



# UCLL and UBA FPP: consultation on regulatory framework and modelling approach

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## Executive Summary

1. Thank you for the opportunity to comment on parties' submissions on the Commission's consultation on the regulatory framework and modelling approach for the UCLL and UBA FPPs.
2. In our submissions, we respond to a number of Chorus' assertions as to the limitations on the Commission's legislative mandate to undertake a conventional TSLRIC modelling exercise for the UCLL and UBA services. We also respond to the approach proposed by Chorus for applying the Act's efficiency requirements, and provide comment on Chorus' applications of the Commission's "reasonable investor expectations" test.

### All parties agree that an efficient provider is the starting point for model inputs, but have differing views on what "efficient" means under the Act

3. All submitters agree that the Commission's models should reflect the network(s) a hypothetical efficient operator would deploy in New Zealand.
4. Retail service providers interpret this to mean the network an efficient operator would deploy:
  - a. Making use of the most efficient modern technologies and deployment techniques available to it;
  - b. Having regard to the disciplines and pressures of a competitive market; and
  - c. Un-constrained by path dependencies resulting from previous legacy decisions in relation to technology, historic demand patterns or network architecture.
5. By definition, this approach results in a lower network cost than a simple replacement cost of the existing Chorus network; because that is what a competitive market would result in. Equally, we acknowledge that it provides a much higher network cost than the current book value of Chorus' existing network.
6. Chorus agrees that the Commission is tasked with building an efficient operator's network, but asserts that the Commission is constrained by Chorus' "reality" in doing so. It uses this asserted requirement for the Commission's model to be grounded in its "reality" to define an efficient operator's network that is in almost all respects a simple analog of Chorus' existing copper network, and a modelling approach that, lo and behold, looks remarkably like a simple replacement cost of Chorus' existing network.
7. And then it goes even further. Chorus also asserts that the efficient operator is effectively overlaying, rather than replacing, Chorus' network and so cannot re-use existing Chorus assets or realise the same access rights to deploy infrastructure that Chorus has today. It also asserts that the Commission "must" add cost "fixes" to any fibre model it builds to enable that network to support a raft of legacy technologies, despite the fact the fibre network it is currently deploying to 75% of New Zealand that does not incorporate any of these fixes.
8. On this basis, Chorus claims the Commission should value the \$2.8Bn network assets it recognises in its balance sheet at between \$8 and \$11Bn and compensate it accordingly.
9. This approach asks the Commission to deploy a network that is less efficient in a number of respects than both the copper network Chorus has built, and the fibre network Chorus is currently deploying today as part of the Government's UFB initiative. It so strains the common understanding of "efficiency" as a concept it is irreconcilable to the Act's requirement for that concept.

## The Chorus submission illustrates the difficulties associated with the proposed “reasonable investor expectations” test

10. We understand and support the intentions behind the Commission’s adoption of the “reasonable investor expectations” and “predictability” tests: we want a predictable regulatory framework that supports investment and provides confidence to investors that they can continue to have a normal expectation of normal returns on their infrastructure investments.
11. But like Vodafone, we struggle to fit these tests neatly into the s18 “test” already provided by our Act, because (we contend) those same concepts are already inherent in that s18 test. And we also share Vodafone’s concern at the uncertain nature of these tests.
12. Chorus’ submission illustrates how undefined tests or concepts such as these can be used to justify interpretations or approaches that are clearly inconsistent with the purpose statement of the Act and/or with the TSLRIC pricing principle. As described above, the Chorus submission appears to identify - for each and every component of the Commission’s modelling process - the most aggressive interpretation possible; label that interpretation the most consistent with either predictability or reasonable expectations, and then assert that the Commission must adopt that interpretation.
13. We can respond to each of these assertions point by point, but the larger point is that, in introducing additional, non-measurable, “tests” to those already set out in the Act, the Commission risks introducing significantly more uncertainty and dispute than if it was to continue to apply its conventional approach to the s18 purpose statement and the TSLRIC pricing methodology.
14. Chorus even goes so far as to state, at paragraph 3.9, that reasonable investor expectations are for the aggregate UBA monthly price to exceed both the IPP prices (\$34.44) and the entry-level fibre price (\$37.50) and for the UCLF price to exceed the UCLL price. Aside from offering the observation that a number of market analysts already rate Chorus a “Buy” at IPP levels, we think it almost goes without saying that the Act’s final pricing principle and the Commission’s proposed exercise of it, assume a costing model that produces final prices, not the other way around.
15. We recommend the removal of these test from the Commission’s process, and a continued focus on the s18 purpose statement and the TSLRIC definition in the Act.

## Introduction

16. Thank you for the opportunity to comment on submissions received on the 9 July 2014 FPP regulatory framework and modelling approach consultation paper (**consultation paper**).
17. In this submission we respond to the submitters comments relating to:
  - a. The purpose of the FPP and the standard the Commission should apply to identifying efficient costs;
  - b. The degree to which the Commission should be constrained in its choice of the modern equivalent asset adopted for model purposes;
  - c. The allocation of costs to services; and
  - d. Chorus' comments relating to proposed inputs in to the model.
18. Further, Spark and Vodafone have jointly asked WIK and Network Strategies (NSL) to comment on submissions (attached). We highlight in our submission specific modelling inputs and implementation matters addressed in their attached reports.
19. We will be making a separate submission relating to Chorus' proposed approach to aerial deployment. However, that submission can only consider the principles of how the Commission might think about Chorus' proposed settings. It is not possible to assess a single input – aerial - in isolation from other model parameters and we have not yet had access to relevant data.

## Regulatory framework: FPP objectives

20. There is broad alignment among access seekers on core modelling principles. All submitters propose that the Commission model efficient costs that reflect the realities of the New Zealand market. However, there are significant difference between submitters on the degree to which the efficient costs should be based on Chorus' current technologies and commercial model.
21. Chorus argues that the technology choices and modelling inputs should be based on their current network and services. Conversely, RSPs argue that the purpose of the FPP is to set efficient prices and this means the Commission should abstract away from Chorus' costs, seeking to model a hypothetical efficient provider.
22. This hypothetical efficient network provider should be modelled using realistic assumptions for the New Zealand context, but should not be constrained in its efficiency by path dependencies caused by previous legacy decisions in relation to technology, historic demand, network architecture or implementation of past Government policies.

## Chorus is asking the Commission to model an inefficient provider

23. Chorus accept that a forward looking model should reflect the efficient costs of providing the regulated service in the real world New Zealand context [3.1]. However, its implementation of this principles is that the efficient provider must:
  - a. Support the same functional services as Chorus provides today;
  - b. Using Chorus' existing copper network, pre-existing topology, asset inventory, commercial model and level of asset sharing, and asset inventory;
  - c. And that this network be valued at replacement cost.

24. At every turn Chorus has proposed modelling choices and parameters, on the basis of the “Chorus reality” or “investor expectations” standards, that depart from the choices and parameters that reflect an efficient provider. Chorus is effectively asking the Commission to model its network, costs and operating model and this is inevitably inefficient.
25. Chorus further propose that the Commission apply a replacement cost methodology to this network (irrespective of Chorus’ actual past or future investment necessary to maintain regulated service capability). That’s despite its stated policy to cease further copper investment. Chorus estimate that the proposed approach results in a network value of \$8bn to \$11bn, for a network with an acquisition value of \$6bn and residual value of less than half that. Chorus’ approach, while failing to provide any efficient cost signals, will maximise the value of the network and windfall gains.
26. Chorus’s proposed approach ultimately leaves the Commission setting regulated prices based on inefficient costs – and this is an unworkable model for the Commission. The Commission is required to set prices based on efficient forward looking costs in the interests of end users. However, basing asset values and costs on the current copper network and practices where no operator is investing on that basis (including Chorus), cannot provide these efficient cost signals. Accordingly, these outcomes are unlikely to be consistent with principles established by the Courts in the IMs appeal, nor acceptable for the purposes of the IPP.
27. The Commission is required to estimate the costs of an efficient provider, and to do this, should anchor its model approach in efficiency – that’s the purpose of an FPP cost model using the TSLRIC approach set out in the Act. The prices should reflect those that we expect to see as the outcome of a hypothetical competitive market; stripping out inefficiencies of the current provider and commercial structures, but also retaining efficiencies where these available to the market.
28. To identify these efficient costs, however, means that the Commission must inevitably abstract from the current regulated provider and market to identify the costs and prices that would be expected to be the outcome of a hypothetical competitive market. The market is regulated, in the first place, because prices are not shaped by competitive drivers and regulation seeks to replicate these competitive outcomes.
29. We believe that the Commission’s general approach, which seeks to as identify the efficient forward looking costs of a hypothetical provider replacing Chorus, is a practical way to assess efficient costs. In particular, it relies on a hypothetical assessment of the efficient costs today for equivalent service, unconstrained by Chorus’ (or end users) historic technology choices, but capturing the core functionality of the regulated service [105].
30. Conversely, Chorus is asking the Commission to ground the FPP model in its reality, which is a function of its past investment approach, historic technologies and part Government policies and market dominance rather than an efficient market, i.e. import Chorus’ inefficiencies. Chorus is really asking the Commission as a result to model an inefficient operator and this must constrain the Commission’s assessment of efficient cost.
31. While Chorus supports the principle of efficiency, its implementation of the model ultimately leads to inefficient prices and windfall gains. We believe the best way for the Commission to avoid following a similar path and ultimately setting inefficient prices that fail to support FPP objectives is to:
  - a. Have a clear set of principles that sets out the FPP outcomes and consistently apply these principles to the FPP model; and

