ISSN 1178-2560
Project no. 13.01/14544

Public version

Draft pricing review determination for Chorus' unbundled bitstream access service

Under section 47 of the Telecommunications Act 2001

Draft determination

Date:	2 December 2014
The Commission:	Dr Stephen Gale
	Pat Duignan
	Elisabeth Welson

Contents

Glossary

ACCC	Australian Competition and Consumer Commission
Act	Telecommunications Act 2001
ADSL	Asynchronous digital subscriber line
Amendment Act	Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011
ATM	Asynchronous Transfer Mode
BUBA	Basic UBA
CI	Confidential information
Common costs	We generally this term to refer to costs not directly attributable to any individual service or sub-group of services; they are attributed to all services See also "shared costs"
CoS	Class of Service
CPI	Consumer price index
CPP	Customised price-quality path
DBA	Danish Business Authority
DSL	Digital subscriber line
DORC	Depreciated optimised replacement cost
DPP	Default price-quality path
DSLAM	Digital subscriber line access multiplexer
EC	European Commission
EEO	Equally Efficient Operator
EPMU	Equi-proportional mark-up
EUBA	Enhanced UBA
FDS	First data switch
FPP	Final pricing principle

FTTH	Fibre-to-the-home
FTTN	Fibre-to-the-node
FWA	Fixed wireless access
GPON	Gigabit Passive Optical Network
HSNS	High Speed Network Service
HFC	Hybrid fibre-coaxial
IM	Input methodologies
IP	Internet protocol
IPP	Initial pricing principle
LCI	Labour cost index
LFC	Local fibre company
LTE	Long-term evolution
MDF	Main distribution frame
MEA	Modern equivalent asset
NPV	Net present value
NRA	National Regulatory Authority
ORC	Optimised replacement cost
P2P	Point-to-point
PDN	Public data network
PPP	Purchasing power parity
PSTN	Public switched telephone network
RAB	Regulatory asset base
RBI	Rural broadband initiative
REN	Regional Ethernet Network
RFP	Request for proposals
RI	Restricted information

RSP	Retail service provider. We use the term RSP where the Act uses "access seeker"
SC	Street cabinets
Shared costs	TERA uses 'joint costs'. We generally use this term to refer to costs not directly attributable to any individual service, but that can be attributed to a sub-group of services (rather than to all services) See also "common costs"
SLU	Sub-loop UCLL
SLU STD	We use SLU STD to refer to the part of the document that relates to sub-loop UCLL, but not to sub-loop co-location or sub-loop backhaul
STD	Standard terms determination
TSLRIC	Total service long run incremental cost
TSO	Telecommunications Service Obligations
UBA	Unbundled bitstream access
UBA STD	UBA standard terms determination
UCLF	Unbundled copper low frequency
UCLL	Unbundled copper local loop
UCLL STD	UCLL standard terms determination
UFB	Ultra-fast broadband
VoIP	Voice over internet protocol
WACC	Weighted average cost of capital

Executive summary

1. This draft determination proposes a maximum monthly price that Chorus can charge for the unbundled bitstream access (UBA) service. This price has been developed following applications from Chorus and access seekers, and has involved the development of a full total service long run incremental cost (TSLRIC) model.

2. The draft combined monthly price for the Basic UBA service is $38.39. This is a decrease of $6.59 per month from the prices that existed prior to the 2011 amendments to the Telecommunications Act 2001 (Act), feeding through to the price determinations, and an increase of $3.95 from the prices set under the UBA initial pricing principle (IPP) determination in November 2013. The additional cost component set under this pricing review determination is $10.17 per month, while the unbundled copper local loop (UCLL) component we have set alongside the UBA pricing review determination is $28.22 per month.

3. The change in price of UBA reflects the fact that the 2011 amendments to the Act involved what the High Court described as a "sea change" in the regime – specifically, moving from regulating UBA on the basis of retail-minus pricing to TSLRIC cost-based pricing. The new regime required us to determine the UBA IPP price by undertaking international benchmarking. The change in price from the IPP to the current draft final pricing principle (FPP) reflects that we have developed, in draft, a full TSLRIC model that more accurately reflects the conditions in New Zealand.

4. This is the first time that we have gone through an exercise of this nature and magnitude in full. It has required a significant amount of information from, and work by, the industry and we are grateful for the constructive way in which parties have contributed.

5. We have employed experienced expert modellers, TERA Consulting (TERA), to construct a full model of the hypothetical efficient operator's costs from bottom-up using detailed topographical data combined with local costing expertise from Beca. We have also sought specialised expert advice on specific topics from Professor Ingo Vogelsang, Dr James Every-Palmer, Dr Martin Lally, and Oxera Consulting (Oxera). The models and their documentation published alongside this draft determination lay out in detail how we have arrived at the draft prices.

6. We have elected to conduct a more streamlined process than advocated for by some parties. Our approach has been driven by the desirability of providing the industry and the market with certainty and stability as soon as practicable.

7. We are now interested in your views on the model that we have built and the reasoning behind our modelling choices. This consultation phase is itself a significant exercise. Certainty for the industry and consumers on the price will not be achieved until we have completed this consultation exercise. These prices are not final. There are a number of matters that we need to work through with industry over the coming months that could still impact on the final prices, including:

    7.1 submissions from the industry on our preliminary decision on the inputs and design of the model;

    7.2 our preliminary decision on non-recurring charges (we will be commencing consultation on this early next year);

    7.3 our preliminary decision on whether or not there should be backdating of prices (we will be commencing consultation on this early next year); and

    7.4 potential errors and corrections to data. Chorus has already notified us that there are a number of corrections it wishes to make to the data that has been provided to us.

8. In the box below we lay out a synopsis of our most important modelling choices and how these combine to form the basis of the model we have published today, to assist with navigating our draft decision.

What we have modelled and why

We have developed a full TSLRIC model of the networks that will deliver UCLL and UBA services. The model is "forward-looking". This means that it is not based on Chorus' existing network and it uses modern equivalent assets (MEAs). The model is therefore a hypothetical efficient network that **replaces** the copper network and the LFC fibre networks currently being rolled out.

There are a large number of decisions that need to be made when developing a model such as this to create a price. Key features of our model include:

- We have tried, where possible, to create a conventional TSLRIC model. This helps promote regulatory predictability. We have, therefore, avoided building in more recent innovations in European policy.
- We are modelling the UBA network on the basis of fibre-to-the-node (FTTN) as required by the Act.
- The network has been partially optimised (relative to the current copper network). This optimisation reflects the fact that it is intended to be a modern replacement network, so it has been designed as if it was efficient now (rather than reflecting all past legacy decisions).
- The network provides services to all end-users who are currently connected to Chorus' copper network.
- The model recognises those areas where the network would not be built other than through receipt of additional capital contributions and where a fixed wireless network would provide a more cost-effective solution to serve to end-users. We believe this is firmly grounded in the reality of a network roll-out today and reflects actual practice.
- Demand is assumed constant for the services. This is because we are setting a long-term benchmark price for the services being modelled.

  We have allocated costs of the network between regulated and other services using standard cost allocation methods. Where the data was not available to do this we have relied on expert advice from TERA.

Overall this represents the efficient long-term replacement network for supplying New Zealand with telecommunications services for the purposes of TSLRIC modelling.

Introduction and process

Purpose of this document

9. We are in the process of setting prices for the unbundled bitstream access (UBA) services provided by Chorus, using the final pricing principle (FPP) in the Telecommunications Act 2001 (Act).This draft determination sets out, and seeks the views of interested parties on, how we have determined draft total service long run incremental cost (TSLRIC) prices for the UBA services, as well as our reasons for our approach to setting the draft prices.

10. We have determined the following draft TSLRIC prices for the UBA services:

	UCLL component ($)	UBA additional cost component ($)	Total monthly price ($)
BUBA	28.22	10.17	38.39
EUBA 40	28.22	12.35	40.57
EUBA 90	28.22	12.88	41.10
EUBA 180	28.22	13.84	42.06

11. This draft determination does not set out:

    11.1 the UBA non-recurring charges (the service transaction charges and the ancillary services charges); or

    11.2 our approach to backdating.

12. Those matters will be addressed in a supplementary draft determination, as we explain further below from paragraph 39.

Background to our TSLRIC cost modelling of the UBA service

The UBA service

13. The UBA service is a designated access service described in the Act as follows:[1]

Chorus's unbundled bitstream access

Description of service:	A digital subscriber line enabled service (and its associated functions, including the associated functions of operational support systems) that enables access to, and interconnection with, that part of a fixed PDN that connects the end-user's building (or, where relevant, the building's distribution frame) to a first data switch (or equivalent facility), other than a digital subscriber line access multiplexer (DSLAM) To avoid doubt, unless otherwise requested by the access seeker, the supply of this service must not be conditional on a requirement that the access seeker, end-users, or any other person must purchase any other service from the access provider

14. Since 1 December 2011 (the Telecom-Chorus separation date), Chorus has been the owner of the fixed line access network that carries voice and data traffic between local exchanges and end-user premises. This is sometimes referred to as the "copper network", with each individual link referred to as a "local loop".

15. Access seekers, also referred to as retail service providers (RSPs), who wish to offer broadband (internet) services utilising the copper network may do so by purchasing the UBA service or the UCLL service from Chorus. These services are regulated under the Act. An access seeker may take the UCLL service and install its own equipment in the exchange or cabinet. This is often referred to as "unbundling". Alternatively, they make take the UBA service.

16. When Chorus provides the UBA service, Chorus handles the broadband traffic between the end-user and the handover point on its own bitstream network on behalf of the retailer. That is, Chorus manages and provides access to the local loop, the exchange or cabinet (and the equipment in it, including a DSLAM), and the aggregation path to transport the broadband traffic to the "data switch" containing the handover point. The UBA service allows a RSP to offer a broadband service to end-users without needing to install its own broadband equipment.

17. The full UBA price paid by retailers is the sum of the UCLL price per line per month, plus a price representing the additional costs incurred in providing the UBA service over and above the UCLL service (eg provision of a DSLAM in the exchange). Industry usage of the term "the UBA price" refers to the price component that represents the additional costs of providing UBA. This is also referred to as "the UBA increment". It is the cost that unbundlers avoid by installing their own equipment.

[1] Telecommunications Act 2001, Schedule 1, Part 2, Subpart 1.

We determined a benchmarked price for the UBA service under the IPP in the Act

18. Prior to the structural separation of Chorus and Telecom on 1 December 2011, the Act provided for the UBA price to be determined on a "retail-minus" basis. The Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011 (Amendment Act) changed the UBA pricing principles from "retail-minus" to a forward-looking cost-based price.

19. The new initial pricing principle (IPP) required us to set a benchmarked price based on prices in comparable countries. The Amendment Act froze the retail-minus prices for three years, so that the new forward-looking cost-based price would only apply from 1 December 2014.[2] The frozen retail-minus price for the UBA increment was $21.46.

20. On 5 November 2013, we set IPP prices for the regulated UBA services as follows:[3]

	UCLL component ($)	UBA additional cost component ($)	Total monthly price ($)
BUBA	23.52	10.92	34.44
EUBA 40	23.52	13.25	36.77
EUBA 90	23.52	13.82	37.34
EUBA 180	23.52	14.85	38.37

We are now required to determine TSLRIC cost-based prices for the UBA service

21. Subsequently, we received five applications for a pricing review determination in accordance with the FPP. Applications were received from Chorus New Zealand Ltd, Telecom New Zealand Ltd (now Spark New Zealand Ltd), Vodafone New Zealand Ltd, CallPlus Ltd, and Kordia Ltd and Orcon Ltd.[4] The FPP for the UBA service is:[5]

> The price for Chorus's unbundled copper local loop network plus TSLRIC of additional costs incurred in providing the unbundled bitstream access service.

22. We discuss the meaning of TSLRIC in Chapter 1.

---

2 Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011, s 77(2).

3 Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under section 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraph [7].

4 Orcon has since withdrawn its application following its purchase by CallPlus. This has not affected the scope of our pricing review determination.

5 Telecommunications Act 2001, Schedule 1, Part 2, Subpart 1.

23. Chorus, in parallel to its FPP application, appealed our UBA IPP determination to the High Court under section 60 of the Act. Chorus' appeal was dismissed, as was Chorus' subsequent appeal of the High Court judgement to the Court of Appeal.

24. In February 2014, we released a UBA process and issues paper, which set out our preliminary view on the modern equivalent asset (MEA) for the additional costs component of the UBA service, and our proposed timetable for completing the FPPs for the UBA and UCLL services by 1 December 2014.[6] We also sought the views of parties on the conceptual issues associated with the TSLRIC methodology raised in the December 2013 process and issues paper on the UCLL service, but in relation to the UBA service.[7]

25. From this point on, we have consulted on issues for the UCLL and UBA services at the same time.

26. Following our consideration of submissions and cross-submissions, during March 2014, we published further consultation papers which sought views on:[8]

    26.1 the role of relativity in our price setting process; [9] and

    26.2 preliminary legal views of our external legal counsel Dr James Every-Palmer on:

        26.2.1 the relevant considerations for determining the MEA for the UBA service; and

        26.2.2 our discretion to backdate the FPP prices.

27. On 7 March 2014, we published a technical consultation paper on our proposed framework for estimating the weighted average cost of capital (WACC) for the UCLL and UBA pricing reviews. Specifically, the paper:

    27.1 sought views on the approach to estimating certain WACC parameters for the UCLL and UBA services;

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

    27.3 highlighted issues we would be seeking independent expert advice on.

---

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

7 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013).

8 Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014) and Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle - supplementary paper" (25 March 2014).

9 Section 19(b) of the Telecommunications Act 2001, together with Schedule 1, requires us to consider the relativity between the UCLL service and the UBA service regarding the application of section 18.

