scorched node approach would be appropriate in the TSLRIC network model. The attached Analysys Mason Response Paper advises that, when modelling the copper network, nodes should be defined as existing exchanges and cabinets in their existing locations.
- 216 A modified scorched node approach would be appropriate in some very limited situations, such as those cases where the exchange has been bypassed and exchange functionality for that exchange area has been taken over by a larger exchange.
- 217 The alternative of a scorched earth approach is not widely used by international regulators. Scorched earth is more time consuming and expensive to implement, with little additional benefit for end-users compared to a scorched node model (as noted in the attached Response Paper from Analysys Mason). Scorched node approaches are much more practical to model (which is why the models in Australia, Norway and of FTTH in Denmark are scorched node). If a scorched earth approach is taken, then the first task in the modelling will be to cluster demand according to various constraints so as to locate the nodes and their served areas. Clustering algorithms are computationally expensive and their cost increases sharply as the number of points clustered increases.
- 218 In addition (as noted in the attached Response Paper from Analysys Mason), scorched node models can be compared to real data more easily for calibration, for example if the bottom up models were to use a sampling approach then the same areas can in principle be examined in the real world. If the modelled areas were completely different, then it would be harder to generate comparison data sets as there would be differences in the areas served.
- 219 At paragraph 62 the Commission suggests that the majority in the Supreme Court favoured a scorched earth approach when modelling the TSO service. We do not think that the court went that far. Certainly the Court summarised the submission of Vodafone that expressed concern about using the fixed network nodes as appropriate nodes when considering a mobile network solution. However the Court did not decide on the appropriateness of that concern or not. Rather the Court was concerned by the fact that the Commission had decided not to model delivery of the TSO service using mobile technology. We also note that the Court was considering this in the context of establishing the appropriate avoidable cost for the calculation of the TSO cost. It was not considering forward-looking access pricing.

Question 20: Please explain the trade-offs between efficiency and 'real-world' considerations in your assessment of the most appropriate approach to modelling the network?

- 220 We do not believe there are trade-offs between the efficiency of the modelled network and real-world considerations. Any efficiency included in the modelled network has to

be one which can be implemented in the real world (any efficiency which cannot be implemented is not actually efficient, it is impossible).

- 221 If by “efficiency” the Commission means the appropriate nature of the modelling choices to be made so as to achieve an effective and sufficiently accurate TSLRIC price within a limited timeframe, then we do agree there are some modelling approaches which could achieve this, for example:

221.1 our proposal to use the actual asset counts from the Chorus network as an equivalent of the asset count of a fully bottom up model; and

221.2 an element based approach rather than one based on multiple service specific increments.

Question 21: If parties develop top-down models independently, how should we audit and reconcile the different models?

- 222 The attached Analysys Mason Response Paper sets out a number of ways in which the models could be audited and reconciled, in the event that parties develop models independently.
- 223 However, reconciliation and calibration would be unnecessary under our proposed option, which is for the Commission to direct Chorus (via a section 45 process) to build a hybrid cost model based on the asset counts of the existing network, since that model already uses real world parameters (as set out in the General section of this submission). Whereas pure bottom-up cost models are time consuming and contain a wide variety of uncertain parameters, a hybrid model is a bottom-up cost model which has been calibrated so as to reflect current asset counts. The advantage of this type of approach is that could be completed in a shorter period of time and would focus the debate on valuation (such as unit costs, depreciation and lifetimes).
- 224 If the Commission did decide to build a bottom up cost model, then we think it will be very important that the Commission reconcile and calibrate its model to reflect real-world conditions. This can be achieved in a number of ways. For example, the Commission could specify the requirements for Chorus to supply data (e.g. trench lengths, demand, input costs, asset economic lifetimes). The outputs of the model could then be compared with the data, with the Commission’s model calibrated to reflect real-world conditions.

Key features and functionality of Chorus’ UCLL service

Question 22: What, in your view, are the important characteristics of Chorus’ copper local loop network that must be also available from the MEA? Please outline the reasoning for your view.

- 225 As stated above, the Commission is required to model a network that can deliver the full functionality of the UCLL STD service, and that RSPs could use to deliver the retail services currently supported by UCLL. For this reason, we disagree with the premise of

the question, which asks whether important characteristics can be distinguished from other characteristics of the UCLL network. The task for the Commission is to identify the cost of providing the full functionality of the UCLL network.

- 226 The functionality delivered by the UCLL STD service is described in paragraphs 43 to 48 of this submission.

Choosing the modern equivalent asset

Question 23: Do you consider that the criteria we have identified will enable us to make the most appropriate MEA selection?