- b. Build a flexible model that allows it to assess and quantify implications of modelling choices. We're not trying to push the model down to unreasonable prices, we just want a flexible model.
32. It's too early to know what the appropriate model parameters, we have had no access to proposed cost data and it may well be that a careful and reasoned assessment results in similar values to current Chorus values. However, Chorus' proposed constraints and past experience with regulatory models suggests that Chorus' proposed parameters will result in significant overstatement of efficient values. These values need to be tested.

### **The Act does not require the Commission to depart from efficient outcomes**

33. Chorus suggest that Act limits the Commission's ability to set efficient prices. We disagree. The Commission is not limited by the Act or section 18 considerations. In particular, Chorus propose that [195-206]:

- a. Dynamic efficiencies are a significant factor in promoting competition [195.3]. However, competition is one of the mechanisms which forces market participants to invest and innovate and this promotes dynamic competition. Regulation seeks to bring about the outcomes of competition, in this case by estimating the efficient prices that would arise if there were competition. This competitive outcome brings about a number of efficiencies, and the legislative framework itself not directing any greater significance be placed on dynamic efficiencies as articulated by Chorus, in this case.
- b. A decision which undermines investment is likely to undermine competition [195.4]. While we agree in principle with much of this statement, we do not consider it a reasonable basis to conclude that providing an investor in a regulated Access Provider with higher returns is key to facilitating competitive outcomes. In fact, we can readily identify a number of reasons why the contrary is expected of a regulatory pricing decision. The decision must limit the opportunity for monopoly rents and is required to estimate the price that would be achieved in a competitive market. As the High Court noted in *Chorus v Commerce Commission and others* [2013], even a TSLRIC price is a modelled estimate of efficient costs. It is not required to necessarily bear any resemblance to the Access Seekers actual or purported measure of cost.

Chorus's view of investment incentives appears heavily linked to achieving the greatest return for its investors – which cannot be the test. A FPP price should provide sufficient revenue for the company to meet its debt obligations, provide a return on and of capital invested and enable a company to attract equity/capital for new investment, and not more than that. The role of investment incentives is but one of the factors to be considered by the Commission in establishing the framework and making the modelling decisions. Again, despite section 18(2A), we do not find any legislative indicia to suggest that the interests of investors to receive above market returns on legacy assets are a valid consideration when seeking to promote competition. Nor do we read section 18(2A) as incorporating "investor preference" (for higher returns – even in legacy networks where very limited future investment is anticipated), or somehow elevating this concept above other factors that are important to promoting competition.

- c. The Commission rightly rejects suggestions that predictability and reasonable investor expectations require it to discount re-use by the hypothetical network operator of Chorus' assets [198]. Despite being apparently well intentioned, it appears from submissions that it is entirely unclear what the Commission's newly introduced reasonable investor expectations test means. For example, there is considerable disagreement about which investors are being considered; when those expectations were set; whether they are

reasonable; and whether those expectations are anticipated to be static or move with other developments in the market and evolutions in regulatory best practice. It is accordingly difficult to understand how any link can be established between such investor expectations and detailed modelling assumptions (such as re-use and performance-based adjustments).

- d. Some important modelling decisions are made plain in the Act (and section 18 is therefore not relevant) [202]. While we agree that section 18 will not always have a directly observable effect on modelling decisions, we disagree with the interpretation that there are modelling decisions that are made plain in the Act. The Act is broadly expressed, and Parliament has left it for the Commission to make the particular modelling decisions it considers appropriate in order to arrive at a competitive and efficient price. If the Act was intended to require certain modelling choices, these would be expressly written into the Act.

Nor are these modelling decisions "made plain" by analysis of how TSLRIC is generally applied in practice (as seen through analysis of regulatory practice overseas). TSLRIC itself requires regulators to make judgments about a theoretical efficient service capable of providing a strong competitive constraint to the service provided by the incumbent. "Full functionality" is not a requirement in the Act. Historic costs have never been entirely excluded from TSLRIC modelling. TSLRIC has evolved to the point where EU Regulators are encouraged to consider using historic costs as part of LRIC+ modelling for sunk assets that will not be replaced. It is therefore conventional to apply these efficient standards during a TSLRIC exercise in New Zealand. Realistically, forward looking replacement costs should be applied to all appropriate assets during the relevant time horizon but the Commission should guard against the application of forward looking costs where such costs are in no way incremental to the service provided and they simply create a windfall.

34. We also disagree with Chorus' proposal that section 18 justifies judgements to increase price through model design, parameters and price point selection. Section 18 is about an efficient and therefore competitive price, not the highest price that the market will bear. We all recognise that model design and parameter choice will have a material impact on price, which is why it is imperative that the most efficient design parameters are selected. Analysing whether a choice between higher or lower price point within a narrow range of plausible efficient prices should be selected is one thing, but it would be entirely inconsistent with the purpose of the law to use section 18 to justify a series of judgments which each have the effect of increasing the price.
35. Further, Chorus also seeks to rely on the STDs as a statutory layer that necessitates detailed additional costs to be built into the hypothetical network operator model [232 of Chorus submission]. We cannot support that approach. The functionality requirements of the STD set minimum standards which are designed to keep a regulated access provider "honest". It's reasonable to assume that in a competitive market the hypothetical access providers would all provide the functionality, performance and service specification the market requires in the most efficient way. Identifying the modern, forward-looking equivalent assets to deliver an equivalent service resolves the potential harms which the STD seeks to mitigate in the first place.

#### **The Commission's assessment of efficiency should reflect what's possible in the NZ market**

36. We are not suggesting the model should be devoid of real world reality – forward looking costs are the costs of accomplishing the activity in the most efficient way possible, given technological, geographical and other real world constraints.



37. This is the level of efficiency an operator in a competitive market could practically expect to achieve. This means the lowest cost modern technologies, network sharing and efficient deployment options available to the operator. For that reason we haven't asked the Commission to adopt technologies and sharing possibilities beyond that reasonably available to an efficient provider. Conversely, where there are efficiencies available in the real world – whether through re-using assets or sharing – these should not be ignored.
38. In other words, in order to identify efficient costs consistent with competitive outcomes, rather than ask what is realistic or what is based on Chorus outcomes, a better question is what could be achieved by an efficient provider sufficiently motivated by the drivers of a competitive market.
39. Further, we're not asking the Commission to set prices below Chorus' actual costs - i.e. all models being considered will result in asset values above the floor identified by the Courts in the IMs decision – or apply an approach that does not have mainstream regulatory support.
40. Finally, as WIK note<sup>1</sup>, the Commission's proposed approach is consistent with the approach taken by regulators overseas. The Commission's consultation paper endorses the view that section 18 requirements are consistent with and best met by implementing the principle of competitive neutrality. Economically efficient outcomes in a competitive market require that the business models adopted by retail market participants are the result of strategic business decisions based on economically efficient wholesale prices. Competitive neutrality in relation to UCLL and UBA services is accordingly best served by the use of efficient regulated wholesale prices which reflect the TSLRIC of those services. Efficient pricing of UCLL and UBA also provide an important baseline for platform competition as between the fixed copper network and other technologies. Properly developed cost models calculate the efficient cost of the network elements and operational and business support systems required to produce the relevant wholesale service. As noted below, efficient cost based TSLRIC pricing uses the modern equivalent asset to replicate delivery of the service since long-run prices in a competitive market will tend to this point, and deliver the provider with a return commensurate with that which investors would expect in the long run in a competitive market.