28. Following submissions and cross-submissions on our WACC technical consultation paper, we published advice we had received from:

    28.1 Dr Martin Lally, reviewing submissions on our proposed approach to estimating the cost of debt; and

    28.2 Oxera Consulting (Oxera), reviewing the company specific components of the WACC for the UCLL and UBA services, such as the asset beta and leverage components.

29. Two workshops were held with Commission staff, on 19 December 2013 and 28 March 2014, to assist interested parties with developing their understanding of TSLRIC. On 9 April 2014, we held a modelling methodology presentation for interested parties with our external consultants, TERA Consultants (TERA), where it shared its knowledge and experience regarding TSLRIC cost modelling processes.

30. On 9 July 2014, we published a regulatory framework and modelling approach paper, seeking views on the following.[10]

    30.1 Our preliminary view of the regulatory framework for our UCLL and UBA TSLRIC cost modelling exercise, including the role of section 18, our TSLRIC objectives, our requirement to set forward-looking costs and the implications of this on the potential re-use of Chorus' assets, as well as additional legal requirements.

    30.2 Our preliminary views on a number of fundamental assumptions for the development of a TSLRIC cost model for the UCLL and UBA services, including the choice of the MEAs, demand, depreciation, tax, price profiles, and cost allocation.

    30.3 Our preliminary views on backdating and the length of the regulatory period.

    30.4 Our updated process, which we updated in response to:

        30.4.1 concerns raised by parties during the March 2014 consultation; and

        30.4.2 requests to consider additional matters as part of the TSLRIC cost modelling exercise.

    30.5 Expert papers prepared by Professor Ingo Vogelsang and TERA.

[10] Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014).

31. We published an open letter to parties on 5 September 2014 in response to concerns expressed in submissions and cross-submissions to our July 2014 regulatory framework and modelling approach paper. It stated:

> Although at this stage we have not elected to adopt as lengthy a process as advocated by some parties, we have planned the delivery of the FPP prices carefully, and have done so in a way which enables us to share our thinking as it develops and evolves. Different countries approach TSLRIC exercises differently. The length of the processes we have observed has varied, depending on the extent to which models include bottom-up as well as top-down elements, the extent of optimisation of networks modelled and the extent to which each country prioritises consultation with industry participants. One party pointed to the TSLRIC cost modelling exercise undertaken by the DBA to illustrate an appropriate process timeframe. When considering submissions, we were unconvinced that the DBA process was a useful a comparator, as it involved modelling three network technologies (copper, fibre and cable-tv), and involved additional consultation steps with the European Commission and other EU Member States. We also discovered that on another occasion, the DBA undertook a TSLRIC process in considerably less time than we have set out to do (around 12 months).
>
> So far, we have conducted a number of consultation rounds throughout the UCLL and UBA FPP price review determination processes. In doing so (and as is often the case in other Commission projects) we have consulted more extensively than the statutory requirements in the Telecommunications Act. We have shared aspects of our framework as it has emerged and developed, and shared a more complete picture as some of our views have crystallised. We have shared and tested our thinking on fundamental modelling choices prior to beginning modelling. We have also consulted on a number of additional matters such as asset re-use – in fact, all of our thinking to date at the last consultation phase. Further consultations will be occurring over the coming months, including on our proposed approach to service transaction charges. This approach to consultation has been adopted to assist parties with developing their understanding and engaging throughout the process, rather than working in isolation and sharing our fully developed thinking at draft determination stage. Incremental consultation has also been very helpful for us in terms of testing our thinking prior to commencing modelling. For example, stakeholder submissions on our July 2014 regulatory framework and modelling approach consultation paper have directly contributed to further refinement of that framework/approach.

32. Following our consultation on the July 2014 regulatory framework and modelling approach paper we began modelling the TSLRIC cost of the UBA service.

Development of our TSLRIC models

33. Building a TSLRIC model is a significant undertaking. We appointed TERA to develop our TSLRIC models for us given its recent experience in building TSLRIC models in other jurisdictions such as Ireland and Denmark. [11] TERA were selected for the role after the following process:

    33.1 We issued a request for proposals (RFP) for modelling consultants on 22 January 2014, asking for proposals by 14 February 2014.

    33.2 Following review of proposals by Commission staff, and input from a co-opted Australian Competition and Consumer Commission (ACCC) staff member, we identified a shortlist of consultants to interview in Wellington in the week of 10 March 2014.

    33.3 Based on these interviews, we identified TERA as our preferred consultant.

34. Following initial meetings with TERA in Wellington in the week of 7 April 2014, which also included a presentation by TERA of its modelling approach to industry participants, we asked TERA to develop:

    34.1 a TSLRIC literature review on UBA and UCLL costing, which we published on 23 June 2014;[12] and

    34.2 an expert report, which we released in July along with our regulatory framework and modelling approach paper.[13]

Other data used as part of our pricing reviews

35. We sourced information from a number of external parties to provide inputs for our TSLRIC model. These included:

    35.1 geospatial data from Corelogic and Landcare Research;

    35.2 trenching and duct cost data from Beca; and

    35.3 price trend data from Statistics New Zealand, World Bank, NZIER and Bloomberg.

36. As part of our modelling, we also sourced data on Telecommunications Service Obligation (TSO) areas from internal analysis that we carried out on TSO areas.[14]

---

11 We have a TSLRIC model for the UBA service and a TSLRIC model for the UCLL services. The latter is discussed in Commerce Commission "Draft pricing review determination for Chorus' unbundled copper local loop service" (2 December 2014).

12 TERA Consultants "TSLRIC literature review on UBA and UCLL costing approaches" June 2014.

13 TERA Consultants "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services: - Modern Equivalent Assets and relevant scenarios" July 2014, and Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014).

37. We sourced extensive information to assist with modelling from a number of parties, including Chorus, by way of notices for information issued under section 98 of the Commerce Act 1986.[15]

Confidentiality

38. We have outlined the steps we have taken to protect confidential information collected as part of our process, and how confidential information is treated in our models in Attachment K.

Consultation process on non-recurring charges and backdating

39. On 25 September 2014, we released a consultation paper on our proposed approach to setting prices for the service transaction charges, which are some of the non-recurring charges in the UBA Standard Terms Determination (STD). The paper set out our preliminary views, and sought submissions, on:

    39.1 the non-recurring charges for which we can set prices in the FPP process;

    39.2 the appropriate approach to setting prices for the non-recurring charges; and

    39.3 whether we can merge some non-recurring charges into other charges.

40. We are grateful for the submissions received and are considering them before modelling the non-recurring charges. There are important and complex issues involved and we agree with parties that we should take time for consideration. We also do not want to hold up the release of this draft determination on monthly recurring charges. Accordingly, we have decided to release a supplementary draft determination addressing non-recurring charges at a later date.

41. In our July 2014 regulatory framework and modelling approach paper we also indicated our intention to reach a preliminary decision on backdating in our draft determination.[16] As we now intend to release a supplementary draft determination on non-recurring charges, we intend to release a preliminary decision on backdating at the same time. Having draft prices for non-recurring charges will allow us to have a more complete understanding of the impact that any backdating would have on end-users.

---

[14] Commerce Commission "Determination for TSO Instrument for Local Residential Service for period between 1 July 2002 and 30 June 2003" (24 March 2005).

[15] Section 98 of the Commerce Act 1986 applies under section 15(f) of the Telecommunications Act 2001.

[16] Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [300].

42. In our July 2014 regulatory framework and modelling approach paper, we expressed a view that we are not required to backdate our pricing review determinations, but that we have discretion to do so.[17] We stated that our decision regarding whether to backdate will be made in accordance with the criteria we identified in that paper:[18]

    42.1 The section 18 purpose statement will provide us with the most important guidance.

    42.2 In particular, any decision to backdate will need to be demonstrably efficient.

    42.3 Likewise, a backdated sum payable to the access provider (either as a lump sum, or "smoothed"), or a backdated price reduction in favour of access seekers, would need to demonstrably promote competition in a way that is likely to directly benefit end-users.

43. We remain of the view that we cannot make a final decision on backdating until the relevant final pricing review determinations are made.[19] We note that potential options for backdating include:

    43.1 Backdating the final UBA price to take effect from the date of this draft determination (2 December 2014). It could only be backdated to take effect from 1 December 2014, but no earlier.[20]

    43.2 Not backdating any final prices, so that they come into effect on the date of the final determination.

Our further updated process for the UBA FPP determination

44. Our indicative dates for the UBA FPP process are set out below:

Next steps	**Indicative date**
Submissions on monthly charges draft determination due	23 January 2015
Cross-submissions on monthly charges draft determination due	19 February 2015

17 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [298].

18 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [299].

19 Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle - supplementary paper" (25 March 2014), paragraph [7]; Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services " 9 July 2014, paragraphs [289] and [299].

20 Telecommunications (TSO, Broadband and Other Matters) Amendment Act 2011, section 77(2). The price for UBA that was set under the previous 'retail-minus' pricing principle has been frozen in place from three years from the day Chorus separated from Telecom (now Spark). The new prices for UBA (either IPP prices or FPP prices) cannot take effect earlier than 1 December 2014.

45. Provided the current indicative timetable does not shift, we intend to hold a conference in March 2015. We will provide a further update of our process shortly, including indicative dates for our supplementary draft determination on non-recurring charges and backdating.

Structure of this paper

46. The main body of this draft determination has three chapters:

    46.1 Chapter 1 outlines the regulatory framework under which we are required to set a TSLRIC price for the UBA service.

    46.2 Chapter 2 explains our approach to determining the cost of providing the UBA service. We describe the steps we have taken to determine the annualised TSLRIC cost, and summarise the decisions we have made at each step.

    46.3 Chapter 3 explains how we propose to convert TSLRIC costs into a monthly unit price, and set the prices for Basic UBA (BUBA) and Enhanced UBA (EUBA) services that we consider best give, or are likely to best give, effect to the section 18 purpose statement, having considered matters including relativity.

47. The attachments to this draft determination then discuss in more detail our proposed approach, and reasons for our approach, to determining key inputs to our TSLRIC model.

48. Attached to this paper, we have also published a number of papers prepared by our expert consultants, including:

    48.1 a model reference paper, a model specification paper (public and confidential versions), and a model documentation paper (public and confidential versions) prepared by TERA;

    48.2 a paper outlining the corridor cost analysis of trenching and ducting rates in NZ prepared by Beca; and

    48.3 a paper outlining current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand, and a report on several submissions in the FPP proceeding for UCLL prepared by Professor Ingo Vogelsang.

49. A separate paper explaining how we have calculated the WACC for the UCLL and UBA services has been published alongside this draft determination. Attached to this paper, we have also published paper prepared by our expert consultants, including:

    49.1 a review of expert submissions on the WACC for UCLL/UBA prepared by Oxera; and

    49.2 a review of responses to an earlier review of submissions on the cost of debt and the TAMRP for UCLL and UBA services prepared by Dr Martin Lally.

We are interested in your views

50. In this draft determination we have provided an updated framework that differs from what we published in our July 2014 regulatory framework and modelling approach paper. We have outlined our views on how section 18 affects our key draft decisions. We are interested in your views on what additional role section 18 may play in the draft decisions outlined in this draft determination.

51. We would like to know your views on our draft decisions in this paper. By providing your views, you will help us finalise the approach we take to our TSLRIC cost modelling exercise for the UBA service.

52. Submissions are due by 5pm on 23 January 2015.

53. Cross-submissions are then due by 5pm on 19 February 2015.

54. Please address responses to: Tricia Jennings (Project Manager, Regulation Branch), c/o telco@comcom.govt.nz

55. All submissions must be provided electronically in a format suitable for word processing. We intend to publish all submissions on our website. If you would like the published electronic copy to be 'locked' then we ask that you provide multiple versions of your submissions. At least one version should be provided in a file format suitable for word processing, rather than a locked PDF file format.

Preserving the confidentiality of your submission

Submitters that are parties under the section 100 orders

56. When seeking protection for information contained in submissions as restricted information (RI) or confidential information (CI), or where submissions contain any protected information (RI or CI) under the section 100 orders, parties under the orders must comply with the processes set out in the orders.[21]

Submitters that are not parties under the section 100 orders

57. While we discourage requests for non-disclosure of information you provide to us, we recognise that there may be cases where you wish to provide information in confidence. We offer the following guidance:

    57.1 Confidential information in submissions should be clearly marked.

    57.2 Both confidential and public versions submission should be provided.

    57.3 The responsibility for ensuring that confidential information is not included in a public version rests entirely with the party providing the submission.

[21] For more details on our confidentiality processes, see Attachment K.

Chapter 1: Our framework for carrying out the UBA pricing review determination

58. This chapter outlines the regulatory framework under which we are required to set a TSLRIC price for the UBA service. In this chapter we address:

    58.1 the legal requirements and constraints we face under the Act, and

    58.2 the objectives and considerations to which we will give weight when exercising our judgement.

59. We first discuss the requirement to determine a price in accordance with the Act's definition of TSLRIC, and our approach to TSLRIC. We will model the forward-looking costs of an efficient operator over the long run using the concept of a MEA.

60. We also discuss the requirements to consider the section 18 purpose statement and make a determination we consider best gives, or is likely to best give, effect to the section 18 purpose statement. The purpose statement provides that the purpose of the relevant parts of the Act is to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand by regulating the supply of certain services between service providers.

61. We then discuss the other legal requirements of ensuring no double recovery of costs under clause 4B, setting prices that apply throughout the geographical extent of New Zealand, and setting an expiry date for this pricing review determination.

62. Finally, we discuss the matters that affect the MEA we will use to model forward-looking efficient costs over the long run.