- 227 No. We do not consider that the Commission's criteria will enable it to select the most appropriate MEA.
- 228 The Commission is not charged with identifying criteria with which to choose an MEA. Any MEA chosen must be capable of providing *all* the characteristics, services, and functionality of the UCLL STD service being priced. This is not optional.
- 229 The Commission must:
- 229.1 Develop a model capable of finding the TSLRIC costs for providing the UCLL STD service, which must include selecting an MEA to model which is capable of providing all the characteristics of that service;
 - 229.2 Choose to model one of the feasible MEAs (those which can provide the UCLL STD service). Analysys Mason explains that the MEA should be the lowest cost option:⁵¹
- The modern equivalent asset is the lowest forward-looking cost (in NPV terms) solution available today meeting the requirements...
- 230 Given the above requirements, the Commission's question proceeds on a legally incorrect basis. The MEA options which may be considered are those which can provide the UCLL STD service. From those options, the cheapest should be selected.
- 231 For these reasons we disagree with the Commission's approach. The Commission is required to model a network with *all* the characteristics of the UCLL service as supplied under the UCLL STD. All are necessary. The Commission does not have the discretion to price something that will not deliver the UCLL STD service currently being supplied to our customers.
- 232 We also disagree with the words in paragraph 80 of the Paper:

We are required to model and establish the cost of a hypothetical MEA network that is capable of competing with Chorus' UCLL Service.

⁵¹ Analysys Mason "Response to Commission" (12 February 2014) at page 17.

233 The Commission is not tasked with modelling a network which could *compete* with the UCLL service, but rather it must model and price a network which can *deliver* the entire UCLL service as defined in the UCLL STD.

234 The attached Analysys Mason Response Paper discusses the Commission's criteria in some detail at section 1.4.4. It sets out the approach to selection of the MEA, which is that the modern equivalent is the lowest cost technology that meets all the characteristics of the UCLL specification.

Question 24: What additional criteria, if any, should we consider for determining the MEA for UCLL?

235 As per our answers to Question 22, the MEA must be capable of delivering the full functionality of the UCLL STD service, described in paragraphs 43 to 48 of this submission.

Question 25: What criteria do you consider to be of most importance in the selection of the MEA for UCLL?

236 The criteria should not be considered more or less important. As Analysys Mason states in the attached Response Paper:⁵²

The criteria are not items which are more or less important to be weighted together: once selected, they are pass/fail criteria. A technology is either the lowest cost for the modelled operator or it is not; it is either non-blocking or it is not; it either allows the access seeker to install their own electronics to provide a competing layer 2 service, or it does not; it is either offering dedicated connectivity to a specific end user at a per-user price or it is not.

237 All of the criteria must be met.

Question 26: Are there other MEA options that should also be considered?

238 Yes. Chorus' copper network is an MEA candidate. As explained in this submission, copper is the only technology capable of delivering the full functionality of the UCLL STD service.

239 It is an error for the Paper to not consider the copper network. As the discussion in this submission and the Analysys Mason Response Paper illustrates, a copper network is the only commercially viable candidate for the technology choice when delivering the UCLL STD service. The attached Analysys Response Paper concludes that it is very likely copper is the lowest cost MEA option and therefore is the appropriate choice.

Question 27: What are the pros and cons of the options that we have identified and any further options that you may have identified?

⁵² Analysys Mason "Response to Commission" (12 February 2014) at page 22.

- 240 This is discussed in our submission above. In summary, the copper network is the only technology that meets all of the criteria of an MEA.
- 241 Analysys Mason explains in the attached Response Paper that none of the all-fibre network options provide the full functionality of the UCLL STD service. For this reason none are valid MEAs. Combinations of fibre and wireless technologies are likewise incapable of providing full UCLL functionality. Further, such combinations of technologies cause specific additional costs due to the strong preference of retail service providers for a national service offering the same capabilities and the same provisioning interfaces on a national basis.
- 242 The shortcomings of the all-fibre options can be addressed by various “fixes” at the customer and/or RSP end. However these by their nature mean that the all-fibre technologies do not have the same functionality as the UCLL STD service.
- 243 Further, these fixes are expensive, disruptive and raise operational difficulties.
- 244 Overall, Analysys Mason recommends modelling a copper MEA:⁵³

If deployed in the same manner (e.g. buried), Copper and FTTH P2P networks will have very similar capital costs...

However, once we consider the additional costs that an FTTP-P2P network would have to bear to provide a service comparable to the existing UCLL (specifically, battery back-up for every end user, ATA for voice users, and additional broadband modems – both to replace DSL modems and for voice-only users to allow the use of voice over broadband (VoBB)), it is very likely in our view that copper remains the MEA for UCLL.

Should we adjust for performance?

Question 28: Should performance adjustments on the MEA value be made to reflect the differing performance attributes of the MEA technology relative to the current UCLL technology?

Question 29: What are the potential adjustment options that we should consider? What are the advantages and disadvantages of these options i.e. willingness to pay, technologies and performance, and costs?

- 245 No. Making performance adjustments based on performance differences between the MEA and the existing network is inappropriate.
- 246 Modelling a network that is not the least cost technology solution and then making a compensative adjustment is relatively novel and untested (a fact recognised by Neumann and Vogelsang). Only one regulator has considered this approach, Switzerland, and only as an option which is yet to be incorporated into their telecom law (telecom ordinance). This approach is not recommended by the European Commission.

⁵³ Analysys Mason “Response to Commission” (12 February 2014) at page 28.