#### **Chorus' approach demonstrates the difficulty in applying the reasonable investor expectation standard**

41. Chorus' submission demonstrates why the concept of "reasonable investor expectations" should not be elevated to take on a key role in the TSLRIC exercise. As demonstrated by the submissions of all parties (and given that "reasonable investor expectations" is not a concept provided for in the Act), there is considerable debate and controversy about what the concept means, and whether it can be reasonably and consistently applied.
42. Choices that deliver a higher set of returns for one set of investors will always be reasonably preferred by that community. And there will naturally be an incentive for Chorus to argue that such investor expectations should guide the Commission's choices.
43. But as Vodafone points out, the Telecommunications Act does not have the same purpose regarding certainty for suppliers; it is not clear which set of investor's expectations should be considered; and there is no evidence to support a view that a broad concept such as "reasonable investor expectations" can inform a detailed modelling choice such as a decision on asset re-use.

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<sup>1</sup> See section 2.4 of WIK-Consult's 5 August Submission.

Such choices should be informed by evidence of choices that are necessary to generate an efficient and competitive price on a forward looking basis.

44. Introducing what is in effect a new test into the regulatory process at this stage is problematic and unwarranted. Evidence of efficient modelling choices and an overall assessment of competitive outcomes should be the key guiding lights during modelling phase. Introducing reasonable investor expectations as a (somewhat undefined) test arguably goes beyond the scope of the Commission's discretion in this process.

### Promoting regulatory predictability

45. We support Vodafone's view that consistent lawful decision making, a thoughtful and thorough analysis and process, and independence from political interference, is important to regulatory predictability and certainty.
46. Modelling that is consistent with current evolving international regulatory practice and discourse in the application of TSLRIC adds to predictability. Parties develop expectations of what New Zealand operators will do, based on the way EU and other regulators when doing the same thing.
47. We also consider that it is important that regulators do what they say they will do – but that must be distinguished from requiring that the Commission held to initial, early views; or requiring that the Commission do something unlawful – just because an initial view suggested it may be an approach it thought it could follow.
48. There can be no way that regulatory predictability requires that the Commission embrace Chorus' "grounded in reality" view – that the incumbent's services, costs and historic choices need to inform the model. Such an approach is contrary to international practice, contrary to conventional TSLRIC approaches and accordingly does not aid regulatory predictability. Looking at the incumbents "factual position" is not required. A hypothetical network operator by definition does not face legal obligations and constraints of the incumbent. Much of the obligations placed on the incumbent arise from its historic inefficiency and monopoly incentives that prompted initial regulation. A hypothetical network operator unencumbered with historic choices will find the most efficient way to build the service demanded on a forward-looking basis.
49. We believe that predictability is better provided by the Commission taking a reasoned approach and providing a transparent process. Investors are unlikely to consider the parameters of regulatory cost models but are interested in the prices that come out of regulatory processes and concerned about price shocks. The policy development, IPP and FPP processes all go to supporting predictable regulation.
50. Conversely, Chorus' approach can simply increase business risk and a wider analysis is required. For example, inefficient duplication of assets takes place if you set the regulated price too high. If you build in the so-called real world constraints referred to by Chorus you encourage inefficient overbuild as you create an incentive / economic space to build instead of buy. Real life operational checks are relevant but only to the extent that we are not modelling something incapable of delivering an equivalent service.

### Chorus' proposed limits to modern technology choices

51. Chorus' grounded in reality approach seeks to constrain key model parameters.

### Core functionality

52. Chorus argues that the Commission is wrong to adopt a "core functionality" approach. It says that:

- a. The clear words of the definition of TSLRIC require "the service" (eg UCLL as known today) to be modelled;
  - b. There is no precedent for the Commission's approach, and therefore a predictable regulatory approach requires the Commission to abandon the "core functionality concept".
53. Chorus then reiterates its views on how an MEA (capable of providing all current functionality) based on its existing copper network or a fibre network could be adjusted and optimised to derive an efficient price.
54. From our review of the submissions, it is apparent that only Chorus holds the view that the definition of TSLRIC precludes the application of the "core functionality" concept.
55. The problem with Chorus's position is that it continues to confuse two distinct concepts, which we believe are common ground between all parties:
  - a. The Commission's legal task is to determine a price for Chorus's UCLL (and UBA) service by applying TSLRIC. There is no dispute that the Commission must determine a price for the regulated services provided by Chorus under the Act. The Commission clearly understands its task in this respect;
  - b. The Commission's economic regulatory task is to determine how TSLRIC should be applied to the services in question. This involves numerous decisions on modelling and costing to achieve a price that, in the Commission's expert judgement, is consistent with section 18.
56. Chorus' argument is essentially that the Commission's economic regulatory task is constrained by the Act such that the Commission is not legally permitted to use the concept of core functionality to guide its modelling choices. To succeed in this argument, Chorus needs to establish that a decision to model the core functionality of the service:
  - a. Is inconsistent with the definition of TSLRIC in the Act (ie the "facilities and functions that are directly attributable to/incremental to the service" requires the Commission to model all aspects of the UCLL service as it currently exists);
  - b. Leads to an outcome that is inconsistent with promoting competition in telecommunications markets for the long-term benefit of end-users (ie generates an outcome that does not promote the purpose statement);
  - c. Is otherwise inconsistent with the Act; or
  - d. Is not a plausible economic decision that can be made when determining how TSLRIC should be applied in practice.
57. Chorus has not done so:
  - a. It reiterates its assertion that the use of "service" in the definition of TSLRIC clearly means all aspects of the service as currently exists must be modelled, and does not engage with the Commission's valid points that the definition must be interpreted in light of the purpose and scheme of the Act (in particular, so that an interpretation does not lead to inefficient outcomes);
  - b. Interestingly, Chorus does not seek to add to or reinforce its previously expressed legal position on "core functionality". Rather, it seeks to explain why its legal position will not unduly constrain the optimisation and efficiency choices required under TSLRIC.

58. The essential problem with Chorus's position is that in circumstances where a conventional application of TSLRIC requires a myriad of decisions to be made by the regulator, it says that one of those choices is dictated by the Act.
59. In that context, Chorus says "core functionality" does not appear in the Act, and therefore cannot be a valid concept. But, for example, "modern equivalent asset" also does not appear in the Act, and its validity is not questioned.
60. The position remains, as set out in the Commission's reasoning and the advice it has received, that Parliament has left the Commission to decide how best to apply TSLRIC to the regulated services consistently with section 18.
61. Chorus's submission also illustrates the danger of the Commission's "regulatory predictability" concept. That is, parties will seek to use the concept opportunistically to prevent the Commission from making decisions that are most consistent with the Act in current circumstances.

### **Chorus propose a number of fixes for alternative (not copper) technologies**

62. Chorus has clarified that it is not seeking to constrain the MEA to its network, but that the MEA must be capable of replicating the functionality of the copper network, including detailed TSO requirements [240]. Accordingly, it's proposed that, for fibre to be considered as the modern equivalent asset, that the Commission should build in to its model the costs of fixes for the FTTH network to mimic UCLL functionality. In particular, fixes are required because many devices rely on a metallic path from the exchange to end user [278].
63. We agree that the TSO does not constrain the Commission in assessing available technologies. The TSO captures general service obligations and is not technology specific. Chorus' TSO Deed expressly permits Chorus to change access technology at any time, without limitation, with acknowledged impact on delivery locations and interfaces (and with consequent flow-on effect for the retail services that it might be capable of supporting). Further, the low-speed data services and other service characteristics Chorus argues must be considered part of the service functionality for MEA purposes are, almost without exception, not required to be provided by either Chorus or Telecom under existing TSO Deeds.
64. Nonetheless, Chorus sets out a list of features for which proposed fixes would be required, including fixes
  - a. To support existing DSL devices. DSL based equipment that cannot connect to fibre. In many cases, the DSL modem provides additional functionality such as WIFI. A replacement model would be required [280] [I think this is largely irrelevant as the modem is provided by the RSP in any case];
  - b. To support existing analogue devices (telephones, fax and dial up internet) and services that rely on an analogue telephone line (EFTPOS, Sky set top boxes and alarms) [281, 282], and those that rely on the DC power path (analogue phones, alarms) [284];
  - c. To support analogue telephone services; phones [286], facsimile [288], dial up internet [289], Eftpos terminals [290] and sky set top boxes [291], alarms [293], legacy copper business grade services [296].
65. Chorus propose that, for each device that cannot operate over FTTH, the Commission model the additional cost of CPE to enable it to work over an IP network [306].
66. We disagree. These proposed costs associated copper adjustments off fibre networks just make no sense when neither Chorus nor a hypothetical network operator will ever incur such costs.