We must determine a price in accordance with TSLRIC

63. The Act requires us to determine prices for designated access services, including the UBA service, in accordance with Schedule 1 of the Act.

64. In this pricing review determination we must apply the FPP. More specifically, the Act requires that: [22]

> The draft pricing review determination must include—
>
> (a) the price payable for the designated access service, which, in the opinion of the Commission, is determined in accordance with—
>
> (i) the applicable final pricing principle (as affected, if at all, by clause 2 or clause 3 of Schedule 1);[23]

[22] Telecommunications Act 2001, section 49(A). For our final determination, section 52(a) contains the same requirement. The provision also mentions "any regulations that relate to the applicable final pricing principle or, if there are no regulations, any requirements of the Commission". There are no such regulations and no requirements of the Commission other than those set in this determination.

65. The Act requires us to form our own opinion of what is "in accordance with" the FPP.

66. The FPP for the UBA service is:[24]

> The price for Chorus's unbundled copper local loop network plus TSLRIC of additional costs incurred in providing the unbundled bitstream access service.

67. We take the price for the UCLL service and add to it the TSLRIC of the additional costs incurred in providing the UBA service. In this draft pricing review determination we are only pricing the "additional costs" component of providing the UBA service (which is the "UBA increment").

68. TSLRIC is an abbreviation for an economic concept: 'total service long run incremental costs'. The Act provides us with a particular definition of "TSLRIC": [25]

> **TSLRIC**, in relation to a telecommunications service,—
>
> (a) means 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
>
> (b) includes a reasonable allocation of forward-looking common costs.

69. The Court of Appeal recently commented, in Chorus' challenge of our IPP determination for the UBA service, that:[26]

> The TSLRIC model provides an estimate of the costs of an efficient access provider over a sufficient period of time (long run), on a "forward-looking" basis (reflecting the notional costs to an operator if it built a new network) rather than of Chorus's actual costs.

70. As outlined in the December 2013 UCLL process and issues paper, the definition of TSLRIC in the Act is broad and provides limited practical guidance on the various choices that need to be made when undertaking a cost modelling exercise.[27] That December 2014 UCLL process and issues paper is relevant to this UBA pricing review determination process, as we have been jointly consulting on common issues for the UBA and UCLL pricing reviews. In February 2014 we issued a UBA process and issues paper, which indicated that the December 2013 UCLL process and issues paper should be read in conjunction with that paper.[28]

---

23 Telecommunications Act 2001, Schedule 1, clause 2 provides that the Baumol-Willig rule does not apply. We have not applied the Baumol-Willig rule. Schedule 1, clause 3 does not affect the FPP, as it only applies to retail-minus prices.

24 Telecommunications Act 2001, Schedule 1, Part 2, Subpart 1.

25 Telecommunications Act 2001, Schedule 1, clause 1.

26 *Chorus v Commerce Commission* [2014] NZCA 440 at [30].

27 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [56].

28 Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

71. There are a number of different options for modelling the costs of the UBA service that would be consistent with the Act's definition of TSLRIC. Although the Act provides us with some guidance, we must exercise our judgement in choosing among those options.

72. As we explain later in this chapter, the requirement to set a price in accordance with TSLRIC has led us to model the costs of a MEA as the basis for setting the price.

The Act's definition of TSLRIC contains several elements

73. The Act's definition of TSLRIC contains several elements, being:

    73.1 forward-looking costs,

    73.1 over the long run,

    73.2 of the total quantity of the facilities and functions,

    73.3 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

    73.4 a reasonable allocation of forward-looking common costs.

74. We discuss each of those elements further below. We have considered these elements in compiling our framework for determining a price in accordance with the FPP.

Forward-looking costs

75. The Act does not define forward-looking costs.

76. In 2002, we defined forward-looking costs as:[29]

> …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.

[29] Commerce Commission "Application of a TSLRIC Pricing Methodology - Discussion Paper" (2 July 2002), paragraph [32].

77. In the December 2013 UCLL process and issues paper, we defined the concept of forward-looking costs as follows:[30]

> Forward-looking costs reflect the costs that a network operator would incur if it built a new network today using assets collectively referred to as the modern equivalent asset, which we discuss further below. The costs of these assets are the costs of currently available equipment as opposed to the costs of older equipment that may actually still be in use.

78. The requirement to base our price on forward-looking costs influences a range of decisions. It is a key factor leading us to model the costs of a MEA, as we focus on what is a *modern* equivalent that a hypothetical operator would build today, and do not consider historical technology choices.

Over the long run

79. "Long run" means that costs are to be considered over a sufficient time horizon such that the service provider can optimise the way the service is delivered.[31] Over this timeframe, all factors of production including capital equipment are variable in response to changing demand. All costs are considered variable costs in the long run.[32]

Total service, incremental costs

80. The "total quantity of facilities and functions" refers to the total inputs required to supply the total quantity of the service by the network operator.[33] The total quantity includes the quantity supplied to the various access seekers and the quantity the network operator supplies to itself. This means that the TSLRIC is different from the incremental cost the network operator incurs in supplying the last unit of the service, or the incremental cost of providing the service to one particular access seeker.[34]

---

30 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [68]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

31 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [96.2].

32 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [66]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

33 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [96.1].

34 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [65]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

81. The description of costs "directly attributable to, or reasonably identifiable as incremental to, the service" refers to costs that are incurred for supplying the service as a whole over and above the network operator's other costs. In the long run, where all costs are variable, incremental costs can also be considered as the avoidable costs, ie the costs that would be avoided by not providing the service. In this case the increment is the total output of the service. The costs included in the analysis are the efficient set of costs required to supply the service.[35]

82. The Act's definition of TSLRIC also requires that "the service provider's provision of other telecommunications services" should be taken into account to determine what costs are directly attributable to, or reasonably identifiable as incremental to, the service we model. This leads us to assume that the hypothetical network operator that we use for cost modelling will provide other telecommunications services, in addition to the UBA service for which we are modelling the TSLRIC cost. This affects how we identify incremental costs, and how we allocate shared costs and common costs (discussed under the next heading below). To determine what those other telecommunications services are, we have chosen to look to the mix of services that Chorus provides when considering what would be present in a hypothetical efficient operator's business. Accordingly, we assume that a hypothetical efficient operator would use its network infrastructure assets (eg trenches and ducts) to provide other telecommunications services, such as leased line services with dedicated capacity for commercial end-users, High Speed Network Service (HSNS) and mobile site backhaul.

83. We note that the Act's definition of TSLRIC refers to the costs of the "service provider" and not the "access provider". The term "access provider" is used in the Act's descriptions of the regulated services, where for many services Chorus is identified as the "access provider". The use of "service provider", and not "access provider" in the definition of TSLRIC reinforces the view that we are not required to model Chorus' actual costs.

84. In addition to costs that are directly attributable to the service, the definition of TSLRIC refers to an allocation of forward-looking common costs, which are discussed next.

Reasonable allocation of forward-looking common costs

85. The Act's definition of TSLRIC covers both:

    85.1 incremental costs (as described in paragraph (a) of the definition and as described above), and

    85.2 a reasonable allocation of forward-looking common costs (paragraph (b) of the definition).

[35] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [67]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

86. In this section we explain the requirements to be met in allocating forward-looking common costs. The details of the approach we have taken to allocating costs is discussed later in this draft determination. We use the following terminology when talking about forward-looking common costs:[36]

86.1 We generally use the term "common costs" to refer to costs not directly attributable to any individual service or sub-group of services; they are attributed to all services. An example is corporate overheads.

86.2 We generally use the term "shared costs" to refer to costs not directly attributable to any individual service, but that can be attributed to a sub-group of services (rather than to all services). An example is the cost of an active cabinet, as not all services will use the active cabinet.

87. The Act also provides a definition of forward-looking common costs:

> **forward-looking common costs—**
>
> (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

88. Accordingly, under limb (b) we must include a reasonable allocation of costs:

88.1 efficiently incurred, but

88.2 not directly attributable to providing an additional unit to that service.

89. First, we are only required to allocate common costs that would be efficiently incurred by the service provider. This means we will allocate the likely common costs associated with the hypothetical network that a hypothetical efficient operator would build. As noted above, this includes the operator providing a mix of other telecommunications services using its infrastructure. It is open to us to look to Chorus' actual network and actual costs, and in a number of instances we do. However, we are not required to set a price based on Chorus' actual costs (though we discuss clause 4B below).

90. In allocating the shared costs of the hypothetical network, we will consider what other services the hypothetical efficient operator would provide. These shared costs include the cost of network infrastructure assets used for multiple services.

---

[36] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [69]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

91. Second, we need to identify costs that are **not** directly attributable to providing an additional unit to that service. Those costs are the 'forward-looking common costs', relevant to paragraph (b) of the definition of TSLRIC. Forward-looking costs that **are** directly attributable to, or reasonably identifiable as incremental to, the service are included in paragraph (a) of the definition of TSLRIC. Together this covers all relevant forward-looking costs.

Costs incurred in relation to a TSO instrument

92. Limb (b) of the Act's definition of "forward-looking common costs" provides that they do not include "any costs incurred by the service provider in relation to a TSO instrument". The TSO instruments are relevant to the UCLL service (by which we mean both the UCLL STD service and the sub-loop UCLL service described in the SLU STD), but not the UBA service. The TSO instruments are explained in Chapter 1 of our UCLL FPP draft determination.

Our approach to TSLRIC

93. The definition of TSLRIC in the Act is broad and provides limited practical guidance on the various choices that need to be made when undertaking a cost modelling exercise.[37] In our December 2013 UCLL process and issues paper we noted that there are a range of approaches to modelling the TSLRIC price of a service.[38] In its literature review, TERA Consultants advised us that there are a wide variety of approaches used to implement a TSLRIC methodology for UCLL and UBA by regulatory authorities across Europe.[39] This reflects the reality that TSLRIC is a broad economic concept with differing applications. In this context, we consider that Parliament intended us to exercise our judgement in choosing between the various modelling choices that would be consistent with the Act's definition of TSLRIC.

94. In order to assist us with determining our approach to TSLRIC, we have closely considered the previous TSLRIC cost model we built (for the TSO), and an international body of literature on the various objectives of TSLRIC or outcomes that a TSLRIC-based price may promote.

---

37 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [56]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

38 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [85]-[86]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

39 TERA Consultants "TSLRIC literature review on UBA and UCLL costing approaches" June 2014, page 6.

95. In our December 2013 UCLL process and issues paper we outlined six outcomes of a TSLRIC-based access price that the ACCC considered in 1997.[40] Just as other countries undertake TSLRIC-based price regulation in the context of different market features and different legislation, we have exercised our judgement to choose the objectives on which we place weight when determining a TSLRIC price in our New Zealand context.

96. In our July 2014 regulatory framework and modelling approach paper we expressed our preference to emphasise predictability and efficient investment as objectives of a TSLRIC price. That remains our preference, though we have reconsidered what we consider each objective to be and why we place importance on it, and have stated this below. When determining a TSLRIC price for the UBA service, we give weight to the following objectives:

    96.1 We consider that we should give weight to choices that provide greater regulatory predictability by generally adopting an approach that is considered to be an orthodox TSLRIC approach internationally.

    96.2 We also consider a TSLRIC-based price should promote efficient investment.

97. We discuss each of these objectives further below.

We consider we should give greater weight to predictability by preferring approaches that we consider to be orthodox TSLRIC approaches

98. We value predictability in the implementation of TSLRIC. That is, we are concerned with giving a greater weighting to predictability of approach.

99. In doing so, it is important to note that predictability of approach is not synonymous with predictability or certainty of outcome. The Court of Appeal has acknowledged (in the context of Part 4 of the Commerce Act 1986) that certainty is a relative rather than an absolute value and may take time to achieve. Moreover, participants in competitive markets generally face conditions of considerable uncertainty: that is the nature of competition.[41] Participants in both regulated and unregulated markets face uncertainty in many forms, for example, in respect of demand, costs, population movements and technological advances.

---

[40] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [58]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

[41] *Commerce Commission v Vector Ltd* [2012] NZCA 220, 2 NZLR 525 at [34]. See also Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" (6 August 2014) at [79].

100. It is well established in the international economics literature that frequent changes to the regulatory approach taken can lead to a lack of regulatory predictability (often referred to as regulatory uncertainty) which can in turn harm investment incentives.[42] This can be particularly true for regulated industries where the assets are sunk and long-lived, as is the case for many telecommunications assets. The "sunkness" of the assets makes it difficult for the regulated firm to exit the market should those rules change, while their long-lived nature means that their costs must be recovered over multiple regulatory periods. The risk of unpredictable changes in the regulatory environment can harm regulated firms' investment incentives. For example, it might lead to a reluctance of regulated firms to invest in the first place, or lead to socially sub-optimal investment behaviour such as under-investment, investment delay or sequential investment when an immediate or single large investment might be preferable from a social welfare perspective.[43] A lack of predictability can also affect confidence and investment incentives more broadly, not just those of regulated firms.

101. We have also considered the section 18 purpose statement in adopting predictability as an objective. Predictability supports investment incentives (as explained above), which in turn supports competition for the long-term benefit of end-users. When businesses invest in their products and processes, consumers can benefit from, for example, the introduction of new and innovative products and services, improvements in the quality of existing products and services, and through lower cost ways of producing existing products. Ensuring that businesses have incentives to invest is therefore important for the promotion of competition for the long-term benefit of end-users. It follows that giving effect to regulatory predictability is likely to give effect to the section 18 purpose statement. We consider the analysis set out above is supported by the attention drawn to investors' incentives in section 18(2A).