- 247 As well as the fact that it is untested, there is no established practice about what is achieved by an adjustment to the MEA for performance, and how to apply it. The likelihood of an adjustment correctly identifying the cost of the UCLL STD service is very low.
- 248 The view of Analysys Mason in the attached Response Paper is that adjustments are not consistent with the requirement of the Act for a TSLRIC approach to FPP as they are not based on forward-looking costs, but are based on value. The only adjustment option that can be considered is one based on cost. This follows from the fact that the requirement in the Act is TSLRIC, which is a measure of cost. Neither technical performance differences nor willingness to pay are relevant to the TSLRIC cost of delivering the UCLL STD service.
- 249 There are also a number of serious practical issues with the application of performance adjustments, some of which are discussed in the attached Analysys Mason Response Paper.
- 250 First, the Commission's Paper notes the conclusion of the European Commission that an adjustment should be made to the extent that a fibre based model results in a higher cost than the cost of a network based entirely on copper, on the basis that the MEA must represent the most efficient (cheapest) option. So if the copper based network is a cheaper cost, the fibre based network cost needs to be discounted to the same cost as the all copper network. This appears to also be the conclusion of BEREC quoted by the Commission, and is also the position of the DBA in Denmark. This suggests that knowing the cost of a copper network is an important first step in the modelling process.
- 251 The Commission suggests two other approaches. Both of these can be considered performance adjustments. One would see an adjustment made to reflect the different technical capabilities of a fibre and copper network, the other an adjustment reflecting the willingness of consumers to pay for different levels of service.

Adjustments for technical capabilities

- 252 The problems with an adjustment based on technical capabilities are twofold.
- 252.1 It will lead to prices that do not reflect costs. So for example copper might be 10 times less capable in speed terms than fibre but is never likely to be a tenth of the cost. So basing prices on this will not provide a TSLRIC price.
- 252.2 Technological improvements are a moving feast, so prices based on these will move over time in an unpredictable way. This is not good for encouraging investment.
- 253 The Danish regulator has looked at the possibility of adjustment for technological performance, and outlines the difficulties when applying it, especially in determining the appropriate performance-to-price correlation:⁵⁴

⁵⁴ Danish Business Authority "Modification and development of the LRAIC model for fixed networks 2012-2014 in Denmark: MEA Assessment" (May 2013) at pages 36 – 37.

The main drawback of this methodology is that current price of copper and cable TV would be completely uncorrelated from their associated cost. Indeed, the cost of copper is not 100 times lower than FTTH which provides ultra-fast broadband whereas copper capacity is limited. The use of this methodology would therefore lead to regulatory inconsistencies as it contradicts one of DBA's objectives which is to incentive efficient investment infrastructure, i.e. allow efficient costs to be recovered.

From a dynamic point of view, capacities improvement can also occur faster than price changes. On top of that, copper and cable TV capacities may still increase due to improvements and lead to price increase which would be inconsistent. For all these reasons, this adjustment methodology has never been used by any NRA and is not proposed to be used in the context of Denmark.

Adjustments for willingness to pay

- 254 Adjustments based on willingness to pay are equally problematic.
- 255 First, such approaches are inconsistent with the requirement of the Act for a forward-looking TSLRIC approach to the FPP as they are based on value rather than based on cost (as noted above).
- 256 Second, there are issues about how the additional value of fibre might be measured on a forward-looking basis. The thinking on this issue to date has revolved around the WTP of retail customers. However Chorus does not deal with retail customers, only RSPs. Hence any measurement would need to be of RSP willingness to pay which is more difficult to measure in an unbiased way and which may change over time.
- 257 Third, for reasons explained by Analysys Mason in the attached Response Paper, value-based adjustments are likely to deter efficient investment (a point also recognised by TERA) and are unlikely to achieve their design aims.
- 258 The Danish regulator has also considered making adjustments based on willingness to pay, and rejected this option:⁵⁵

However, this methodology has drawbacks and especially the fact that it might be difficult to calculate consumer willingness precisely and that the willingness to pay extra for FTTH is likely to change over time. Also, it may not encourage investing in the most cost-efficient technology since the differential of prices between copper or cable TV and FTTH does not represent the differential of costs.

Should we take into account the TSO when considering the MEA?

Question 30: Should a technology's inability to deliver TSO services disqualify it from consideration as an MEA? Or is it more important to have a forward-looking MEA than to preserve the ability to carry legacy services?

- 259 Yes. This is explained in paragraphs 43 to 48 of our submission.

⁵⁵ Danish Business Authority "Modification and development of the LRAIC model for fixed networks 2012-2014 in Denmark: MEA Assessment" (May 2013) at page 36.

260 In summary, the TSOs are relevant to the selection of the MEA because they set out some of the functionality currently delivered to customers over the UCLL STD service. The MEA selected must be capable of providing that functionality (as part of the full functionality currently delivered on Chorus' network). It follows that a technology's inability to deliver TSO services must disqualify it from consideration as an MEA.

Demand: determining the size of the network to be modelled

261 As discussed by Analysys Mason and in relation to Question 16, the level of "demand" serves two purposes – in dimensioning the network, and as the volume of usage over which the cost will be recovered.

262 The demand relevant to determining the size of the network to be modelled is the former of the two purposes above – the demand which sets the quantity of assets required to be built. As Analysys Mason sets out:⁵⁶

This should be based on current and expected future demand for the assets being deployed.