They could in no way form part of a realistic cost model. It conflates the role of the MEA. The MEA seeks to model the efficient network. It does not form the basis on an engineering exercise from which the MEA is re-engineered to be backward compatible.

67. In any case, to the extent Chorus' claimed features form part of the expected service set for customers, fibre network providers and retail service providers are already identifying solutions that are compatible with fibre and mobile technologies. IP based networks are able to support facsimile and alarm services. For example, the Australian NBN has undertaken a testing programme.<sup>2</sup>
68. Further, Spark is currently testing service and modem capability for our voice over fibre service. That testing indicates that the platform can support the full range of analogue services, including facsimile, alarms and almost all Sky modems. While yet to be completed, the testing indicates that the IP platform will support a wide range of existing services and modems.
69. Chorus suggests that the model need take in to account customer CPE. However, CPE is not a function of the network operation and typically funded by the RSP and end user. We disagree that the model should seek to add these costs to efficient costs.
70. Finally, if the Commission was to include CPE costs in the model, these need to be directly related to the provision of core functionality and not additional service capability that does not form part of that function, i.e. facsimile equipment, medical alarms and home networking capability such as wifi.

### **Fibre unbundling**

71. Chorus further reiterates earlier claims that GPON is not able to be unbundled on a per user basis and, therefore, is not appropriate as a feasible technology to model [310].
72. For completeness, as set out in our earlier submission, it must be possible to provide such a service because Chorus has agreed with the Crown to provide both a layer 2 UFB service and design and build the network to support layer 1 unbundling from 2020.<sup>3</sup> We are not aware of technical limitations that, in itself, would prevent GPON from being unbundled and an unbundled fibre service is not only possible but likely to be in existence by 2020.<sup>4</sup>

### **FWA is a viable technology**

73. Chorus sets out a number of reasons why FWA may not be a viable technology to meet the requirements of the STD: it is not able to be unbundled so that access seekers can provide a layer 2 service (it's not a layer 1 service) [318]; RSPs can't differentiate their services on the basis of layer 2 investment [321]; it is not a non-blocking or point to point technology [325, 331]; it requires different CPE and battery backup [334]; and can't support TSO – dial up and fax [335].

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<sup>2</sup> For example, see compatibility information here <http://www.nbnco.com.au/connect-home-or-business/information-for-home/fixed-line/device-compatibility.html>

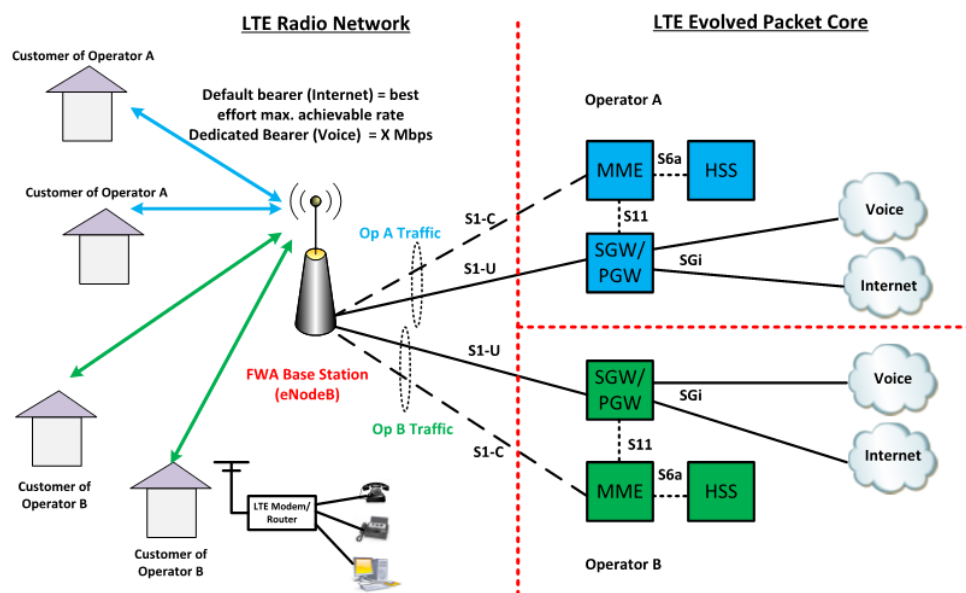
<sup>3</sup> See section 6 of Chorus Fibre Deed.

[http://www.crownfibre.govt.nz/media/17297/chorus%20limited\\_%20deed%20of%20open%20access%20undertakings%20for%20fibre%20services.pdf](http://www.crownfibre.govt.nz/media/17297/chorus%20limited_%20deed%20of%20open%20access%20undertakings%20for%20fibre%20services.pdf)

<sup>4</sup> On the face of it, a number of options appear to have been explored. For example, the Analysis Mason report for Ofcom sets out a number of unbundling options [http://stakeholders.ofcom.org.uk/binaries/research/technology-research/Analysys\\_Mason\\_GPON\\_Market\\_1.pdf](http://stakeholders.ofcom.org.uk/binaries/research/technology-research/Analysys_Mason_GPON_Market_1.pdf).

74. However, we do not see these limitations in the market. FWA is a mainstream technology with a robust ecosystem of equipment and CPE. FWA technologies wouldn't be ignored by an efficient provider, and neither should the Commission in the FPP model.
75. Chorus has suggested a number of technical limitations to sharing a FWA network. However, mobile operators are increasingly sharing networks and the LTE capabilities that support network sharing are able to also mimic the functionality of the UCLL and UBA services. For example, through the use of Multi Operator Core Network (MOCN) standard and guaranteed bit rate bearers it is possible to offer "virtual" unbundling of the shared spectrum (see Figure 1 below). Furthermore, the technology permits each service provider can provide their own quality of service definitions that can be applied to end user customers. It is also possible to lock down the access to the FWA site using the "Closed Subscriber Group" capability further supporting end user performance.

Figure 1: Multi-Operator functionality allows service providers to share access capability



76. Further, CPE technology in the LTE ecosystem suggest that one terminal will be able to provide all the functions shown in figure 2. That is, the CPE will provide, modem, router, ATA, T.38 (fax), WiFi, in addition to standard LAN ports.
77. There is a confirmed LTE technology roadmap that will provide significant performance improvements over the life of the STD. For example, once the FWA site is deployed, it will be possible to leverage the extensive roadmap of enhancements being defined for LTE-Advanced. One such feature is carrier aggregation. We anticipate that in the future the 850MHz band can be used in combination with the 700MHz band to provide further data rate increases for FWA users. Further bands (e.g. the L-band) may also be available for 3 band CA). Multiple input multiple output (MIMO) antennae capabilities are also being enhanced from 2x2 systems upto 8x8 systems (note MIMO requires high SINR and is better suited to non-LoS conditions).
78. There are other wireless solutions being adopted for rural FWA and these could also be considered. A key such alternative is the IEEE 802.22 standard. This technology adopts Cognitive Radio technology to operate in TV White Space.
79. We are not seeing Chorus' FWA limitations in practice – FWA remains viable and attractive technology for providing fixed services to customers. Network Strategies consider this point in



detail in section 4 of their attached expert report and makes reference to material included in their expert report attached to our 6 August submission.

80. Chorus notes that, even if FWA could provide the necessary functionality, the model would need to reflect the costs to provide necessary coverage; capacity and throughput, and Spectrum [347]. We agree that these are all factors that will need to be tested in the cost model – that is the point of assessing its costs. Further, we expect these costs to fall over the regulatory period as, for example, LTE technologies support higher capacity and operators use the LTE Relay Node functionality to extend coverage to areas with limited or no coverage by the FWA base station.
81. Further, we accept that performance is an important parameter to the modelling. The difficulty is that the fixed network performance benchmark varies, performance varies from long copper lengths through to fibre. Copper performance degrades over distance. Accordingly, a practical means to reflect performance variability and likely nature of future investment, may be to limit FWA access to areas outside UFB deployment areas. This could be tested through the model process.