102. To adopt a more predictable approach to implementing TSLRIC, our starting point has been to consider our previous approach to TSLRIC when modelling the TSO. Given this is our first implementation of a TSLRIC model for the UBA service, we have then drawn guidance from the fact that TSLRIC has been applied as a pricing principle many times in an international context, and this has produced a set of principles developed over time. In our view, predictability will be promoted if we adopt a stable, well established and internationally orthodox approach to TSLRIC that neither moves away significantly from accepted practice nor quickly adopts the latest cutting-edge economic theory.

---

[42] See, for example, section 6.1 of Graeme Guthrie (2006), "Regulating Infrastructure: The Impact of Risk and Investment", *Journal of Economic Literature*, 44(4), 925-972; and section 1.9 of Jean-Jacques Laffont and Jean Tirole (1993), *A Theory of Incentives in Procurement and Regulation*, Massachusetts Institute of Technology.

[43] Guthrie (2006), *op cit.*

103. We consider that predictability is also supported by the Act. Once we complete this pricing review determination, we can update the calculation of the FPP price because of a change in circumstances, as provided in section 30P(1)(a)(ii) (which is discussed further below from paragraph 216). In order to continue to apply the FPP, and not revert to the IPP, the Act limits us to providing an updated calculation of the FPP-based price. The TSLRIC objective of predictability means we would be unlikely to revisit all of the modelling choices made for the initial FPP price, but instead would focus on updating the calculation of the FPP-based price because of a change in circumstances.

104. Some submitters agreed that predictability supports investment and that giving weight to predictability is an appropriate objective (noting that many of these submissions were less supportive of our proposed approach of respecting reasonable investor expectations, which we discuss further below in relation to our approach to section 18).

105. Vodafone submitted that we are required to ensure that our use of TSLRIC "falls squarely within an orthodox understanding of TSLRIC methodology".[44] Chorus submitted that it is important we adopt a "conventional approach" to the implementation of TSLRIC.[45] Network Strategies recommends that we focus on regulatory consistency as a means of ensuring predictability.[46]

106. Spark submitted that we should apply TSLRIC in "an economically 'orthodox' way"[47] and apply TSLRIC consistent with international guidance and recent practice.[48] It acknowledged that "Modelling that is consistent with current evolving international regulatory practice and discourse in the application of TSLRIC adds to predictability".[49] It also referred to "international best practice and thought evolution in TSLRIC implementation".[50]

---

44 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.7(a)].

45 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [216].

46 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, page 12.

47 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [95].

48 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [46].

49 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [46].

50 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [46].

107. We consider that an orthodox approach is desirable and fundamental to our construct of predictability. We disagree with Spark that this encompasses "recent practice" or adopting "current evolving" practice. We give more weight to tried and tested approaches which have benefitted from repeated interactions over time. We give less weight to leading edge or recent practices that have not yet bedded in, and the results of which are therefore less clear.

We consider that a TSLRIC-based price should promote efficient investment

108. A common theme internationally, and in our previous approach to TSLRIC, is the ability of a TSLRIC price to incentivise efficient build or buy choices.

109. This approach emphasises the use of forward-looking costs, resulting in a price that reflects the efficient costs of building an equivalent service today.[51] The intention is that an access seeker will build an alternative rather than purchase the regulated access only where building is more efficient and therefore is in the long-term best interest of end-users.

110. For an incumbent considering further incremental investment in its network which is used to provide regulated products, TSLRIC provides for the efficient incremental cost of such investment.

111. Submitters have generally agreed that investment efficiency should be a TSLRIC objective, including Chorus[52] and Spark.[53] Network Strategies noted that Chorus is limited in its ability to invest in new copper deployment, although it also notes that Chorus must maintain its existing copper network.[54] It is this incremental investment for which TSLRIC provides efficient incentives.

112. We have also considered the section 18 purpose statement in adopting the promotion of efficient investment as an objective. Section 18(2) requires us to, when making our overall judgement of what promotes competition for the long-term benefit of end-users, consider efficiencies that will, or will be likely to, result from particular acts or omissions. That makes it clear that considering whether investment is efficient is relevant to considering the section 18 purpose statement. We consider that incentivising efficient build or buy choices is consistent with the section 18 purpose statement, by promoting investment in alternative infrastructure, and in turn promoting competition for the long-term benefit of end-users.

---

51 For a TSLRIC model this is closely connected to the concepts of MEA and optimisation.

52 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)", 6 August 2014, paragraph [215].

53 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach", 6 August 2014, paragraph [27].

54 Network Strategies, "Key issues in modelling UBA and UCLL services", 6 August 2014, section [2.2].

113. Additionally, separate from incentivising build or buy choices, a TSLRIC-based price rewards efficient investment. The TSLRIC price is independent from actual costs, and so provides incentives for Chorus to operate efficiently and consequently, adopt the most efficient mix of capital expenditure and operating expenditure given its actual bitstream network.

114. As Spark submitted:[55]

> In this case, the underlying purpose of the Act (and regulated FPP prices) is to set efficient pricing signals, encouraging efficient provision of the regulated services and efficient investment by Access Seekers and the Access Provider that benefit end users.

115. We are also required to set prices that apply throughout the geographical extent of New Zealand (under clause 4A of Schedule 1 of the Act, which we discuss this further below, from paragraph 192). This affects our objective of broadly promoting efficient investment, as the price can only promote efficient incentive on average.

116. A geographically averaged TSLRIC price for the UBA service will be above forward-looking costs in low cost areas and below forward-looking costs in high cost areas. Accordingly, TSLRIC cannot act as an efficient benchmark for every line over the entire bitstream network. This contrast will be most evident at the extremes of the network. Even so, we expect that TSLRIC will generally provide for the upkeep of the network and equipment and any required expansion across Chorus' actual bitstream network.[56] The incremental income covers the incremental costs on average.[57]

We will model the costs of a hypothetical efficient operator, using a MEA

117. A MEA is a modern equivalent asset that an efficient operator would build today to provide the service in question. Identifying and modelling the costs of a MEA is the orthodox approach used internationally to model the forward-looking TSLRIC costs of building and providing a network service. Using a MEA would therefore be consistent with giving greater weight to taking a predictable approach.

118. We will model the TSLRIC price of the UBA service using the MEA concept. The use of a MEA meets the requirement to determine forward-looking costs over the long run, and the TSLRIC objective of broadly promoting efficient investment.

119. Our conceptual framework for TSLRIC is that the hypothetical efficient operator would operate a newly built network providing the relevant regulated services. The implication of this is that the hypothetical efficient operator is not constrained by the legacy decisions of the incumbent in respect of, for example, network technology, network design, the nature of the assets used and cost structure.

---

55 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [24].

56 By bitstream network we mean the additional fibre network from the DSLAM (in the active cabinet or exchange) to the first data switch, the cost of which is part of the UBA increment. By access network we mean the network that reaches to and connects with end-users.

57 We note here that, in general, the renewal expenditure required to maintain a network is likely to be lower than the replacement cost of a network.

120. However, as we noted in our December 2013 UCLL process and issues paper,[58] models which centre on the concept of a hypothetical efficient operator may in practice also include information based on the existing operator's actual cost structures where these are likely to be broadly efficient. Similarly, in practice, elements of the existing bitstream network design may also be taken into account, as occurs with scorched node and modified scorched node approaches to network optimisation.

121. We consider that modelling a hypothetical efficient operator operating a newly built network is consistent with the requirement in the Act to model forward-looking costs. The hypothetical efficient operator would incur the current and future costs associated with building, operating and maintaining the network, and this is consistent with a forward-looking pricing basis.

122. Efficiency in respect of our hypothetical operator has various dimensions. One is in respect of the technology choice – our hypothetical efficient operator would choose a network technology that is most efficient in respect of factors such as cost, lifetime and technological performance (we discuss this further in respect of the choice of MEA).

123. Another aspect of efficiency relates to network deployment. While Chorus' current telecommunications network may have been efficiently deployed at the time it was rolled out, it may be that changes such as population movements, new sub-divisions, changes in technology or shifts in demand have led to inefficiencies in the current network design. A hypothetical efficient operator could optimise its new network deployment to efficiently meet expected demand. We consider that it is open to us to optimise a network that ignores real world inefficiencies, such as by using the scorched earth approach to optimisation. We consider that it is equally open to us take the incumbent network and any legacy inefficiencies into account, such as by using the 'scorched node' approach to network deployment.[59] That is, the Act does not prescribe a particular approach in this regard.

124. Efficiency of the hypothetical operator also requires that costs are efficiently incurred. This would, for example, result in the hypothetical efficient operator making decisions to minimise costs, subject to maintaining quality.

125. In this respect we note that Professor Vogelsang has observed that efficient costs under TSLRIC implies that "outdated technologies and inefficiently incurred costs like redundant manpower are not reflected".[60]

---

58 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [85.1], footnote 26. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" 7 February 2014, paragraph [8].

59 We discuss the approach we have taken to network optimisation in Attachment B.

60 Professor Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand", 8 September 2014, paragraph [39].

126. Orthodox TSLRIC is not intended to be a business plan for building and operating a high-speed nationwide network replacement accounting for resource pressures.

127. Since the telecommunications operator that we postulate in our TSLRIC cost modelling exercise is a hypothetical one, we are not constrained to reflect in our modelling all the realities of the "real world" that a business would face if it was actually building a new network. For example, we can assume that there are no resource constraints, and the hypothetical operator has ready access to labour, capital and other resources (such as pole sharing with the local electricity distribution business for aerial roll-out) required to build and operate the network.

128. We note that we may consider what occurs in the real world to inform our assessment of what decisions a hypothetical efficient operator would be likely to take. We assume that our hypothetical efficient operator is a rational, profit-maximising business. Accordingly, there may be circumstances in which decisions made by other rational, profit-maximising businesses in the real world provide an indicator as to the hypothetical efficient operator's likely response to the same issues. Our considerations on operating expenditure are an example where we have drawn on the real world.

129. The hypothetical network is a replacement for Chorus' existing bitstream network. Our hypothetical efficient operator is a substitute for Chorus; it does not compete with Chorus. In the UBA process and issues paper, we mentioned a hypothetical new entrant seeking to compete with Chorus' UBA service.[61] We now consider that was the wrong way of expressing our task of implementing TSLRIC and does not reflect how we have in fact approached it. The term "hypothetical new entrant" suggests the operator is entering the market to compete with the incumbent, which is not the case. We prefer the term "hypothetical efficient operator" and this has formed the basis of our approach to conducting a TSLRIC cost modelling exercise for the UBA service.

130. For the avoidance of doubt, we note that some other provisions in the Act (but not the definition of "TSLRIC") separately require us to take account of real world considerations affecting Chorus and end-users of telecommunications services in New Zealand, such as clause 4B and section 18. These are separate and distinct from our application of TSLRIC methodology.

131. We discuss our considerations in selecting a MEA for the UBA service later in this chapter.

[61] Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle: Process and issues paper" (7 February 2014), paragraph [15].

We must make the determination we consider best gives, or is likely to best give, effect to the section 18 purpose statement

132. So far in this framework chapter we have discussed the specific legal requirements that apply because we are conducting a pricing review determination of the UBA service using the FPP. In addition to those requirements, section 19 applies whenever we make a recommendation, decision or determination under Part 2 of the Act.[62]

133. Section 19(a) requires us to consider the purpose set out in section 18. Section 19(c) then requires us to make the determination that we consider "best gives, or is likely to best give, effect to the purpose set out in section 18".

134. Section 19(b) also requires us to consider any additional matters specified in Schedule 1 regarding the application of section 18. For the UBA service, that additional matter is the relativity between the UCLL service and the UBA service, which we discuss further below and in Chapter 3.[63]

135. Section 18 provides:

> **18 Purpose**
>
> (1) The purpose of this Part and Schedules 1 to 3 is to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand by regulating, and providing for the regulation of, the supply of certain telecommunications services between service providers.
>
> (2) In determining whether or not, or the extent to which, any act or omission will result, or will be likely to result, in competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand, the efficiencies that will result, or will be likely to result, from that act or omission must be considered.
>
> (2A) To avoid doubt, in determining whether or not, or the extent to which, competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand is promoted, consideration must be given to the incentives to innovate that exist for, and the risks faced by, investors in new telecommunications services that involve significant capital investment and that offer capabilities not available from established services.
>
> (3) Except as otherwise expressly provided, nothing in this Act limits the application of this section.
>
> (4) Subsection (3) is for the avoidance of doubt.

---

62 For completeness, we note that section 19 also applies whenever we make a recommendation, decision or determination under Schedules 1, 3 or 3A of the Telecommunications Act 2001.

63 We note this requirement applies because we are setting the price of the UBA service; it does not apply for all regulated services. This is a qualification to our statement in paragraph [132].

We must exercise our judgement in considering what best promotes competition for the long-term benefit of end-users

136. In Chorus' challenge of our IPP determination for the UBA service, the High Court considered the requirements under section 19 and 18. Kós J noted that the statutory language is "not entirely prescriptive" as to the manner in which section 18 is to be applied[64] and referred to an "area of judgement". Adopting submissions made on behalf of Vodafone, Kós J noted that statutes providing for economic regulation:[65]

> …present a chart of medium scale at best. The exact route to be taken is left to the judgement of the navigator, the decision-maker. Usually, as here, an expert tribunal for that very reason. In such cases, the decision-maker may have an "area of judgement".

137. The Court of Appeal, in upholding Kós J's decision, stated that we make value judgements when considering what best promotes competition for the long-term benefit of end-users. It noted that the language of section 19 - what "best gives, or is likely to best give effect to" the section 18 purpose statement - "reinforces the Commission's role as the arbiter of the value judgements involved under the Act."[66] The Court observed that "this means that Parliament has left it to the Commission to make a further value judgement when considering and applying the s 18 purpose provision".[67]

138. The Court of Appeal also stated that the phrase "best gives, or is likely to best give" recognises that we have a choice between current ("best gives") and future ("is likely to give") assessment.[68] We must exercise our judgement as to how much weight to place on what best promotes competition now, and how much weight to place on what best promotes competition in the future.