263 However, we note that in Questions 32 and 33 below, the Commission is asking about the other element of demand – the volume of usage – as opposed to the size of the network to be modelled.

Question 31: What geographical aspects drive equipment/technology choices for network owners?

264 The geographical aspects which affect equipment and technology choices include:

264.1 soil conditions – which affect the trenching cost;

264.2 land use – which affects trenching (for example, footpaths) and wireless propagation (for example, forestry);

264.3 terrain such as mountains which block wireless technologies;

264.4 natural obstacles such as lakes and rivers;

264.5 man-made obstacles such as railroads, bridges and motorways;

264.6 road boundaries (which are often used for trenches);

264.7 The layout and clustering of houses and business locations.

265 We also consider a number of non-geographical aspects to be relevant to equipment/technology choices for network owners, which include:

265.1 demography such as income and lifestyle, which can influence demand; and

⁵⁶ Analysys Mason "Response to Commission" (12 February 2014) at page 9.

265.2 local council and government policy and regulation, which can affect choices (such as by restricting the ability to deploy aerial solutions, or to build fixed network elements).

266 All of these aspects affect network layout as well as equipment/technology choices. For a new entrant there will be other factors as well, in particular the availability of spare duct or pole space. When modelling a network from scratch, ensuring it reflects these real world constraints is complex, potentially disputatious, costly and time consuming.

267 If the Commission models the current network configuration as we propose in this submission, it will not need to consider these questions, since the equipment/technology choices have already been determined for the various geographies. It follows that the size of the network to be modelled is the size of the existing network. Similarly, the geographical dispersion of demand is given and the equipment/technology choices to be modelled should match the existing network technology. This will save significant modelling time and is an advantage of the proposed approach.

Question 32: What forecasts of demand currently exist that may be relevant?

Question 33: How would we establish an accurate forecast of the network provider's connection volumes over time?

268 As discussed at the beginning of this section and in response to Question 16, demand may mean "dimensioning" (size and number of assets in the network) or "usage" (the denominator in the cost calculation). These questions go to the latter, as they regard demand over time.

269 In contrast, the *size* of the network to be modelled is based on what Chorus is obliged to provide under the UCLL STD, which does not require forecasting. When modelling that size, the Commission should have regard to all active and inactive lines. In other words, when it comes to modelling the network, changing connection volumes are irrelevant.

270 We are aware of a number of demand forecasts which may be relevant, including:

270.1 IDC estimates;

270.2 Ovum estimates;

270.3 Forecasts of other operators and in particular forecasts of substitution either to mobile or to other LFC fibre (or migration targets contractually agreed with CFH);

270.4 Statistics New Zealand;

270.5 Chorus internal forecasts (which we are able to provide to the Commission);

270.6 LFC internal forecasts;

270.7 Terralink total address locations;

270.8 Local Government regional development / district plans; and

270.9 Housing New Zealand.

Should we take into account the TSO when considering demand?

Question 34: Do you agree that the TSO area is an appropriate area to consider when calculating the cost of UCLL? If not, what would you consider to be a better alternative?

271 The issue here is the scope of the network that is relevant to identifying the TSLRIC cost of the UCLL STD service. The TSO area is not determinative of the area to consider when calculating the cost of that service, although it sets a minimum.

272 The UCLL STD imposes on Chorus a regulatory obligation to be ready to provide the UCLL service over any part of its existing network (which may extend beyond the TSO area), when requested. In particular:

272.1 The STD specifies:

The UCLL Service is a service... that enables access to, and interconnection with, Chorus' copper local loop network...⁵⁷

Chorus must comply with a Request by making the UCLL Service available to the Access Seeker in accordance with the UCLL Terms unless section 30S(2) of the Act applies.⁵⁸

272.2 Furthermore the STD addresses instances where services may be interrupted (such as outages, faults and maintenance) and where services may be suspended (such as for non-payment, default or for cabinetisation, provided it follows specific procedures). These all indicate that supply is protected and so Chorus must provide the UCLL service wherever it has the network.

272.3 The Act specifies:⁵⁹

If the Commission has made a standard terms determination for a designated access service or specified service,-

(a) an access seeker of the service e may request an access provider in writing to supply the service on the terms specified in that determination; and

(b) the access provider must comply with the request.

⁵⁷ UCLL STD, Schedule 1 at [1.2].

⁵⁸ UCLL STD, General Terms at [4.1].

⁵⁹ Telecommunications Act 2001, section 30S.

273 The TSO is relevant to the extent that it requires the copper local loop network to remain in place. But the scope of the UCLL STD service obligation is described by the copper local loop network (whether inside or outside the TSO area).

274 Therefore, the area relevant to identifying the TSLRIC cost of the UCLL STD service is not the TSO area per se, but the area served by Chorus' copper local loop network which is not cabinetised. This includes:

274.1 those parts of the copper local loop network which service Chorus' active end-users, who are currently taking the UCLL service; and

274.2 those remaining parts of the network that are currently inactive but not disconnected. If an RSP were to request that Chorus provide UCLL in relation to these lines, the STD would oblige Chorus to do so.