## Key inputs to the FPP model

82. Chorus has proposed the approach to a number of inputs. These are discussed below. A key difference between the parties to this process, which influences each party's views, is that Chorus believes its inputs are the starting point for the model, and that the hypothetical provider to be modelled is a hypothetical new entrant. We disagree with this suggestion.

### The Commission should model a hypothetical efficient provider

83. We believe the provider to be modelled is a hypothetical efficient provider and that the starting point in determining the inputs to the model should be the behaviour and expectations of the market reflecting current forward looking conditions in New Zealand.
84. Chorus' misplaced emphasis perhaps results from a historic focus by regulators enabling access to incumbent operator infrastructure for market entrants at economically efficient prices. In contrast for New Zealand, as in the EU, the key focus today is on setting economically efficient signals for all market participants to ensure economic efficiencies in pricing during the transition to next generation access technologies. This approach requires that model inputs be considered on a forward looking basis over the long run, rather than a backward looking basis and derived, as Chorus seems to suggest, from its historic network infrastructure.
85. The pricing signals generated as a consequence of setting a TSLRIC price certainly are important to ensure correct build/buy decisions remain for retail service providers in their choice of input services, and correct incentives are maintained for those providers to invest in complementary infrastructure such as transport infrastructure and innovative application layer services. This is however a consequence of TSLRIC pricing, rather than a reason for setting prices in this way.
86. TSLRIC based prices are equally important to ensure Chorus has incentives to be efficient, to innovate, and to continue to invest efficiently in all areas of its network. Finally, TSLRIC pricing under regulation is also important where there is monopoly power in the supply chain to ensure consumers are faced with economically efficient price signals. These are a result of the combination of regulated wholesale inputs and the effect of competition between RSPs, and ensure that consumers are not forced to pay inflated prices due to the use of monopoly assets in the delivery of their services.
87. Chorus further suggest that this approach would require the Commission to model a hypothetical efficient provider which does not have a realistic and attainable standard of efficiency. We do not

think this is the case, and we do not think this is what the Commission is proposing to do. As previously submitted to the Commission, TSLRIC pricing looks at the reproduction costs of the efficient MEA for a sound economic reason.

88. The reason for setting TSLRIC based prices is to expose all market participants to cost-based pricing signals to promote economically efficient decision-making under regulation. Telecommunications infrastructure such as that required for the delivery of UCLL and UBA services requires investment in a range of assets with high sunk, and largely irreversible costs. In the long run, prices in a workably competitive market tend to be set at the level that covers efficiently incurred current rather than past capital costs, whether these were efficiently incurred or not.
89. As has been recognised in other jurisdictions, these capital costs are not the capital costs of reproducing the current infrastructure in its entirety but the current capital cost of reproducing the service with the most modern technology currently deployed in the market. It is these pricing signals that the TSLRIC based price seeks to replicate in a market in which there is a degree of monopoly power. The intent of Chorus' submissions appears to be to lock as many of the input variables as possible to those reflective of Chorus' actual network.

### **Chorus inputs do not provide reliable starting values**

90. The Commission is looking to identify values for the cost model that reflect those of an efficient operator.
91. Chorus suggest that its network and costs should be the starting value for the model. However, we disagree as this will not be the case in many instances. This is because Chorus' data reflects a range of differences in efficiencies and of economic trade-offs in comparison with an efficient provider. For example, Chorus can access existing ducts and open trenches in subdivisions at low marginal cost. Chorus estimates that it will use 40% existing ducts for the UFB build. Its subdivision policy requires developers to provide open trenches, install Chorus plant within the subdivided area and along the frontage of the subdivision and make a contribution to the costs of Chorus extending its network.<sup>5</sup> Under these circumstances, it makes sense for Chorus to use, say, underground cable rather than aerial alternatives. However, if an efficient provider were faced with replacement cost values for plant, it faces a different set of economic choices and would make more use of alternatives in comparison with Chorus' approach. The risk for the Commission in adopting Chorus' actual approach for the purposes of the model would, in this example, likely understate the level to which a provider in a competitive market would use aerial deployment.
92. If adequate data were available, the Commission could internalise these trade-offs within the model by, for example, omitting trenches provided by land developers from the asset valuation and therefore increasing pole use. Alternatively, the Commission needs to be careful it looks at efficient pole use that would be achievable based on the economic choices faced by an efficient provider. In this example, evidence is that there is widespread use of aerial by providers that don't have Chorus' legacy advantage – see Greymouth and Auckland, and greater use of aerial by Chorus.

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<sup>5</sup> For example, see Chorus arrangements with developer here <http://www.odc.govt.nz/media/77202/attachment%2011%20-%20correspondence%20from%20horizon%20energy%20and%20chorus.pdf>



93. As a realistic alternative, the Commission could preferably look outside Chorus' experience for evidence of what an efficient provider would do. In the above example, it would adopt aerial techniques wherever feasible. This kind of analysis ensuring comparability of economic choices faced by the efficient provider should be applied to all model parameters when considering Chorus actual inputs.
94. We also agree with Chorus that the Commission should look at parameters adopted by overseas regulators. These can provide a valuable source of information that shouldn't be ignored. For example, New Zealand trenching rates currently observable in connection with the UFB build are not necessarily reflective of efficient costs relevant for a regulatory cost model. The contractor market for dependable semi-skilled labour is very tight at the moment and this means trenching rates are almost certainly beyond what we would expect to see over time in an efficient market and deployment model. We also believe that the costs to be faced by a hypothetical efficient operator cannot be determined by direct comparison with Chorus or LFC costs additionally as a result of the timeframe and build location requirements under the UFB arrangements. Under these circumstances, overseas trenching rates (adjusted for relative labour costs) will likely provide a useful calibration of the estimate of efficient trenching rates, and may be more representative of the efficient costs than those provided by Chorus.
95. At this point in time of course, we don't have a definitive view on the actual inputs which the Commission and TERA may consider most accurately contribute to the particular economic choice which would be faced by a hypothetical efficient network operator. The Commission has yet to consult on a reference paper (necessary to ensure a consistent approach is taken across in inputs) nor detailed inputs – these elements are both prerequisites to inform the Commission's decision making in the draft determination. We have not had access to data to test assumptions or propose proper variables, although we can form tentative views on the likelihood that Chorus' inputs will reflect efficient costs. Therefore, all we ask is the Commission design the model in a way that can test the range of possible settings – it can then assess the appropriateness of input values and make a draft determination as to the TSLRIC cost for consultation.
96. We simply think that the Commission should scrutinise information from a range of sources, including Chorus, other LFC's, other jurisdictions, and evidence from other cost models as appropriate. The Commission's model should be sufficiently flexible to include a full suite of relevant parameters, and accommodate a range of input values for each parameter. In this way it can be "grounded in the reality" of objectively determined forward looking long run incremental costs within the scope of the TSLRIC definition in the legislation,
97. We summarise our views on these inputs in the table below.

Input	Comment on approach
Optimisation and scorched node	Optimisation is the right approach but the model should provide the capability to carry out modified scorched node optimisation in order to capture efficiencies.
Deployment/aerial	Consideration should be given to aerial deployment where it is cheaper. Chorus suggest that the scope for aerial deployment is limited based on international experience. We disagree and urge the Commission to ensure that the structure of the cost model is sufficiently flexible to allow different rates of aerial deployment, preferably in relation to each MDF area, but at minimum per geotype.
Demand	The model should use forward looking estimates of 100% demand (including regulated and non-regulated services using copper access together with Chorus and LFC fibre, and existing FWA) in dimensioning the UCLL and UBA MEA networks, and then allocate costs based on estimated

Input	Comment on approach
	actual demand using a demand tilt in the tilted annuity calculation as described in the WIK-Consult expert report.
Asset sharing	Consideration should be given to sharing on third party's assets.
Cost allocation	A capacity based approach is more appropriate than the Shapley-Shubik methodology in this modelling context. We support the use of EPMU with some caveats. Chorus' proposal for cost allocations in relation to UFB services if not included in demand may give rise to under or over estimation unless our proposal for total demand and cost allocation set out above is adopted.
Operating expenditure	Chorus' actual operating costs are not appropriate for assessing the efficient operating costs for a hypothetical network operator, Use of these costs will require detailed scrutiny and extensive adjustment to make them relevant. The Commission should use information from other LFCs, and from overseas jurisdictions, but exercise appropriate caution and judgment. Chorus' suggestion that a cost escalation for operating expenditure is required within the model is inconsistent with our advice on the benchmarking of operating expenditure in TSLRIC modelling and should not be implemented.
Depreciation	Chorus propose that an adjusted tilted annuity should be used in preference to a tilted annuity. We disagree with their formulation. Based on the proposed approach to demand and cost allocation, together with appropriate demand tilts as explained in detail in the WIK report, Chorus' concerns as to recovery of the efficient cost of the network are dealt with .
WACC	Our views are set out in previous submissions.