Our overall consideration is what promotes competition for the long-term benefit of end-users, and in doing so we consider section 18(2) and (2A)

139. Section 19 requires us to consider "the purpose set out in section 18". That purpose is found in section 18(1), which is:

> … to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand by regulating, and providing for the regulation of, the supply of certain telecommunications services between service providers.

140. Section 18(2) and (2A) identify particular matters that we are required to take into account when making the overall consideration of what promotes competition for the long-term benefit of end-users.

---

64 *Chorus v Commerce Commission* [2014] NZHC 690 at [139].
65 *Chorus v Commerce Commission* [2014] NZHC 690 at [15].
66 *Chorus v Commerce Commission* [2014] NZCA 440 at [49].
67 *Chorus v Commerce Commission* [2014] NZCA 440 at [152].
68 *Chorus v Commerce Commission* [2014] NZCA 440 at [152].

141. As the High Court observed, section 18(1) is the "dominant" provision in section 18, and that subsections (2) and (2A) "are specified for the purpose of assisting analysis under section 18(1)".[69]

142. Section 18(2) requires us to consider the efficiencies that will result, or will be likely to result, from acts or omissions. We have treated "efficiencies" as referring to static and dynamic efficiencies.

143. Static efficiencies are allocative and productive efficiencies. By contrast, dynamic efficiencies are concerned with new and innovative products and services, or existing ones at better quality, which lead to greater consumer choices and benefits over the long-term.

144. Where there is a trade-off between static and dynamic efficiencies, we generally give greater weight to dynamic efficiencies. This is because of the emphasis in section 18(1) of promoting competition over the long-term. We took that approach in our IPP determination, which was noted by Kós J.[70] As discussed above, we consider efficiencies as part of considering what will result, or will be likely to result, in competition for the long-term benefit of end-users.

145. Section 18(2A) requires us to consider the "incentives to innovate that exist for, and the risks faced by, investors in new telecommunications services that involve significant capital investment and that offer capabilities not available from established services." A determination that undermines incentives to invest would deter future investment and so would likely undermine competition over the long-term.

We have revised our view on the relationship between section 18 and the consideration of reasonable investor expectations

146. In our July 2014 regulatory framework and modelling approach paper we expressed a view that respecting reasonable investor expectations would give effect to the section 18 purpose statement, as doing so would help build predictability into regulation.[71]

147. Chorus agreed with that proposed approach, noting that our focus on predictability is consistent with the focus of other overseas regulators.[72] Other submissions and cross-submissions raised concerns with our proposed approach of respecting reasonable investor expectations.

---

69 *Chorus v Commerce Commission* [2014] NZHC 690 at [34].

70 *Chorus v Commerce Commission* [2014] NZHC 690 at [34].

71 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services", 9 July 2014, paragraph [86]. See also paragraphs [80] and [125].

72 Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)", 20 August 2014, paragraphs [21]-[24].

148. The major criticisms were that:

148.1 section 18 does not contain a reasonable investor test – Parliament would have chosen different words if it has this in mind, and section 18 can be contrasted with the purpose statement in Part 4 of the Commerce Act;[73]

148.2 by considering a new test as part of section 18, we were detracting from taking a predictable approach;[74] and

148.3 the test itself is unpredictable, as it is unclear who the investors are, what their expectations are, and what will be judged to be reasonable – and all of those are new matters for the Commission to judge.[75]

149. Spark argued that the best way for us to advance predictability and reasonable investor expectations "is to employ those legal and economic tests already outlined in the Act".[76] It was also concerned that applying a further reasonable expectations test "could artificially multiply the influence of this factor… in a way that was not intended by the Act and not applied during the IPP process", and that this would only reduce predictability.[77] It submitted that reference to a subjective view of investors' expectations would undermine, rather than promote, predictability and certainty.[78]

150. CallPlus shared this view, emphasising that "the Act already provides for predictability and certainty of regulatory outcomes, and that importing this separate and new test could in fact reduce predictability".[79]

---

73 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraphs [D1.16]-[D1.21].

74 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.41].

75 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.15], [D1.26]-[D1.36].

76 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [9].

77 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [12]-[14].

78 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [89].

79 CallPlus "Cross-submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA & UCLL services" 20 August 2014, paragraph [2(c)].

151. Vodafone made all of the major criticisms summarised in paragraph 148 above. Vodafone also summited that our proposed approach was ranking what was, at best, a relevant consideration read in via section 18(2A) over our primary consideration in section 18(1).[80]

152. Network Strategies submitted that the concept of a 'reasonable investor' to direct modelling choices "introduces considerable uncertainty into multiple aspects of the FPP process. As such it would not serve the purpose of fostering predictability."[81]

153. Overall, we found submissions compelling. We will not use the concept of "reasonable investor expectations" as an independent consideration when considering what best gives effect to the section 18 purpose statement.

154. Despite objections to our discussion of respecting reasonable investor expectations, some submitters agreed that predictability supports investment and thereby helps to promote competition. Giving effect to regulatory predictability is likely to give effect to the section 18 purpose statement of promoting competition.

155. Spark appears to support the link between section 18 and predictability.[82] Network Strategies notes that a lack of regulatory predictability can deter investment when investments involve long-lived assets and large capital costs.[83]

---

80 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.24]. Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B2.3].

81 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, page [12]. This was endorsed in Vodafone July submission, paragraph [D1.40].

82 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [79].

83 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p.[11].

156. Vodafone also agreed that a decision that undermines incentives to invest may undermine competition over the long run, and consequently not be in the long-term benefit of end-users.[84] On the other hand, Vodafone states that we have not adequately explained how prioritising predictability is consistent with section 18(1).[85] In a similar vein, Wigley and Company suggest that we have introduced the predictability concept without adequate reasoning.[86]

157. In terms of the distinction between predictability and investor expectations, part of our approach to the application of TSLRIC is to give weight to greater predictability of approach by generally adopting an orthodox TSLRIC approach. We note that this promotes predictability without attempting to identify and give weight to reasonable investor expectations as a separate exercise.

Considerations other than predictability also affect competition for the long-term benefit of end-users

158. Some submitters were also concerned that our July 2014 regulatory framework and modelling approach paper suggested we were elevating reasonable investor expectations, or considerations under section 18(2A), to be of paramount consideration. As we have already noted, Vodafone also submitted that we were ranking what was, at best, a relevant consideration read in via section 18(2A) over our primary duty in section 18(1).[87]

159. We agree that our overall consideration is what promotes competition for the long-term benefit of end-users and that in doing so we consider section 18(2) and (2A).

160. There are many matters that affect competition for the long-term benefit of end-users other than predictability, such as efficiencies, incentives to invest (which are affected by predictability as well as other factors) and relativity.

---

84 Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B1.4]. Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.13].

85 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.21].

86 Wigley and Company "Submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL", August 2014, paragraph [172].

87 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.24]. Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B2.3]. We will discuss how our FPP price may promote competition for the long-term benefit of end-users in our Chapter 3.

We must consider the relativity between the UBA service and the UCLL service

161. Section 19(b) requires us to consider any additional matters specified in Schedule 1 regarding the application of section 18. For the UBA service, that additional matter is the relativity between the UBA service and the UCLL service. We will explain our response to this requirement in Chapter 3.

We will consider section 18 throughout the process and again before making our overall price decision

162. The Act directs us to both:

162.1 include in our draft pricing review determination the price payable for the UBA service, which, in our opinion, is determined in accordance with the FPP, which is the Act's definition of TSLRIC (section 49(a));[88] and

162.2 make the determination that we consider best gives, or is likely to best give, effect to the section 18 purpose statement (section 19(c)). As we have stated earlier, this is a general requirement that applies whenever we make a recommendation, decision or determination under Part 2 of the Act, not just a pricing review determination.

163. We note that the section 18 purpose statement is not simply to promote competition for the long-term benefit of end-users, it is to (emphasis added):

> … promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand **by regulating**, and providing for the regulation of, the supply of certain telecommunications services between service providers.

164. For designated access services, such as the UBA service, we promote competition by regulating the price access seekers pay the access provider. The Act provides us with specific requirements for how to regulate prices. In this case, we have specific requirements regarding the Act's definition of TSLRIC, avoiding double recovery of costs in terms of clause 4B, determining a geographically averaged price, setting an expiry date and considering the relativity between the UCLL service and the UBA service.

165. The Court of Appeal has confirmed that, as a general principle, we should read such specific requirements as being consistent with the section 18 purpose statement. It stated:[89]

> … it is reasonable to assume that Parliament will have settled on that particular definition because it is consistent with and implements the requirements of the statutory purpose.

---

88 For our final determination, Telecommunications Act 2001, s 52(a) contains the same requirement.

89 *Chorus v Commerce Commission* [2014] NZCA 440 at [153].

166. In the context of the IPP determination, it also stated (footnotes omitted):[90]

> [44] It is also reasonable to assume, on the basis of the principle of statutory interpretation that the provisions of a statute are likely to be internally consistent, that the statutory definition of the UBA price reflects the requirements of s 18, including in particular subs (2A) which was enacted at the same time. In other words, the mandatory requirement for the Commission to carry out the "benchmarking" exercise for the IPP by reference to appropriate "comparable countries" is itself designed to implement the statutory purpose, not to contradict or undermine it.

167. The same could be said, in the context of the FPP, for the requirement to determine a price in accordance with the Act's definition of TSLRIC. The process of setting a price in accordance with TSLRIC is designed to implement the section 18 purpose statement, not contradict it.

168. We remain of the view that we should not disregard TSLRIC objectives purely on the basis that they do not appear in section 18.[91] Adopting a TSLRIC approach will generally not conflict with the section 18 purpose statement because setting a price based on forward-looking, efficient costs will generally promote competition. If and where there is a tension between a TSLRIC approach and the section 18 purpose statement, we consider that section 18 cannot override our need to undertake a TSLRIC exercise.

169. Spark indicated that it agreed,[92] and submitted that "s18 does not override the obligation to first focus on the technical task of determining and modelling the best estimate of efficient forward-looking costs when applying a TSLRIC methodology."[93] Vodafone has submitted that "s 18 considerations cannot displace a proper analytical approach to determining TSLRIC." [94]

---

90 *Chorus v Commerce Commission* [2014] NZCA 440.

91 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [107].

92 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [36].

93 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [43].

94 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.7]. Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B1.6]. See Vodafone "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, paragraph [C2.12]-[C2.13].

170. In our July 2014 regulatory framework and modelling approach paper,[95] we stated that section 18 may provide guidance at a number of decision points during the TSLRIC cost modelling exercise, including:

170.1 our choices on model design and approach;

170.2 the determination or selection of individual parameters in the cost modelling exercise; and

170.3 selecting a price within any relevant range provided by the modelling.

171. We remain of that view, and explain further below how we have considered and will continue to consider section 18 throughout the process and before making our overall price decision.

We will consider section 18 throughout the process

172. We will consider section 18 throughout the process, but it may not affect every choice we make.

173. Spark had earlier submitted that we should consider the effect of a package of internally consistent modelling choices, not just individual choices.[96] It also submitted that not each and every specific decision must be made to best give effect to section 18. All of the specific decisions throughout the process will impact on the assessment of whether the overall determination best gives effect to section 18. It is that overall outcome that must best give effect to section 18.[97]

174. We agree with the Spark and Vodafone submissions that section 18 may not necessarily have a "discernible",[98] or "separately observable",[99] effect at every decision point during the modelling process. Setting a forward-looking cost-based price promotes competition and promotes efficiencies, so will generally give effect to the section 18 purpose statement.

---

95 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [65]. See also Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [52].

96 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [19].

97 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [49].

98 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [46].

99 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.7]. Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B1.6]. See also Vodafone "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, paragraph [C2.12]-[C2.13].

175. Wigley and Company submitted that section 18 only applies when we face a plausible range of choices that are all consistent with TSLRIC, when section 18 should be applied to make a choice, and that this comprises two sequential steps.[100] We disagree with the sequential step contention, particularly if it is intended to imply deferring consideration of section 18 until after modelling is complete, as in our view we should consider section 18 throughout, though it may not affect every decision.

176. Frontier Economics, on behalf of Vodafone, Spark and CallPlus, had earlier submitted that if we are faced with a choice of which of two (or more) approaches to follow on a particular modelling method or parameter, we should choose the method or parameter that is more likely to meet the underlying purpose in section 18.[101] Chorus submitted that we should apply a section 18 framework to each choice in the 'decision tree' we face when developing the TSLRIC model.[102] Webb Henderson submitted that we are required to best give effect to section 18 of the Act whenever we exercise a statutory discretion.[103]

177. We agree that we need to consider section 18 throughout, but note that: section 19(c) applies to the overall determination; section 18 may have little to say about technical details; and certain approaches are prescribed by the Act and cannot be overridden by section 18.

We will also consider section 18 before making our overall price decision

178. Section 18 also assists us with making our overall price decision. Section 19(c) requires that we make a determination that we consider best gives, or is likely to best give, effect to the section 18 purpose statement. Considering section 18 throughout the process will assist this, but we will also consider the effect of our package of modelling choices when setting the price.

---

100 Wigley and Company "Submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL", August 2014, paragraph [138] and Appendix A, paragraph [60(c)].

101 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 7.

102 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [173].

103 Webb Henderson "Memorandum to Vodafone on UCLL and UBA Price Review - Selection of an appropriate MEA" 29 April 2014, footnote 3.