Common cost allocation

Question 35: Is there benefit in segmenting common costs in this way i.e. as it allows for different allocation methodologies to be applied to different cost pools?

275 The Commission's proposed approach to segmenting common costs creates computational difficulties. We have noted in the response to Question 14 that the element based approach proposed by the Commission in 2004 is more suitable. One of the advantages of an element based approach is that the pool of common costs is considerably smaller.

276 Assuming that the Commission does follow the element approach, then we would expect that many of the costs that the Commission has labelled as 'shared', 'network' or 'non-network' will be able to be allocated on some sort of causal basis. In other words for each of the cost elements within these groups, the services that use these cost elements can be identified. Costs are then allocated to UCLL on the basis of its use of that element. In that way all the costs are allocated to a service, and UCLL collects its share based on its use compared to all other services also using that cost element.

277 There will then remain a small pool of truly common costs in the sense that these costs cannot be allocated on any causal basis. While acknowledging that these would ideally be allocated by the Ramsey pricing method, traditionally regulators have used the easier equi-proportionate mark-up.

Question 36: Is the distinction between shared and common costs necessary? Does the allocation methodology need to differ between shared and common costs?

278 Our preferred distinction is between cost elements that are incremental, those which are common but can be allocated on some sort of causal basis (e.g. distribution trench), and those which are common and cannot be allocated on any causal basis. As discussed above and as recommended in the attached Analysys Mason Response Paper, the allocation methodology does differ between these three types of costs.

Depreciation

Question 37: Should we use an alternative depreciation approach to tilted annuity and if so, why is this preferable?

- 279 Yes. The Commission should use an alternative depreciation approach to tilted annuity: superior approaches include both an “adjusted tilted annuity” approach and also other economic depreciation methods, as discussed in the attached Analysys Mason Response Paper. As noted in that paper, both “adjusted tilted annuity” (with an additional tilt for demand changes) and simple economic depreciation are superior to tilted annuity if, as here, demand levels are changing over time. And economic depreciation methods are superior to adjusted tilted annuity where there is, as here, the possibility of a future migration to an alternative access technology (for example, fibre).

Question 38: If we adopt a tilted annuity approach, what factors reflect how the tilt should be set?

- 280 Any factor that is expected to affect the future ability to recover value from the asset should be taken into account when setting the level of depreciation over the period. The Commission should use the depreciation profile to account for forecast changes in asset unit costs, demand and future changes in the MEA, as recommended in the attached Analysys Mason Response Paper.
- 281 This is one area where the Commission will need to be particularly careful to maintain NPV neutrality. If asset values will be revisited, then some form of economic depreciation method should be applied, in order to ensure expected present value neutrality.
- 282 A sudden and previously unaccounted for change to a new technology will result in (i) under-recovery of existing investment and (ii) strong signal to investors of likelihood of windfall losses in the future. The copper access network has been subject to TSLRIC regulation since 2001 (at least indirectly). Since that time the benchmarked prices have been based on the recovery of copper assets over their full useful life. There has been no attempt to adjust the cost recovery profile to reflect a future change in the technology.
- 283 Whilst TSLRIC may be used by the Commission to set cost-based prices for a discrete period (such as 10 years) this is, in reality, just the first 10 years of a TSLRIC price path that has been estimated out many decades. That is, what is actually estimated each time TSLRIC is applied using a tilted annuity is a smooth price path that extends over the lives of the modelled assets.
- 284 Therefore, if there is an expectation⁶⁰ that the Commission will move to a different technology at any time (even outside the regulatory period) the price path for copper needs to be adjusted to reflect this change. Specifically, the price path for copper

⁶⁰ Perhaps with some probability.

needs to be adjusted upwards now to reflect that at some point in the future, the Commission will possibly jump to a lower price path for the other technology.

- 285 If this is not done the Commission could not be said to be setting forward-looking prices. That is, it would not be setting prices based on the forward-looking costs of using the current technology – one of the ‘costs’ of using the current technology is that it depreciates to reflect expected changes in technology. In the Commission’s language, if technological change is expected to be incorporated at some future point (even outside the current regulatory period) it needs to be compensated for in this regulatory period in order to achieve expected present value neutrality.
- 286 Chorus strongly endorses the principle of expected present value neutrality. It is an essential element of TSLRIC and all good regulation. However, the application of this principle in the context where the Commission may consider future changes in technology raises some significant challenges for the Commission. Not least of which is to forecast the likelihood that new technologies might be adopted over the life of the current technology and the effect they have on the value of the current technology.
- 287 The Commission cannot take a wait-and-see attitude to new technologies if it leaves open the possibility of adopting them in the future. This is because if new technologies are imminent, the Commission will need to raise prices for the current technology significantly to compensate for the change. Importantly, if investors do not believe that the Commission will commit to this difficult outcome (and might simply adopt the new technology without compensation) they will be wary to invest.

Cost of capital

Question 39: Do you agree that it is appropriate to use the cost of capital input methodologies as the starting point for estimating the cost of capital for the UCLL TSLRIC model?