98. We agree with Chorus on the principle that the Commission should ensure that its decisions on inputs are fact based, objective, and reflect New Zealand conditions. The reality of New Zealand conditions is that there will be no material network investment in UCLL services and the notion of the hypothetical efficient provider. We strongly believe that it would be inappropriate for the Commission to treat information on Chorus' experience as definitive of economically efficient forward looking network design, implementation, or operation.

99. Current network deployment, and the associated economic circumstances depend in important ways on the historical circumstances in a range of ways reflective of investment decisions taken primarily around technology and techniques in use at the time, demand for services, policy settings, and access to capital funds at the time. In fact, many key elements of the overall network design were determined over past years; prior to privatisation, in response to successive Governmental policies around universal access to voice telephone services, and based on sub-national population densities at the time, and following privatisation based on a range of subsequent commercial and Government policy-based decisions.

100. Some optimisation will assuredly have taken place over time as the portions of the network infrastructure have been upgraded. Equally however, it is just as clear that the impact of path dependencies mean that it is not necessarily the case that the relevant components of Chorus' current network configuration for delivery of UCLL and UBA services represents the MEA network which would represent the cost structure determining the TSRIC price required by an efficient operator.

## Optimisation and scorched node

101. Chorus support the notion of optimisation as key to the identification of efficient level of costs of supplying UCLL and UBA. Surprisingly however, they suggest that the Commission should follow a scorched node approach in modelling the FTTH network used as an MEA. WIK-Consult advise us<sup>6</sup> that many regulators modify the scorched node approach in order to capture efficiencies in a forward looking network while still having regard to current local conditions.
102. Chorus invokes past regulatory practice from other jurisdictions to support the proposition that the Commission should not use a modified scorched node approach. This approach might in some factual circumstances be appropriate if the primary objective was to set economically efficient access prices for incumbent operator infrastructure in order to promote access seeker investment in infrastructure competition. In New Zealand, the key focus is on setting economically efficient signals for all market participants to ensure economic efficiencies in pricing access in the context of limited new investment in copper technologies or unbundling copper, and the transition to the UFB/RBI next generation access network. This approach requires that model inputs be considered on a forward looking basis over the long run, rather than a backward looking basis and derived, as Chorus seems to suggest, from its historic network infrastructure.
103. As recommended by WIK-Consult,<sup>7</sup> we suggest that the Commission ensure that the model to be developed provides sufficient flexibility to allow for efficiency improvements in respect of network elements. These would include the ability to incrementally change the number of ODFs , the efficient placement of cabinets in the case of the reference copper network architecture, and for efficient local access area at a given number of ODF nodes.
104. We urge the Commission to ensure that the model has the flexibility to modify the scorched node approach recommended by TERA so that an objective evidence-based decision can then be taken as to the appropriate level of each relevant assumption. This will ensure that a proper consideration of the relevant model inputs, can be made when the model is consulted upon.

## Deployment/ aerial

105. We agree with Chorus that the considerations of efficiency mean that aerial deployment should be modelled where it represents the lowest cost means of providing fixed access. Chorus suggest that while it is targeting a 20% aerial deployment in its UFB areas, this target is higher than their perception of international proportions of aerial deployment. As WIK-Consult make clear in their expert report, they have observed aerial deployment in rural geotypes in excess of 60%. The structure of the model should allow for a sufficiently wide range of values to be used either on the basis of each MDF area, or at least for each geotype defined by the model.
106. Chorus suggest that the model constructed for Norway used a deployment of 9%. WIK-Consult advise that their research suggests a level of 21% for the most rural geotype. The manner in which Chorus present the data may well suggest to the Commission that there is only limited scope for aerial deployment. There is some evidence that other LFC's in New Zealand are achieving higher rates of aerial deployment in some geotypes than this level. We disagree with this implication

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<sup>66</sup> In para 27

<sup>7</sup> Para 27-28

107. It seems clear that the use of averaged estimates across all geo-types will provide a misleading indication of the potential for aerial deployment. We urge the Commission to ensure that the structure of the cost model is sufficiently flexible to allow different rates of aerial deployment, preferably in relation to each MDF area, but at minimum per geotype in order to overcome this. As WIK-Consult state, it would be appropriate for the Commission to consider modelling a high degree of flexibility in using costings for aerial, ducted and directly buried cabling for the fixed access area, and select the lowest cost option for each MDF area or geotype as the case may be.
108. In addition, we anticipate that the model will include the use of sharing line company poles, and other means of aerial deployment. Chorus suggest that their ability to use aerial deployment in practice is limited by a combination of legal constraints, and inability to secure access to the poles of third parties, and the cost of securing access. The Commission should still ensure that the model has sufficient flexibility to cost these options and to use realistic attainable inputs within a sufficiently large range of values and at an appropriate level of granularity (MDF area or geotype) to make the model realistic.
109. We note elsewhere in this submission that Spark and its expert advisors disagree with Chorus' view that the Commission should think of itself as modelling a hypothetical new entrant. As Network Strategies state<sup>8</sup>, and the discussion of issues such as optimisation, aerial deployment and asset sharing by WIK-Consult make clear<sup>9</sup>, the hypothetical efficient network operator is not a competitor to Chorus, but rather a hypothetical existing operator sharing some characteristics with Chorus but not constrained by path dependencies resulting from previous legacy decisions in relation to technology, historic demand patterns or network architecture. Accordingly, we think that the hypothetical efficient network operator should be assumed to have access to Chorus' existing aerial deployment infrastructure..

## Demand

110. When considering demand, it is important to understand that there are two aspects to be considered, Forward looking demand must first be estimated in order to appropriately dimension the network, and secondly, in order to allocate the forward looking TSLRIC costs to each of the services provided and thus to the unit costs per connection. This will ensure that over the regulatory period, the TSLRIC price will provide revenues for Chorus which are commensurate with the economic costs of providing the efficient forward looking regulated service. As described above, this outcome should align with the competitive market outcome, namely, the recovery of efficiently incurred current capital costs.
111. Chorus, and its advisors CEG suggest that the Commission's approach to demand will set a price below the forward looking costs of providing the actual regulated service. CEG also suggests that this would reduce the incentives for Chorus to replace and maintain the infrastructure supporting that service in the long run. We disagree. For the reasons set out above, the Commission's task is to set a forward looking price for a hypothetical efficient network operator. This preserves rather than reduces Chorus' incentives to invest and innovate. In fact the reality of the New Zealand situation is that the FTTH network is the network actually being

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<sup>8</sup> Paragraph 2 of the Network Strategies expert report attached to this cross-submission.

<sup>9</sup> See e.g. paragraphs 4, 5, and 7 of the WIK-Consult expert report attached to this cross-submission.

deployed under the UFB programme. We think that Chorus' view of demand does not correctly set out the way in which demand is used in a TSLRIC model.

112. We consider demand in relation to both UCLL and UBA in turn.

*Dimensioning the MEA network for UCLL*

113. The Commission's MEA approach requires that the total of all possible forward looking fixed line access connections should be considered as the relevant demand in order to correctly dimension the size and scope of the access network.

114. As Network Strategies point out in paragraph 3 of their expert report, the demand for the hypothetical network operator should start with the aggregate demand for all the hypothetical operator's copper, fibre, and FWA services. We would expect that this would include Chorus' copper access lines, unbundled copper access lines used by other operators, copper access lines of other regulated or unregulated services, fibre access lines operated by Chorus and other LFCs, demand for HFC in locations served by Vodafone as a cable operator.