179. In our December 2013 UCLL process and issues paper we suggested that a TSLRIC model could potentially provide a relevant range, from within which we would need to select a price, and that section 18 could have a role in that price selection.[104] We further explained that a TSLRIC model may provide a point estimate of cost, and a range for the true TSLRIC value could also be derived, for example using a sensitivity analysis or other statistical techniques.[105]

180. To explain further, our model is based on estimates of the costs of the inputs required to build and operate our hypothetical network/MEA. It also contains a number of other variables, such as asset lives, which are also estimates of what the true values would be if the hypothetical network/MEA were actually built. Accordingly, our model provides us with a central estimate of the 'true' TSLRIC cost for the UBA service, from which we might determine a range with an upper and lower bound.

181. Although the model is conceptually capable of expressing a range, we have not done so in this draft pricing review determination, as we explain in Chapter 3. How we consider section 18 and exercise our judgement in determining a price is further discussed in Chapter 3.

Additional legal requirements

182. The Act sets out a number of additional legal requirements that apply when determining FPP prices for the UBA service, which we now discuss.

We must ensure no double recovery of costs recovered in prices of designated or specified services (clause 4B)

183. Clause 4B of Schedule 1 of the Act provides:

> In applying [the FPP], the Commission must ensure that an access provider of a designated service does not recover costs that the access provider is recovering in the price of a designated or specified service provided under a determination prepared under section 27 or 30M or a designated or specified service provided on commercial terms.

184. We note that the term "access provider" is used in clause 4B. The access provider of the UBA service is Chorus, so we take into account the prices Chorus receives for the designated and specified services that Chorus provides.

---

104 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013) at paragraph [50].

105 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), footnote 13.

185. The UBA price we set must not allow Chorus to recover costs that it recovers in the prices of other "designated services"[106] and "specified services"[107] it provides.

186. We will also allocate the costs we are currently modelling for the UCLL service and UBA service to avoid double recovery of those costs in the prices we set for those services. We are well placed to do that given that we are pricing the two services at the same time.

187. The particular steps we have taken to best give effect to clause 4B are explained later in this draft determination (in Attachment J).

188. Clause 4B applies to designated or specified services provided under an STD where a regulated price applies, and designated or specified services provided on commercial terms where an unregulated price applies. Accordingly, if and how Chorus provides designated or specified services on commercial terms will affect the costs allocated to the regulated prices that we set.

189. As outlined in our July 2014 regulatory framework and modelling approach paper,[108] we intend that whenever we reset or review the UBA price, we will assemble a routing table based on the existing regulated and unregulated services at the time. Revisiting the routing table at each price reset will ensure a reasonable allocation of shared and common costs.

190. It would be open to us to initiate a section 30R review, and consider whether there had been a change in circumstances that necessitated an updating of the price of the regulated service, if a Chorus commercial UBA variant was to gain a material market share. [109] We discuss this further at paragraph 218 below.

---

106 A "designated service" means:
- a "designated access service", which means a service described in subpart 1 of Part 2 of Schedule 1 of the Telecommunications Act 2001; or
- a "designated multinetwork service", which means a service described in subpart 2 of Part 2 of Schedule 1 of the Telecommunications Act 2001. These are: Local telephone number portability service; Cellular telephone number portability service; National toll-free telephone number portability service; and Telecom's fixed PSTN to mobile carrier pre-selection service.

107 A "specified service" means a service described in Part 3 of Schedule 1 of the Telecommunications Act 2001. These are: National roaming; co-location on cellular mobile transmission sites; and co-location of equipment for fixed telecommunications services at sites used by Broadcast Communications Limited.

108 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [189].

109 Chorus is required to notify us if it intends to launch a new UBA variant, under the UBA STD – Commerce Commission, "Standard Terms Determination for Chorus' Unbundled Bitstream Access Service – UBA General Terms" (updated 30 November 2011), paragraphs [10.1]-[10.3].

191. We note that including a reasonable allocation of the forward-looking common costs of the service provider in the TSLRIC price (which we discussed above from paragraph 85) is additional to this requirement in clause 4B to consider double recovery of particular costs recovered by Chorus. If we were to conclude that a reasonable allocation of the forward-looking common costs of the service provider would lead to Chorus double recovering costs in terms of clause 4B, then we must not make that allocation of the forward-looking common costs in the TSLRIC modelling.

We must determine a geographically averaged price (clause 4A)

192. Clause 4A of Schedule 1 of the Act provides that, in applying the FPP for the UCLL and UBA services, we "must determine" a geographically averaged price, which is defined in clause 1 of Schedule 1 as follows:

> ***geographically averaged price*** means a price that is calculated as an average of all geographically non-averaged prices for a designated service throughout the geographical extent of New Zealand.

193. Clause 4A and the definition of geographically averaged price were introduced by the Amendment Act to address the inability of a structurally separated Telecom (as Spark was then called) to cross-subsidise urban and non-urban services. Under the TSO, Spark, unlike its competitors, has to provide national pricing for some services, despite facing geographically de-averaged input prices, and therefore has to cross-subsidise services. However, Spark faces profit erosion in this area, and a structurally separated Telecom could no longer cross-subsidise losses between the separate entities of Spark (the new Telecom) and Chorus.[110] Accordingly, we must now set prices that apply throughout the geographical extent of New Zealand.

194. Turning to the definition of geographically averaged price, we consider that we would only need to calculate the average of geographically non-averaged prices if we had geographically non-averaged prices to begin with. That is, we are not required to first set geographically non-averaged prices, though we may do so as our first step if we chose to. Our interpretation of the definition is what the text and purpose of setting geographically averaged prices requires.

195. In our view, Parliament's reference to calculating an average of geographically non-averaged prices simply reflected the fact that, when clause 4A was introduced, we had been setting non-averaged prices and so averaging them was the easiest and most efficient way to produce the necessary single price. It does not follow that Parliament intended that we should always be constrained to using that method to determine prices that apply throughout the geographical extent of New Zealand, though it is open to us to choose that method.

---

[110] Report of Finance and Expenditure Committee on Telecommunications (TSO, Broadband, and Other Matters) Amendment Bill 2011 (250-2) (16 May 2011) at page 19.

196. Being required to set prices that apply throughout the geographical extent of New Zealand affects our objective of broadly promoting efficient investment, as we discussed above at paragraphs 115 and 116.

We must set an expiry date

197. In this draft determination, we must propose an expiry date.[111]

198. On 13 January 2014 we published a supplementary paper to the December 2013 UCLL process and issues paper with our preliminary views on the effect of the expiry date in relation to the UCLL service.[112] We have re-stated those views here, which continue to hold, and also hold in relation to the UBA service.

199. The Act is not clear what UBA price will apply for the STD at the expiry of the UBA pricing review determination (ie the determination we are currently in the process of making).

200. We would expect to amend the STD to update the UBA price before the expiry of the pricing review determination, recalculating the price to take effect from the expiry date. This would avoid the UBA price reverting to the IPP price, which otherwise appears to be the effect of having to include an expiry date in the pricing review determination.

201. The price would be recalculated in accordance with the FPP through sections 30R and 30P(1)(a)(ii) of the Act (that is, we would not revert to the IPP). That updated price would not have an expiry date; there is no expiry for the STD. We could conduct a further update at any time, as discussed further below.

202. We also consider that we have the ability to update the FPP price to take effect before the pricing review determination expires, either under sections 30R and 30P(1)(a)(ii) of the Act (discussed below) or if we incorporated an updating process into the price review determination itself.

---

111 Telecommunications Act 2001, s 49(f). In the final determination s 52(f) of the Act requires us to set the expiry date. See also s 62.

112 Commerce Commission "Process and issues for determining a TSLRIC price for Chorus' unbundled copper local loop service - supplementary paper on expiry date" (13 January 2014).

203. Chorus' submission on the December 2013 UCLL process and issues paper sets out its understanding of that proposed approach to the expiry date.[113] We confirmed in our 14 March 2014 Further Consultation Paper that Chorus' submission broadly corresponds with our proposed process on expiry of the pricing review determinations, but that one additional step not set out in Chorus' summary is that it is possible that the UBA model itself might need to be updated as part of amending the STD to update the UBA price before the expiry of the pricing review determination.[114]

204. We set a regulatory period, which has three important roles in a TSLRIC cost model:[115]

    204.1 it is an important input used to estimating the WACC;

    204.2 it sets the timeframe over which we levelise the different yearly prices to be the same price year-on-year (given our preference to do so);

    204.3 it sets the timeframe that the TSLRIC price calculation will be in force. This means the regulatory period sets both the beginning and end dates of the model.

205. The length of the regulatory period does not affect, for example, our view of "forward-looking" in the Act's definition of TSLRIC, or our approach to asset lives or asset depreciation.

We propose an expiry date of five years after our final determination

206. We sought views on the length of the regulatory period in our December 2013 UCLL process and issues paper. Most submissions supported a five-year regulatory period. However, Chorus argued that 10 years would be the appropriate length for the regulatory period. This was primarily because, in its view, that length of time would provide more certainty for business planning and investment.[116]

---

113 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled bitstream access service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [152].

114 Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014), at paragraph [6].

115 In our July 2014 Regulatory Framework and Modelling Approach paper we stated there were two, but have now separately identified price smoothing as a third. We discussed price smoothing in that paper, at paragraphs [259] and [260].

116 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [23].

207. Our consultations to date regarding the regulatory period have not included any reference to the possibility of backdating of the determination. Our comments have been based on the assumption that what we referred to as the regulatory period would begin on the date of the final determination. Accordingly, we interpret the submissions on the regulatory period as addressing the issue of the expiry date of the determination, ie submissions favouring a five-year regulatory period advocate an expiry date five years after the date of the final determination. We consider that backdating, if we decide that it is warranted, should be implemented by a corresponding extension of the regulatory period. In the discussion below we continue to use the term "regulatory period" for convenience but discussion should be interpreted as referring to the length of period from the date of the final determination to the expiry date.

208. In our July 2014 regulatory framework and modelling approach paper, we outlined our preliminary view that:

    208.1 a five-year regulatory period is the most appropriate for our TSLRIC modelling; and

    208.2 we should have the same regulatory period for both the UBA and UCLL services. This is supported by the Act's requirement that we consider the relativity between the UBA service and the UCLL service.[117]

209. We outline below the reasons we gave in that paper, with some modifications given that we have further considered the issue and the recent submissions:

    209.1 The primary reason is that the telecommunications markets at issue are fast changing, both in terms of technology and the applicable regulatory settings. Accordingly, we consider that a ten year regulatory period would be too long, as inputs used in our cost model and modelling decisions are more likely to become out of date or become less appropriate over ten years compared with five years.

    209.2 In 2019, the roll-out of fibre to deliver ultra-fast broadband (UFB) will be significantly further advanced and we will have a better idea of the effects of UFB migration on the markets for UBA and UCLL. By then the Government's review of the Act[118] will have been completed and any changes will have taken effect.

    209.3 In combination, the above matters also seem to us to suggest that a seven-year period would be too long.

    209.4 We also consider five years to be supported by the broader legislative context. The Act does not define how often we should review a STD (or in this case the part of a STD that relates to price). However, it does provide some guidance that suggests a five-year regulatory period is appropriate.

---

117 Telecommunications Act 2001, s 19(b) and Schedule 1, Part 2, Subpart 1.

118 Telecommunications Act 2001, s 157AA.

209.4.1 Five years is the period within which we must consider whether to review whether a service should remain regulated. Schedule 3 provides that we must consider:[119]

> … at intervals of not more than 5 years after the date on which a designated service or specified service came into force, whether there are reasonable grounds for commencing an investigation into whether the service should be omitted from Schedule 1 under s 66(b).

209.4.2 Given that the Act requires us to review whether to de-regulate a service within five years, it is appropriate that we should endeavour to review prices in STDs at no longer than five-year intervals.

209.5 We note that section 53M of the Commerce Act 1986 requires every price-quality path to have no longer than a five-year regulatory period. This is more prescriptive than the Act, but it is widely agreed that the telecommunications market is a faster changing market, which supports our view that we should be reviewing STD prices at intervals of no longer than five years.

210. In response to our July 2014 regulatory framework and modelling approach paper, Vodafone[120] and Spark[121] supported our preliminary view of a five-year regulatory period for both the UBA and UCLL services. Chorus stated that it would prefer to have a reasonable period of price stability in order to focus on the UFB roll-out and migration of customers.[122] Chorus re-iterated that it would like a longer regulatory period, and suggested a compromise of seven years, in order to balance regulatory and pricing stability.[123]

211. We consider a five-year period does provide a reasonable period of price stability. We have already noted the Court's comments that participants in competitive markets generally face conditions of considerable uncertainty, as that is the nature of competition.[124] Price stability over five years provides relative stability to suppliers and purchasers.

---

119 Telecommunications Act 2001, Schedule 3, clause 1(3).

120 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, section D2.

121 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraphs [154]-[155].

122 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [176].

123 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [179].

124 *Commerce Commission v Vector Ltd* [2012] NZCA 220, 2 NZLR 525 at [34].

212. We have explained above that we consider a more predictable approach would *generally* be an approach that is considered to be an orthodox TSLRIC approach internationally. That might suggest a shorter regulatory period as adopted by some international regulators (for example, Sweden, France, Denmark, Ireland and Germany all support a regulatory period of three years or less).[125] However, in this case we consider that a more predictable approach is affected by other considerations, such as the telecommunications framework and New Zealand regulatory practice in other sectors of no more than a five-year regulatory period under Part 4 of the Commerce Act 1986.

213. We have considered submissions, our TSLRIC objectives and the section 18 purpose statement. We have weighed the factors of supporting investment (which supports competition) and taking an approach that provides greater predictability. We propose a five-year regulatory period.