- 288 Yes, it is inevitable that the cost of capital input methodology will be a starting point that is used by the Commission in its consideration for estimating the cost of capital for the UCLL TSLRIC model. The cost of capital input methodologies represent an important body of regulatory precedent for the WACC. The Commission has consulted extensively on these within the electricity, gas and airport industries and they have recently been tested on appeal.
- 289 However, the cost of capital input methodologies have not been consulted on previously with the telecommunications sector. Moreover, time has passed since the Commission’s IM decision and with it new evidence, including important international regulatory precedent, has become available. It is important that the Commission retains an open mind to the prospect of changing aspects of its cost of capital approach under the input methodologies where improvements can be identified including, but not restricted to, variations to account for the different circumstances of a UCLL service provider.

Question 40: If the cost of capital input methodologies are used as the starting point, which (if any) parameters should be updated to reflect the specific circumstances of the UCLL TSLRIC model?

290 There is potential for adaptation and improvement of the cost of capital methodologies in three areas, which are set out below. We do not consider that using the cost of capital input methodologies as a starting point means that an update of its parameters is all that is required to estimate a WACC for the UCLL TSLRIC model. As noted in the answer to Question 39, the Commission should retain an open mind to analysis and information demonstrating that there are improvements to the approach adopted in its cost of capital input methodologies.

1. Equity beta

291 The WACC for the UCLL TSLRIC model must be populated by an equity beta that is specific to the services provided by Chorus, rather than an equity beta formulated for electricity, gas or airport services. Chorus' suggested approach to the equity beta is discussed in further detail in the answer to Question 42.

2. Cost of debt

292 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. The same would be true for any hypothetical new entrant in a regulated infrastructure business. By contrast, the Commission's cost of capital input methodologies compensates businesses based on the assumption that they raise the entirety of their debt requirements by issuing 5 year bonds in a narrow window of time immediately before the beginning of the 5 year regulatory period. The input methodologies also allow, through the term credit spread differential (TCSD) allowance, for some limited additional compensation if the business can demonstrate that its practice is to issue longer than 5 year debt. However, 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.⁶¹ This approach does not result in compensation for efficiently incurred costs, including those incurred by an hypothetical new entrant:

292.1 **First**, increasingly, international regulators are moving away from an assumption that the entire debt requirement is raised in a narrow interval before the beginning of a regulatory period. Regulation in the US, the UK and now Australia has moved towards an assumption that debt is raised in a portfolio that is characterised by the staggered raising of debt.

292.2 This type of behaviour is considered to be a prudent and efficient way of managing a business' debt portfolio. It acts to minimise the potential for adverse interest rate movements to affect a business' both and customer cashflows.

292.3 The debt raising behaviour assumed by the Commission's cost of capital input methodology requires businesses to act imprudently if they are to attempt to

⁶¹ See, CEG "Review of updated input methodologies" (for Vector) (30 November 2010).

hedge their costs to the regulatory benchmark. Specifically, exposing themselves to significant finance risk by raising their entire debt portfolio at a single point in time. Chorus does not consider that an assumption requiring imprudent and inefficient behaviour by a business is a reasonable basis for determining its cost of capital requirement.

292.4 It is proposed that Chorus' WACC in the first year of the regulatory period be based on a cost of debt that reflects an average of debt costs over the preceding years in which an efficiently managed business providing the same services as Chorus would have raised debt. It is Chorus' contention that this length of time is 10 years. That is, an efficiently managed business providing the same services as Chorus would have funded itself by issuing 10 year debt more or less evenly over the last 10 years.

292.5 **Second**, customers (both direct and final end-user) will be made better off if the cost of debt is based on long term averages rather than the cost of debt at the beginning of each regulatory period. The latter approach results in unwanted volatility of prices – a fact which explains why customer groups have actively advocated for the AER to change its approach and adopt a long term average cost of debt.⁶²

292.6 Even if the Commission were to apply its previous logic for setting the term of debt equal to the term of the regulatory period, the rationale for a 5 year debt term in the current input methodologies is predicated on a 5 year regulatory period. Chorus is proposing a 10 year regulatory period so, even applying the Commission's past logic, a 10 year term would be appropriate for Chorus.

292.7 The Commission's logic is founded upon the incorrect notion that setting a term for the cost of debt equal to the term of the regulatory period achieves an NPV=0 expectation on behalf of investors at the beginning of the regulatory period.

292.8 However, this is only true if a firm funds itself entirely with new debt at the beginning of each regulatory period. Prudent and efficient debt raising behaviour for infrastructure firms, such as Chorus, is to issue debt over as long a term as possible. When combined with the use of a staggered debt portfolio,

⁶² See Submissions made by the Energy Users Association of Australia, the Public Interest Advocacy Centre and the Major Energy Users to the AER consultation process on its Rate of Return Guideline process – available at www.aer.gov.au. For example, the Major Energy Users state:

"the current arrangement is flawed, and... a rolling average is a better solution (both propositions widely accepted)...".