115. In respect of UCLL, the FWA MEA should be modelled separately and the costs of providing the relevant regulated service equivalent using FWA should be measured against the costs of providing UCLL using the FTTH MEA,

116. Since the MEA equivalent network would be a FTTH network, this demand should be a function of the total premises passed. Allowance should be made on a forward looking basis for expected growth in total demand, and for some spare capacity to deal with uncertainty. Forward looking projections of subnational population changes such as those produced by Statistics NZ may be a useful basis to assist in calibrating the forward looking estimates based around the regulatory period.

117. Forward looking estimates of demand are crucial since network demand will change over the course of the regulatory period. An efficient network operator must build in advance of demand and with a level of spare capacity in order to be in a position to meet uncertain future requirements with as little additional capital expenditure as possible since the investment process is semi-fixed and additions to network capacity are most economically made in large increments.

118. A regulated efficient network operator will build in the same way, but with certainty that it will cover its revenue requirements over the period. In short, it will recover a certain return on and of the efficient capital invested in the services sufficient to meet its efficiently incurred debt obligations in respect of that investment, and to maintain and attract new equity capital. Shareholders will receive a return reflecting the fact that regulatory pricing will largely insulate them from windfall capital losses over the period, and limit their exposure to the possibility of windfall gains over the same period.

119. As WIK-Consult suggest in paragraph 6 of their expert report, it is appropriate to use a tilted annuity with an additional adjustment for demand changes. The hypothetical efficient network operator's

120. The length of the regulatory period, considered in conjunction with the expected economic life of the relevant assets (under uncertainty of the rate of technological change) should be used to determine the forward looking time period over which the dimensioning of the network is estimated.

### *Dimensioning the network for UBA*

121. A similar approach should be used for to determine the demand for UBA services. The Commission has considered the scale of the hypothetical efficient network operator to ensure that it captures the economies of scale available to Chorus. As noted in our submission on this point, we think the best approach to this is to consider a hypothetical efficient network operator (ie an equally efficient operator), rather than a hypothetical new entrant as a reasonable efficient operator.
122. The dimensioning of the UBA network should be based on the same demand estimation principles as that set out for the UCLL network. This is important as well to maintain consistency between the two models, and ensure that there is neither double counting or omission of costs as between the two estimates.

### *Demand and cost allocation to UCLL regulated services*

123. Chorus suggest that the Commission should model decreasing demand as a result of the need to guarantee cost recovery. We do not agree. We support the view set out in Vodafone's submission which follows the European Commission's reasoning tha modelling a single efficient NGA network as the MEA for copper and for fibre access will allow for the progressive transfer of traffic volumes from the copper access network to the fibre access network. This will mean that decreasing copper demand will reduce the cost allocation of the MEA FTTH/FW network to copper access, and increase the cost allocation of the network to next generation access. This means that there will be no need to guarantee cost recovery since demand projections will take into account migration away from copper access technology.
124. Under this approach, the total demand modelled for the network dimensioning step described above would be allocated across the hypothetical efficient network operator cost for each of the services supplied. The proportion of total demand allocated to the UCLL component would be based on a forward looking view of the demand for those services. As set out in the expert report from WIK, we suggest that the tilted annuity approach should be used with an additional adjustment for demand changes. The total TSLRIC cost of the network, dimensioned to meet the total demand, would then be reduced by the lines used for unregulated services.

### *Demand and cost allocation to UBA regulated services*

125. The estimation of demand for the UBA service and the cost allocation to that service from the total TSLRIC cost of the network should again be based on the same demand estimation principles as that set out for the UCLL network. This is important as well to maintain consistency between the two models, and ensure that there is neither double counting, nor omission of costs as between the two estimates.

### **Asset sharing**

126. Spark agrees with Chorus that the hypothetical efficient network operator would and should share network infrastructure access with third party networks. WIK-Consult set out in its submission and notes again in paragraph 7 of its expert report accompanying this submission that the potential for asset sharing should be considered widely, Again, the model should be sufficiently flexible to allow for asset sharing to be considered across the range of realistic possibilities. We disagree with Chorus, that the scope for asset sharing is as limited as they suggest.
127. As set out above, we think the Commission be modelling a hypothetical existing efficient network operator sharing some characteristics with Chorus but not constrained by path dependencies resulting from previous legacy decisions in relation to technology, historic demand

patterns or network architecture. Accordingly, we think that the hypothetical efficient network operator should be assumed to have access to Chorus' existing infrastructure. We also think that the hypothetical efficient network operator should be modelled in such a way as to allow for the possibility of sharing passive infrastructure with third parties as suggested by WIK-Consult.

### **Cost allocation**

#### *Shapley-Shubik method*

128. Chorus suggests that the Commission should adopt a capacity-based method to allocate network costs that are not directly attributable. We agree.
129. We think that the Shapley-Shubik method is inappropriate for allocation of indirectly allocable network costs in this context. This approach is, in our experience, best suited to an examination of cost sharing where the costs are to be split between two participating agents on an arm's length basis in a cooperative game. This would be based on objectives of fairness, equity and neutrality associated with arm's length bargaining. This situation arises in circumstances where joint production is based on collective use of common services and where the allocation of joint costs to the separate classes of users is delegated to them. In these circumstances, firms would experience unnecessary costs (including transaction costs) and other inefficiencies if bargaining took place, or if another surrogate such as the Shapley-Shubik method was employed.
130. An efficient provider constructing a network and providing the modelled services would dimension the network to a given level of end to end QoS for a given level of demand, and provide the necessary services to support that process. In our view, the most appropriate allocation key for use in this context is the capacity based method used by the Commission.

#### *Equi-proportional mark-up (EPMU)*

131. Chorus also consider that the Commission should use an EPMU methodology for non-network costs which are not directly attributable. We agree with the Commission's position that Ramsey pricing is difficult to implement practically. In relation to the assumption is that EPMU is appropriate since it is used widely, regulatory precedent supporting the use of EPMU is based on the underlying assumption that the relevant costs are small relative to other costs. In circumstances where this does not hold true, there is an proportionate efficiency distortion when the demand elasticities of the products amongst which the allocation is made show large differences. We agree that the use of EPMU is appropriate subject to care being taken over this point in implementing the model.

#### *Allocation of common costs based on inclusion of UFB in demand*

132. Chorus, as a consequence of their position on the calculation of demand, consider that if UFB services are not included in demand then common costs will need to be allocated between copper and fibre. For the reasons set out above, we consider that the Commission should model total demand, and then make its allocation of costs between the regulated and unregulated services on the basis of forward looking demand. The result Chorus suggest in paragraph 114 of their submission is dealt with equally efficiently and, we believe more correctly if our suggested approach is adopted. The advantage of the total demand/cost allocation approach is that the risk of under or over allocation of costs across services is avoided completely.

### **Operating expenditure**

133. Chorus suggest that its operating expenditure is an appropriate basis for determining the operating expenditure of the hypothetical efficient network operator. We disagree with this suggestion. Even if these expenditures were to be use, the overseas experience is clear:



significant adjustments would be required in order to approach the operating expenditure of an efficient operator, based on the use of a different network technology, the path dependent cost structures of legacy systems and methodologies. WIK-Consult set out a detailed summary of their experience in section 8 of their report.

134. Chorus also refer to the recent Ernst & Young review of operating costs and assert that the levels of operating costs were not out of line with its peers. We asked WIK-Consult to review this report, and they note that the report does not identify the basis for assuming comparability of the companies identified as being in their peer group. We disagree with Chorus suggestion that the Ernst & Young review supports the notion that Chorus' own operating costs are efficient and would be relevant to a hypothetical efficient network operator supplying UCLL and UBA services.
135. Chorus also suggest that the Commission should exercise caution in utilising operating cost data from other LFCs and applying those to the hypothetical efficient network operator, or directly using operating benchmark expenditure measures from incumbent service providers in other jurisdictions. In regard to the LFCs, we note that there are material issues to be considered in relation to the allocation of costs between the regulated and unregulated business activities, and the opportunity to allocate and recover costs under a different regulatory regime. We agree that caution should be exercised, but there is no reason to assume from any information available to us that any information of this type is any less reliable than Chorus' own operating expenditure.
136. Finally Chorus, assert that cost escalation should be applied over the regulatory period. WIK-Consult advise that when using operating expenditure benchmarks, its experience is that the level is not related to the age structure of the asset of the hypothetical efficient operator, but rather an industry best practice value for the typical asset age structure in the industry. This approach would address Chorus' concern that the operating expenditure of the new network would not fully compensate the hypothetical efficient network operator through the regulatory period. Accordingly, we disagree with Chorus that cost escalation should form a part of the model. We refer instead to the WIK-Consult expert report at paragraph 50.