214. We propose to set the expiry date to be five years from the date of our final determination. We have modelled TSLRIC costs over a five-year period.

215. Prior to the end of the expiry date of the pricing review determination, we will conduct a review under section 30R of the Act, regarding the price payable for the service for the next five-year period (the FPP price reset). As well as considering and determining a price for the service for the next five-year regulatory period, we will update the inputs in our cost model and review whether any other change in circumstances since our previous pricing review determination causes us to reconsider any of our fundamental modelling decisions. The Act defines a "change in circumstances" as follows:[126]

> **change in circumstances**, in relation to the price payable for a service, means any change in relevant circumstances since the last date on which that price was calculated (for example, any change to the terms of the service).

We can review the price during the regulatory period and update the price due to a change in circumstances

216. Within the pricing review determination period, we will still consider reviewing the price in response to a change in circumstances. Under section 30R of the Act, we have the discretion to commence a review of all or any of the terms in a STD "at any time", including terms regarding the price payable.[127] We interpret the Act empowering us to do so "at any time" as including before the expiry date included in the pricing review determination.

---

125 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014) paragraph [321].

126 Telecommunications Act 2001, s 30B.

127 Parties can also apply for us to reconsider a determination under the Telecommunications Act 2001, s 59.

217. Without limiting our discretion, we consider that we would be unlikely to revisit all of the choices we made in setting the initial FPP price during the regulatory period of this pricing review determination process.[128]

218. In order to aid predictability of approach, but without limiting our discretion, we note that the following change in circumstances is the sort of scenario in which we may exercise our discretion to update the price: If we were to conduct a section 30R review that resulted in significant changes to non-price terms of an STD that we consider should be reflected in a change to the price payable for the regulated service. Such a review of non-price terms could result from a Chorus commercial UBA variant gaining a material market share, [129] which we consider should be reflected in the price of a regulated service to give better effect to clause 4B.

219. Chorus has advised us that on or after 1 December 2014 it proposes to introduce 'Boost VDSL' with a specification and price reflecting Chorus' view that this will be a commercial service not subject to the UBA STD. The issue will then arise as to whether the introduction of Boost VDSL will have any implications for the UBA price, either immediately upon introduction or alternatively if the market share of this new service was to become material. One specific issue is what steps, if any, we could take to ensure our UBA pricing review determination addresses clause 4B in these circumstances.

220. We have considered possible approaches to addressing the issues of cost allocation between regulated and commercial bitstream services in the above situation, such as the fibre link between the DSLAM and the first data switch.

221. First, we could rely upon the ability to undertake section 30R reviews leading to updating the UBA price. Our view is that the achievement of a material market share by Boost VDSL may necessitate a change to the price of the regulated service. Undertaking s30R reviews is our proposed approach.

---

128 If we were to revisit our pricing review determination decision without a change in circumstances we would have to revert to using the IPP. This is due to our reading of sections 30P(1)(c) and 30P(1)(a) of the Telecommunications Act 2001.

129 Chorus is required to notify us if it intends to launch a new UBA variant, under the UBA STD – Commerce Commission, "Standard Terms Determination for Chorus' Unbundled Bitstream Access Service – UBA General Terms" (updated 30 November 2011), paragraphs [10.1]-[10.3].

222. We draw attention to a second approach to assist and guide submissions. The second approach is that we could prescribe a "price change mechanism"—like those in the current UBA, UCLL and SLU STDs[130]—whereby the UBA price would change to reflect a cost allocation to Boost VDSL that would, in our assessment, give better effect to clause 4B.

223. The periodic updating under a price change mechanism could be that the average cost per line per month of the relevant shared backhaul link (part of the UBA additional costs) could be allocated to the regulated UBA service in proportion to that service's share of peak hour traffic (reported by Chorus). Another possibility would be to adopt a fixed ratio between the amount of shared costs recovered per line from regulated and commercial UBA variants and to adjust the average cost of the relevant link accordingly for incorporating in the regulated UBA price.

224. We seek submissions on reliance on 30R reviews and on the alternative described (and variants thereof).

MEA for UBA

We apply MEA principles to the "additional costs" component of the UBA service, that we presuppose would exist on Chorus' copper network

225. The FPP for UBA is:[131]

> The price for Chorus's unbundled copper local loop network plus TSLRIC of additional costs incurred in providing the unbundled bitstream access service.

226. As we have already noted, we take the price for the UCLL service and add to it the "TSLRIC" (as defined in the Act) of the additional costs incurred in providing the UBA service.

---

130 Clause 3 of Schedule 2 of the UBA STD provides a mechanism for Chorus, subject to approval by the Commission, to pass through changes in cost of certain Core and Sundry charges:

- Each year, on 1 November, some service components must be updated by an amount equivalent to the percentage change for the previous year in the Labour Cost index (Communication services), eg 1.31 to 1.36.
- When adjusting the charges above, Chorus must also review a different set of service components which are POA and provide a fixed price where this is practicable, eg 1.37.
- For some service components, Chorus must immediately adjust the charge where the cost of providing that service has increased or decreased due to changes in input costs charged to Chorus by its field service company contractors, eg 1.9.

In addition, prior to separation day, Telecom (as the access provider of the UBA service at the time) was required to update the retail-minus price of the Basic UBA monthly charge on a quarterly basis, and whenever it changed its retail broadband services by launching any new broadband product; altered the price of any existing plan; or changed the data cap on any existing plan.

Clause 3 of Schedule 2 of the UCLL and SLU STDs has a similar price change mechanism for certain sundry charges.

131 Telecommunications Act 2001, Schedule 1, Part 2, Subpart 1.

227. As we explain further in this section, we consider that, for the UBA pricing review determination, MEA principles are only relevant to the "additional costs" component of providing the UBA service (which is the "UBA increment"), and that we must presuppose that the MEA of those additional components would exist on Chorus' copper access network.

228. In our February 2014 UBA process and issues paper, we stated that our (then) current thinking was that the UBA MEA would utilise Chorus' copper based inputs, potentially with some Rural Broadband Initiative (RBI) fixed wireless in place of copper in some rural areas.[132]

229. Chorus submitted that the UBA MEA should use Chorus' copper inputs, but that RBI was not relevant to our calculation. That was because end-users within the geographic scope of the UBA STD in RBI fixed wireless areas are currently served by Chorus using ADSL or ADSL2+.[133]

230. We agree that we should limit our consideration of the UBA MEA to Chorus' copper access network, rather than adding RBI fixed wireless, as this is the network presupposed by the service description in the Act.[134] Accordingly, MEA principles are only relevant to the "additional costs" component of providing the UBA service. In other words, Chorus' copper access network must be taken as a given, and the TSLRIC and MEA principles only be applied in relation to the facilities associated with the "additional costs".

231. Spark agreed that we should model UBA incremental to the local loop network, but considered that the degree to which the UBA service can be assumed to be based on the existing layer 1 services will depend on our UCLL pricing review approach.[135] Spark also considered that wireless technologies may have a role in determining an optimised MEA.[136] We disagree, as we consider the words of the Act limit our choice of MEA for modelling the costs of the UBA service (but not our choice of MEA for modelling the costs of the UCLL service).

---

132 Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle: Process and issues paper" (7 February 2014), paragraphs [15]-[17].

133 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled bitstream access service in accordance with the Final Pricing Principle" 21 February 2014, paragraphs [24]-[28].

134 See also, James Every-Palmer "FPP determination: Issues re service description and the modern equivalent asset - a report prepared for the Commerce Commission" 12 March 2014, paragraph [29] and the table following that paragraph. Dr Every-Palmer noted that the RBI may nevertheless be relevant for other purposes (for example, the RBI subsidy may need to be netted out from the TSLRIC cost calculations).

135 Telecom "Process and issues paper for determining a TSLRIC UBA price Submission" 21 February 2014, paragraph [16].

136 Telecom "Process and issues paper for determining a TSLRIC UBA price Cross submission" 5 March 2014, paragraph [23].

232. Vodafone did not support our preliminary view that the appropriate MEA for the UBA service should utilise Chorus' copper based inputs, potentially with RBI fixed wireless in place of copper in some rural areas. That was because it considered that "a single (optimised) MEA should be adopted for the cost model for both the UCLL and UBA services" and that "a TSLRIC cost-price should not permit Chorus to be compensated for any inefficiencies in its underlying copper network at the layer 2 level (the UBA uplift), as much as it should not be compensated for inefficiencies in the layer 1 level (the UCLL input)."[137] Vodafone subsequently submitted that our approach to identifying a MEA for each of UBA and UCLL must be "analytically consistent", and that a hypothetical efficient operator would not deploy different technologies and networks for UBA and UCLL.[138]

233. We do not consider that approach is open to us under the Act. In our view, the wording of the UBA service description coupled with the staggered set of services require us to presuppose Chorus' copper access network and only apply TSLRIC and MEA principles in relation to the additional costs of UBA. We do not consider that having different assumed networks for different services creates any logical inconsistencies or implies that the hypothetical efficient operator is behaving irrationally by building two networks. Rather, it simply reflects that the determination of FPP prices for different services may require different modelling assumptions. We approach the task of pricing each service separately,[139] so do not restrict ourselves to considering that the same hypothetical efficient operator is building both the UBA and UCLL services at the same time and would optimise the relationship between the two.

234. We also note that for unbundlers the decision of whether to unbundle is based on the costs of Chorus' copper access network, not a fibre access network. That is, unbundlers must install their own equipment on Chorus' copper access network and by doing so avoid "the UBA increment" we will set based on our MEA. For that reason, we consider that a MEA for UBA that presupposes a copper access network is likely to best give effect to the section 18 purpose statement.

---

137 Vodafone "Submission to the New Zealand Commerce Commission - Comments on process and issues paper for the unbundled bitstream access service (UBA) final pricing principle" 21 February 2014, paragraph [D3].

138 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G1.8].

139 Though we may take into account the other pricing review determination process as a relevant consideration.

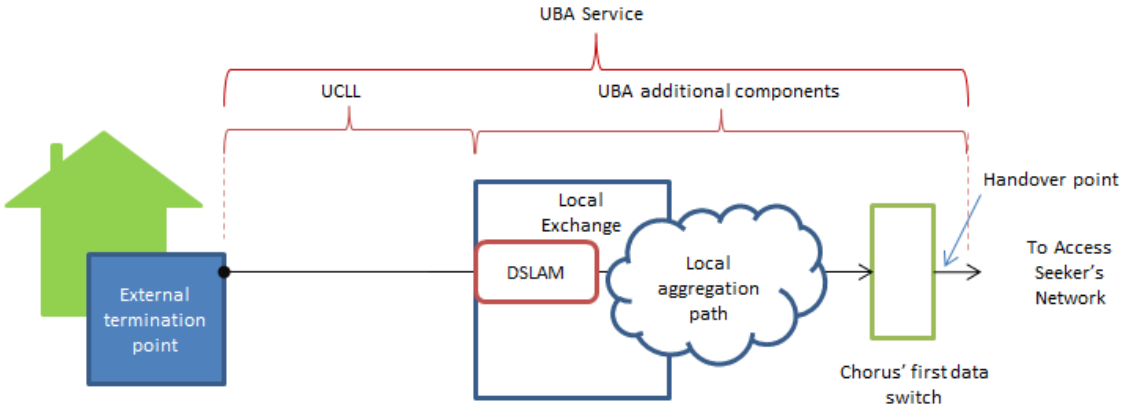
235. Vodafone has suggested our reasoning appears to be based on a view that unbundling should be encouraged because this alone gives best effect to section 18.[140] Our reasoning is not based on a desire to encourage or incentivise unbundling. Rather, our approach allows for unbundling to occur where it is efficient to do so, and we consider that approach is likely to best give effect to the section 18 purpose statement.

236. Our choice of MEA for the UBA "additional costs" is discussed in Chapter 2.

The UBA service we are modelling

237. The UBA STD describes the UBA service as "a DSL service that enables access to, and interconnection with, that part of Chorus' fixed public data network (PDN) that connects the end-user's building (or, where relevant, the building distribution frames) to Chorus' first data switch (or equivalent facility), other than the DSLAM".[141] This is illustrated below:[142]

Figure 1: The UBA service



140 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G1.11(b)].

141 Commerce Commission, "Standard Terms Determination for Chorus' Unbundled Bitstream Access Service", Schedule 1 UBA Service Description, clause 2.2.

142 This is a logical diagram and does not describe any technical build.

238. We note that the UBA Service Description in the STD requires that the UBA service provide a minimum throughput of 32kbps during any 15 minute period.[143] Specifying a minimum throughput metric allows for the average throughput level to evolve with changing end-user needs – that is, specifying a minimum throughput does not imply that the service is static or capped. The STD is also silent on where regulated services end and commercial services, if any, begin. Given that the STD does not definitively prescribe the throughput of the UBA service we are setting the price of, we need to determine the level of throughput to suit a hypothetically efficient operator. We acknowledge that a number of options are open to us. For instance, we could model and price a 32kbps service. We could also model a service equivalent to the proposed Boost offering or HSNS, or better.

239. Our interpretation of the STD is consistent with the UBA service that has historically been provided by Telecom, and then Chorus, in that capacity has been increased over time to meet end-user's throughput demand. This interpretation is also consistent with our approach to conducting a TSLRIC modelling exercise: we consider that a hypothetical efficient operator would deploy a bitstream network capable of meeting current and future end-user demand and that the UBA service provided by the hypothetical efficient operator would be dynamic and evolve over time as demand increases.

240. The fibre links between the cabinets and the exchanges, and between the exchanges and the first data switch (FDS) are not dedicated to the provision of UBA but are shared with other services such as legacy services or dark fibre services. Our approach to allocating the cost of the links is discussed in Chapter 2 and Attachment J.