The Public Interest Advocacy Centre states:

"...the experience of the last few years suggests that the 'on the day' approach is too vulnerable to volatility in the debt and equity markets. The greater the volatility, the more variance there is in the allowed cost of debt arising from the particular selection of the short-term averaging period"

"Currently the regulatory cost of debt is set on the basis of 'on the day' and fixed for the 5-year regulatory period. As such it bears little relationship to what NSPs are currently doing to manage their debt through various tenors, volumes and maturity dates. In other words, there is no evidence that NSPs are acquiring debt to align with the current regulatory benchmark approach."

this contributes to achieving the objective described from paragraph 292.1 above of minimising the potential for adverse interest rate movements to cause cashflow problems for the business (and for customers if debt costs are passed on in regulated prices).

292.9 A 10 year term for the cost of debt is appropriate even if the term of the regulatory period is five years. This is consistent with prudent and efficient debt raising practices of firms investing in and managing major regulated infrastructure assets similar to those Chorus invests in and manages. It is also consistent with the basis used by the Australian Energy Regulator to estimate the cost of debt.

293 The Commission's adoption of a 5 year term in the existing input methodologies was appealed by the businesses regulated under those methodologies. The High Court dismissed those appeals and, in doing so, accepted the Commission's rationale for aligning the term of the cost of debt with the term of the regulatory period. However, the counterfactual being considered by the High Court was the adoption of a 10 year term for the cost of debt allowance still be set 'as if' the entire debt portfolio was raised at the beginning of the regulatory period. Chorus' proposal is that the cost of debt allowance be set based on the assumption that its debt costs have been incurred over-time and are based on a trailing average of 10 year debt costs. This is a different counterfactual which proposes an approach and rationale not considered by the High Court.

294 Moreover, the High Court did, in relation to the TCSD, reference the same CEG report referenced above (*Review of updated input methodologies*) and find that:⁶³

[We] would expect the Commission to review the structure and efficacy of the TCSD and, in so doing, undertake further empirical research on the nature and availability of swaps for regulated suppliers so that a TCSD – where necessary – may be able to be better articulated and connected with market practice.

295 A revised TCSD could potentially be made consistent with compensating a business on the basis of a staggered portfolio issuance. We also note that the substantial amount of evidence put before the AER and OFGEM, and both regulators subsequent adoption of a trailing average cost of debt approach, were not before the Commission when it made its decision on the current cost of capital input methodologies.

3. Cost of equity

296 The cost of capital input methodology is inadequate in its use of a current value of the risk free rate in combination with a historical average market risk premium. This methodology gives rise to neither a current estimate of the cost of equity or a historical average of the cost of equity.

297 We note that the Australian Energy Regulator is giving increasing consideration to the use of methods to estimate the current market cost of equity as informing its estimate

⁶³ *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC, 11 December 2013 at [1288(b)].

of the market risk premium. Such methods are long-standing and widely used in the United States already.

- 298 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.
- 299 Doing so has the added advantage of reducing the potential for error associated with using different proxies for the risk free rate in the simplified Brennan-Lally capital asset pricing model (CAPM). That is, using the Simplified Brennan Lally CAPM the required return on asset "i" can be written as $R_i = RFR + \text{Beta} * (R_m - RFR)$.⁶⁴ Rearranging this formula gives, $R_i = \text{Beta} * R_m + RFR * (1 - \text{beta})$. It can be seen that for beta values of around 1.0 the level of the RFR does not affect the estimate of the cost of equity for asset i. However, this is only true if the TAMRP (ie, $(R_m - RFR)$) is estimated at the same time that the RFR is estimated. If beta is below/above 1.0 then the level of RFR does have an effect – but only a fraction of the change in the risk free rate is reflected in a change in the estimated cost of equity.
- 300 The recent appeal of the cost of capital input methodologies did not involve an appeal on the grounds that the TAMRP is not updated at the same time as the risk free rate. Therefore, this issue was not considered by the High Court. The High Court did consider an appeal of the term of the risk free rate used in the CAPM. In doing so it concluded that the Commission was correct to set the term of the risk free rate equal to the term of the regulatory period.
- 301 Chorus' proposal is to adopt a 10 year term for the risk free rate. This is the same as the proposed term of Chorus' regulatory period. Consequently, a 10 year term would be appropriate even if it was accepted that the sole basis for selecting the term of the risk free rate was that it should match the length of the regulatory period.
- 302 However, as described above, assuming other elements of the input methodologies are determined in an internally consistent manner, this should not be expected to materially affect the cost of equity allowed. Nonetheless, Chorus considers that the adoption of a long term risk free rate is consistent with standard practice of investment managers who tend to adopt a term for the risk free rate of 10 years when valuing regulated infrastructure assets (just as they do with unregulated infrastructure assets). The AER's recent adoption⁶⁵ of a 10 year term for the risk free rate used to estimate the cost of equity (rather than the alternative of setting the term of the risk free rate equal to the term of the regulatory period) is consistent with this.

⁶⁴ where R_i is the required return on asset i, RFR is the tax adjusted risk free rate, beta is the equity beta of asset i, and R_m is the required return on the market.

⁶⁵ See AER, Explanatory Statement, Rate of Return guideline at pages 48-49.

Question 41: Do you agree that it is appropriate to use the simplified Brennan-Lally capital asset pricing model as the basis for estimating the cost of equity for the UCLL service?