### Depreciation

137. Chorus propose that an adjusted tilted annuity should be used in preference to a tilted annuity. In their summary table at paragraph 45 they suggest that the depreciation profile has to take account of changes in forecast demand. At paragraph 125, Chorus note that they suggested an additional tilt for demand changes. We agree generally that forward looking forecast demand changes can be dealt with in an adjusted tilted annuity.
138. We disagree with the Chorus approach to estimating demand. When modelling an FTTH/FWA MEA network, we think it important to model total demand for all regulated and unregulated services, and allocate the total costs across all services in order to avoid the risk of double counting or of omissions as described above. The allocation of costs across those services is then based on the demand for each service, and an adjusted tilted annuity is then used. Based on the proposed approach to demand and cost allocation, together with appropriate demand tilts as explained in detail in the WIK report, we consider Chorus' concerns as to recovery of the efficient cost of the network are dealt with .

## Mapping costs to services

### Disaggregated prices

139. Chorus also propose that access prices be disaggregated, expecting SLU and UCLL costs to be broadly comparable with UCLFS costs being higher [20].



140. We disagree. As set out in our previous submissions, an aggregated approach is consistent with the current application of the Act, protects the coherence of the regulatory framework and provides sensible investment incentives on access providers and access seekers. Conversely, a disaggregated would result in incentives never contemplated by Parliament and a logical incompatibility in the regulatory framework. Access seekers would rapidly migrate to the lowest price access.

141. Further, even if the Commission were to apply a disaggregated approach, we do not agree that this would result in a higher UCLFS price. The UCLFS voice service consumes a small proportion of cable capacity and alternative low cost access technologies.

142. Chorus further submits at a number of places in its submission that the Commission should not encourage unbundling [for example, at 3.10, 25 and 210]. However, Chorus' proposed disaggregated approach can only encourage unbundling. In other words, a disaggregated approach is not consistent with minimising the incentives for unbundling.

### Double recovery

143. The Commission also proposes to avoid double recovery of costs in applying the aggregated approach [223]. This is necessary because access costs are mapped to a number of services and this raises the potential for costs to be double counted/recovered. We support the Commission and TERAs proposed approach.

144. However, Chorus argue that there is not double counting of costs and that the (legislative) intention is that the UBA price should recover the cost of the copper feeder and fibre feeder, i.e. two lots of feeder trenching costs [152]. Chorus suggests this is consistent with its hypothetical new entrant model whereby the UBA new entrant would be charged by the copper incumbent for the copper local loop (i.e. the copper local loop incumbent will only agree to access if it can recover its investment) and incur the additional costs of installing the fibre feeder [153]. Analysis Mason advises that, as the Commission proposes a different MEA for UBA that uses the copper network as a given, there is no double recovery (the copper network does not have a fibre feeder) [154].

145. Chorus' proposed approach illustrates the inefficient model it is asking the Commission to apply. No efficient provider would deploy overlay copper and fibre cables and trenches and, incorporating double counting of costs within the model, must result inefficient costs. Chorus' approach simply makes no sense.

146. The Commission should strip out double counting or recovery as proposed – this is what the Act requires and avoids setting inefficient prices. Chorus' proposed approach must be inefficient as it provides inefficient investment signals and asks consumers to pay for the same functionality (at a minimum feeder trenches) twice. The approach would result in the aggregate UCLL + UBA price exceeding cost, adding inefficiency.

147. We support the Commission's proposed approach.

### Implementation

148. Chorus raises implementation issues.

### Separate transaction charges consultation

149. Chorus notes that the price review need to consider transaction charges and that these are important for Chorus and RSPs [157]. We agree - transaction charges is a material cost and the structure and level of these charges is important for access seekers and consumers. However,

we do not support Chorus' proposed approach nor that the Commission should undertake a separate consultation.

### **Chorus' proposed approach is unlikely to result in efficient charges**

150. Chorus has proposed that the transaction charges be based on service company contracts as these are the result of a competitive tender process [166]. As set out in the IPP consultations, we are not confident that service company prices are necessarily efficient and risk departing further from cost over time (depending on the incentives provided by the pricing construct).
151. The service company and Chorus arrangements take a whole of business view under their contracts and, accordingly, there will be overs and unders on particular services within the contract. It's wrong to assume for the purposes of the model that just because service company contract sets a specific charge for a particular service, that that charge matches the actual costs incurred for the services performed. Chorus has a strong incentive to "rebalance" charges between regulated and commercial services.
152. Network Strategies notes similar risks in paragraph 6.3 of its report that Chorus may have a range of bulk contracts which apply to the supply of services for regulated and non-regulated businesses. They recommend as a preliminary step that the Commission should determine which charges relate specifically to the regulated activities and then that the Commission should subsequently assess whether the charges are reasonable. Chorus should provide access seekers with cost information relating to proposed charges and there should be transparency to assure access seekers that any double recovery of overheads recovery have been or can be removed [3.3].

### **The Commission should also consider assurance of service company charges**

153. Further, Chorus' proposed pass through does not encourage Chorus to reduce the cost for RSPs or end consumers in performing the services or ensure that service companies are correctly applying the correct charges for the services performed. If Chorus simply passes the service company costs onto RSPs "as is" and clips the ticket in the process, Chorus has little interest in challenging service company charges or service company compliance with charging arrangements.
154. Many transaction charges (e.g. in home fault identification and resolution and customer initiated network extension) are heavily reliant on service company technicians making the right classification of the fault/or services performed. It is an inherently human process and compliance will always be an issue.
155. Currently Chorus are not proposing to provide any ability for RSPs to legitimise whether the correct connection charge has been applied to a UBA line. This is of particular concern when distinguishing between a "remote connection" or "non site visit connection". Without an obligation on Chorus to provide sufficient evidence to RSPs to legitimise the applicable connection charge applied, there is a risk that this tiered connection model may be abused.
156. Accordingly, in any pass through model, access seekers likely incur the additional costs of assuring service company charges, i.e. ensuring compliance with service codes and arrangements. It's important that the structure minimises overall costs (be allocating responsibility to the entity best able to provide assure) and, where access seekers are expected to provide the functionality, that they have access to relevant information and reporting. Chorus should be obliged to make the necessary information available to RSPs so that they can assure the cost and provide accurate bills to customers (where appropriate).

157. Further, we believe Chorus' list at appendix 4 is incomplete and the FPP will need to set prices for a wider range of UCLL and UBA related transaction charges. For example, in addition to connection charges, access seekers incur charges for no fault found, customer cancelled service orders and network re-arrangements at the customer's request and installation of cable for new dwellings (Chorus currently charges to install lead in cable in customer provided trenches. This is in addition to the regulated connection charge).

**We do not support a separate transaction charge consultation**

158. Chorus has also requested that the Commission consult on transaction charges prior to the release of the draft determination [159]. We do not support a separate consultation of transaction charges divorced from the other elements of the model.

159. We accept that some transaction charges can be divorced from key asset parameters. For example, when connecting a dwelling to the network, end user customers are required to provide an open trench and Chorus charges connection charges to recover the cost of materials. At this stage, Chorus charges \$195 to install a service lead in up to 100 meters in length, plus time and materials for any additional distance [updated in 20 February 2014 Informer]. Therefore, the FPP network demarcation is at the street and the cost model would not include any lead-in costs/assets beyond the street. Accordingly, these transaction costs which do not rely on the network modelled and could be derived separately from the general model.

160. Conversely, some transaction charges relate to the modelled network. For example, some connection charges relate to reconfiguring the network to make capacity available for new customers or are due to faults. A modern network will not require the same level of network rearrangements or faults and, therefore, we would expect an adjustment to reflect lower volumes. For example, a modern network would have sufficient capacity such that network re-arrangement would not be required to connect customers previously connected. Therefore, access seekers would not expect to be charged for these connections.

161. The difficulty of separating out transaction changes from this second category means that, in practice, the charge cannot be divorced from overall model design.

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*END*

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## **Attachment 1: WIK report**

## **Attachment 2: Network Strategies Report**

Provided to the Commission as separate documents.