- 303 Yes, however we consider that use of the simplified Brennan-Lally CAPM does not require an implementation that is identical to the Commission's approach in its cost of capital input methodology. In particular, the Brennan-Lally CAPM is capable of accommodating the changes to the cost of capital input methodologies suggested in our answer to Question 40.

Question 42: Which comparator firms should be used to estimate the beta for the UCLL service?

- 304 The choice of comparators for the estimation of beta must be guided by a trade-off between ensuring that the comparators have similar risk and ensuring that the sample of comparators is of sufficient size for estimates from that sample to be robust.
- 305 In order to be considered to have similar risk any comparator to the UCLL provider in New Zealand should have the following features:
- 305.1 be a structurally separated copper fixed-line network business;
 - 305.2 face competing (subsidised) investments in fibre infrastructure; and
 - 305.3 face TSLRIC style regulation of the kind actually employed by the Commerce Commission (noting that Chorus faces regulatory risks that reflect the risks the hypothetical operator would face).
- 306 Capturing these aspects of its risk profile is critical to estimating a reasonable cost of capital.
- 307 Unfortunately, there are very few, if any, businesses that are similar to Chorus in these respects. The possibility for error is very high if it is benchmarked against companies that are not similar – such as vertically integrated copper incumbent businesses. On this basis, we are not convinced that a satisfactory trade-off between sample size and comparability will be able to be found. In this context, the assumption of the question – that benchmarking of the equity beta against comparator firms will be the main basis for estimating beta – may not be reasonable.
- 308 An alternative that is available to the Commission is to estimate an equity beta for Chorus directly on the basis of Chorus' market data available to date. This can have regard to Chorus' own historical beta risk but also to forward-looking estimates of Chorus' beta risk. For example, Chorus's beta is a measure of Chorus' risk divided by the market risk. This can be measured by estimating both Chorus and market risk using a model such as the dividend growth model.

- 309 Relying on Chorus specific data has two key advantages over benchmarking – the estimate is directly comparable to Chorus and there are no issues involved with comparing equity beta estimates between different financial markets.

Operating expenditure

Question 43: Which approaches to estimating operating expenditure are most appropriate in the UCLL TSLRIC modelling exercise?

- 310 The appropriate approach to estimating operating expenditure is to use Chorus' actual operating costs, as a reasonable equivalent of the hypothetical operator's costs.
- 311 As Analysys Mason notes, local loop cost models in other countries use actual operating expenditure figures to inform their estimates to a large extent (e.g. via hybrid calibration). Existing network operating expenditure values are realistic and operators do face incentives to minimise costs (e.g. mobile substitution as well as fibre and HFC competition). Importantly, the majority of network operating costs are outsourced by Chorus, so Chorus' costs represent the outcomes of competitive processes.
- 312 The potential alternative approaches are problematic. As discussed in the attached Analysys Mason Response Paper (at 1.9.1), truly bottom-up cost estimates for operating costs (based on asset counts and other inputs) are not currently feasible to provide.
- 313 We have particular difficulty with benchmarking jurisdictions outside New Zealand. First there are few providers who look like Chorus in the sense that they are wholesale only providers. Even fewer of those provide the scale of services provided by Chorus. Benchmarking with a limited data-set inevitably creates the risk of large errors.
- 314 Second, operating costs tend to be predominantly labour costs. Labour costs differ from country to country. It is not a trivial exercise to normalise these so comparable statistics can be derived. This is even more so if the benchmark is a ratio such as operating costs per unit of capital expenditure as suggested by the Commission.
- 315 Third, the choice of technology and the actual network design will influence operating costs. A number of key decisions, like underground vs aerial plant, or the degree of sharing plant, will strongly influence the level of operating cost. But those decisions will have been a result of opex vs capex trade-offs reflecting the unique situation in each jurisdiction. It is very difficult to translate those trade-offs to NZ which faces quite different trade-offs.
- 316 We therefore believe that the most appropriate approach is to start with Chorus's actual operating costs and make any appropriate adjustments (as discussed in the Analysys Mason Response Paper).
- 317 For costs that come from third parties (for example all repair and maintenance costs) who were selected following a rigorous tender process, the Commission can take some comfort that those are appropriate costs in the sense that they are both efficient

(having been derived from a competitive tender) and forward-looking (in the sense that these would be the costs any new entrant of Chorus's scale would face).

- 318 For costs associated with IT systems, Chorus is in the process of replacing its systems that were inherited from Telecom, and are currently shared, with standalone systems. In a very real sense therefore there will be cost data that the Commission can access that will represent the forward-looking costs any player of Chorus' size faces.
- 319 For common costs such as corporate overheads, we note that Chorus is a publicly listed company whose costs come under a great deal of scrutiny. They are efficient.
- 320 Deviations from Chorus' operating costs are appropriate in certain tightly defined circumstances. If the Commission models a technology different to that deployed in Chorus' existing network, then existing operating costs may need to be adjusted to represent chosen technology and deployment style (e.g. a more underground deployment may have a lower fault rate; a more aerial one may have a higher fault rate driving higher opex levels). Similarly, if the Commission modelled a higher rate of use of other parties' infrastructure than Chorus currently experiences, then higher rental costs would need to be factored in.