241. Chorus' existing DSLAM engineering provides for at least a single GigE backhaul per sub-rack. We consider that this is consistent with the level of capacity a hypothetical efficient operator would deploy. Accordingly, for the fibre links allocated to bitstream services, we have modelled a single GigE backhaul per sub-rack.[144]

242. We intend to allocate the share of these backhaul costs (both passive and active assets) on the basis of bitstream service volume (regulated and commercial), which essentially translates to a per line allocation. Based on advice from TERA, we are not undertaking the allocation on the basis of bitstream service traffic, as this would be likely to lead to distortionary effects between services.

243. Our approach to cost allocation between the designated services provided under the regulated price and designated access services provided on commercial terms seeks to reflect a point in time. Accordingly, we consider that the material uptake of new commercial variants to the UBA service would be the sort of change in circumstances in which we may exercise our discretion to "reopen" the FPP model and update the UBA price to ensure that Chorus is not double recovering.

---

143 Commerce Commission, "Standard Terms Determination for Chorus' Unbundled Bitstream Access Service", Schedule 1 UBA Service Description, clause 3.12.

144 For more information, see TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 7.3.1.

244. If, as result of meeting increasing end-user demand over time, Chorus' costs materially increased, it could request that we initiate a section 30R review to consider it was necessary to update the price.

Chapter 2: How we have calculated the TSLRIC for the UBA service

245. In this chapter we discuss our approach to determining the cost of the UBA service. We describe the steps we have taken to determine the annualised TSLRIC cost, and summarise the draft decisions we have made for each step.

246. We have taken the following steps to determine the TSLRIC for the UBA service:

246.1 Step 1 – Determining demand for the UBA service. In this step we determine demand over the regulatory period for the UBA service.

246.2 Step 2 – Determining the hypothetical network. This step involves determining the MEA for the UBA service, the degree of optimisation in the modelled network, and how the hypothetical efficient operator would deploy the network.

246.3 Step 3 – Determining the cost of the modelled network. This step discusses how we have approached costing the network elements of our MEA to provide the UBA service.

246.4 Step 4 – Allocating costs to services. This step involves allocating the efficient costs across services provided by the hypothetical efficient operator and then calculating the cost of the UBA service.

247. In the following sections of this chapter we summarise the draft decisions we have made under each step. Detailed discussions of our draft decisions are included in attachments to this draft determination.

Determining demand for the UBA service

248. The UBA demand footprint determines the number of connections over which total modelled costs will be spread, and informs the number of assets required to provide the UBA service.

249. As the modelled UBA service must be capable of working over Chorus' copper infrastructure, our view is that the hypothetical efficient operator will use Chorus' copper based inputs.

250. Our draft decision is to limit our consideration of the hypothetical efficient operator to Chorus' copper network, rather than adding fixed wireless, as the former is the network presupposed by the service description in the Act.

251. Our view is, therefore, that the modelled UBA footprint should match Chorus' actual demand for UBA.[145]

[145] Our treatment of RBI funding will be to remove capital costs relating to the number of DSLAMs and active cabinets deployed by Chorus under the RBI initiative.

Demand take-up and migration

252. Demand take-up and migration is relevant for calculating unit costs over time and our modelling assumptions will determine how rapidly the hypothetical network will reach full load, and then whether, as the result of changes in the market, migration to or away from the network should be modelled.

253. We consider that our assumptions of instant take-up with no migration are efficient because they result in a price that would cover for any piece-meal refurbishment, replacement, or expansion of the hypothetical efficient operator's network.

254. In this regard, Professor Vogelsang advised that:[146]

> TSLRIC is conceptually based on an expanding market, where additional capacity is being installed. Since a large portion of the copper-related costs are sunk and some overcapacities develop, true forward-looking costs will therefore be much lower than TSLRIC as traditionally calculated by regulators. Also in this stage of the market an operator in a competitive environment would wish to take advantage of wholesale demand to defend its position against competing technologies. But if TSLRIC were still measured based on the old technology this would lead to price increases because of the smaller quantity base over which then fixed costs would have to be spread. Summing up, in the face of long-term declining demand relying on the TSLRIC standard for the old technology would induce unnecessary over-capacities and allocative inefficiencies in copper networks.

255. We agree with Professor Vogelsang, and continue to hold the views that, modelling no 'ramp-up' and constant demand during the regulatory period is appropriate.

256. Accordingly, for the UBA service we have modelled:

256.1 no 'ramp-up' of demand on the hypothetical efficient operator network;

256.2 a fully loaded network – 100% demand; and

256.3 constant demand during the regulatory period.

257. Attachment A provides a detailed discussion of how we have reached our draft decisions.

---

[146] Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" (25 November 2014) paragraphs [10]. Also see paragraphs [78]-[80].

Determining the hypothetical network

258. Once we have determined the demand footprint for the UBA service, we then must determine the efficient costs of supplying that demand. To do so we have first considered the likely MEA for the UBA service to determine what we consider a hypothetical efficient operator would build today to provide the UBA service. We have then considered how the hypothetical efficient operator would deploy that network, including the level of optimisation employed relative to Chorus' copper network.

Selecting the MEA for the UBA service

259. As noted in Chapter 1, our view is that the MEA principles only apply to the "additional costs" component of the UBA service, and that we must presuppose that the MEA of those additional components would exist on Chorus' copper access network..

260. In our July 2014 regulatory framework and modelling approach paper, we noted advice from TERA that two technologies met the eligibility criteria - Ethernet and ATM.[147] Our view was that Ethernet was the most appropriate choice of MEA as it was the best in-use technology, and offered superior technical performance to ATM.

261. Chorus submitted that it supported our identification of Ethernet over copper as the MEA for UBA.[148] Other parties did not comment on our choice of Ethernet as the layer 2 MEA for the UBA service.

262. Accordingly, we have modelled Ethernet protocol as the MEA for the "additional costs" component of the UBA service.

263. We have said that we presuppose that the MEA for those additional components would exist on Chorus' copper network, or be based on Chorus' copper inputs. By this we mean that the additional components should be a technology compatible with a network that, like Chorus' network, connects end-users with copper and uses fibre from cabinets to the exchange on cabinetised lines (sometimes referred to as a Fibre-to-the-node (FTTN)/copper network). This is in contrast to, for example, modelling additional components that are compatible with a Fibre-to-the-home (FTTH) network.

264. We have modelled the additional components on our modified scorched node network that closely resemble Chorus' actual network, as explained immediately below and in Attachment B. In particular, we have kept the number and location of exchanges and active cabinets as in Chorus' actual network, with some modifications.

147 Commerce Commission, "Consultation paper on issues relating to Chorus' proposed changes to the UBA service" 9 July 2014, paragraph [172].

148 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [263].

Optimising the network we have modelled

265. We have made the following optimisation draft decisions in the model:

265.1 We have adopted a modified scorched node approach for the modelled network. This approach is an orthodox approach in TSLRIC modelling and is more reflective of an incremental roll-out. We consider that basing the regulated price on modelling an approach that is compatible with an incremental roll-out is more likely to promote efficient investment. Accordingly, TERA has modelled an "optimally structured network" which is constrained by the existing number of nodes (exchanges and active cabinets) and their existing locations, and follows the road network.

265.2 TERA has recommended minor modifications to the exchange boundaries as defined by Chorus, to take into account the location of notional exchanges and network connectivity constraints imposed by the adoption of a theoretical network that is based on the road network. We agree with TERA's recommended approach.

265.3 TERA has modelled the size of exchange buildings and active cabinets based on a bottom-up calculation of the required space and equipment. Chorus has also provided data regarding relevant modern sites consisting of blueprints of a number of sites and linking their current sites with the relevant modern buildings or active cabinets. Where available, TERA has used this information alongside its bottom-up calculation to model the most efficient deployment.

265.4 The active assets in the core network have been optimised based on the relevant demand. Accordingly, TERA has calculated the necessary number of assets required to meet that demand. As such, the power consumption and the air-conditioning requirements reflect the modern assets being modelled.

265.5 The model includes use of motorways and private roads to determine the shortest path for links between the DSLAM and exchange, and exchange to the FDS, as an efficient operator would be likely to use a combination of these where efficient to do so.

266. Attachment B provides a detailed discussion of how we have reached our draft decisions.

Determining the cost of the hypothetical network

267. Having decided how we will build the core network, we must decide how we will cost the network elements that are used to provide the UBA service.

Asset valuation

268. Our draft decision is to use optimised replacement costs (ORC) to value all assets used in our model as:

268.1 we consider that adopting an alternative methodology would weaken the predictability of the regulatory framework. Such a move can have longer-term costs to end-users from its adverse impact on investment incentives; and

268.2 in our view, in practice, the alternative methodologies have limitations which may impact on their potential benefits. Most notably failure to recognise the opportunity costs of fully depreciated assets that are still in use.

269. Attachment C provides a detailed discussion of how we have reached our draft decisions.

Weighted average cost of capital

270. We have estimated a post-tax WACC of 6.47% for the UBA service. A detailed discussion of how we estimated the WACC percentage is set out in the Cost of Capital for the UBA and UCLL pricing reviews paper, published alongside our draft determination.

Asymmetric risk

271. We have considered asymmetric risks in our model to include prudent and efficient costs over the long run for the hypothetical efficient operator; and to reduce the risk that we underestimate the forward-looking costs over the long run for the hypothetical efficient operator.

272. Accordingly, we reached the following draft decisions:

272.1 an ex ante allowance for specific prudent costs is appropriate for catastrophic risks, as is recognising the risks of asset stranding due to technological change by shortening asset lives; and

272.2 an ex ante allowance is not appropriate for risks of asset stranding due to competitive developments or for asset stranding due to re-optimisation.

273. Attachment D provides a detailed discussion of how we have reached our draft decisions.

Asset lives

274. We consider that the accounting asset lives provided by Chorus are an appropriate starting point. We have used these as a proxy for the economic lives of the assets in our model.

275. Where the asset lives provided by Chorus seemed out of line with what has been observed in other jurisdictions, or if no data was provided, TERA has used international benchmarks derived from TSLRIC models overseas.

276. In selecting this approach, we have weighted the risks of over-compensating with under-compensating Chorus.

277. Attachment E provides a detailed discussion of how we have reached our draft decisions.

Price trends

278. Asset price trends in our model have been used to forecast costs, and have been applied with a tilted annuity depreciation.

279. We have forecasted price trends as follows:

279.1 for active assets we have used international benchmarks;

279.2 for passive assets we have used a cost escalation approach using the consumer price index (CPI) as the default; and

279.3 for labour related opex we have used a cost escalation approach using the labour cost index (LCI).

280. We have decided not to forecast price trends for non-labour related opex, and have treated it as nominally constant over the regulatory period. We expect that efficiencies are likely to offset general inflation.

281. We have converted foreign currency to New Zealand dollars using purchasing power parity (PPP) rates. We have used a constant rate for PPP over the regulatory period.

282. Attachment F provides a detailed discussion of how we have reached our draft decisions.

Depreciation

283. Many of the costs incurred in providing the UBA service are on fixed infrastructure assets or capital goods that are useful over many years. A forward-looking cost-based price assumes that these costs are recovered over a number of years. Depreciation determines the amount of an asset that the network operator can recover each year through the regulated access price.

284. We have applied a titled annuity methodology which we have determined is the most appropriate for our TSLRIC modelling exercise. A tilted annuity will result in a relatively constant rate of change in prices in a situation where a stable demand profile is modelled. This is expected to avoid windfall gains and losses being caused by changing network costs.

285. Attachment G provides a detailed discussion of how we have reached our draft decisions.

Exclusion of certain capital costs

286. We have considered whether the hypothetical efficient operator would incur all of the capital costs of providing the UBA service, or whether we should deduct some of the modelled capital costs for some parts of the network because the operator would not incur those costs itself. The operator could, as occurs in practice, receive a payment to induce it to build part of the network (a 'capital contribution').

287. We consider that the hypothetical efficient operator would be unlikely to provide bitstream in RBI areas without a capital contribution. Accordingly, we have accounted for the cost of providing bitstream in RBI areas by removing the modelled TSLRIC costs relating to the number of DSLAMs and active cabinets deployed by Chorus under the RBI initiative. However, because there are no DSLAM IDs in the model, we could not remove the specific individual DSLAMs in RBI areas. Instead, we:

    287.1 removed the capital costs of the number of DSLAMs related to the RBI; and

    287.2 removed the capital costs of active cabinets related to the DSLAMs in RBI areas.

288. Operating expenditure (opex), such as power consumption for the DSLAMs in RBI areas, remains in the model because we are only removing the capital costs that we consider a hypothetical efficient operator would receive a capital contribution for. Attachment H provides a detailed discussion of how we have reached our draft decision.

Tax

289. The TSLRIC-based price we derive for the UBA service should be grossed up for corporate tax. Attachment I provides a detailed discussion of how we have adjusted the tilted annuity charges for each asset type to allow for tax and taking into account an appropriate tax depreciation rate.

Cost allocation

290. Once we have completed costing the core network, we must allocate the costs to services. We are also required to include a reasonable allocation of forward-looking common costs.

291. Finally, we allocate the cost of the UBA service across the number of connections to determine the annualised unit cost of the UBA service.

Approach to cost allocation

292. Our draft decision in respect of cost allocation is:

292.1 for network costs, we have used a capacity-based approach rather than the Shapley-Shubik approach (because a capacity-based approach reflects cost drivers). The capacity-based approach is the most established approach in TSLRIC modelling, is more transparent than the Shapley-Shubik approach, and is supported by all submitters; and

292.2 for non-network costs, we have used an Equi-proportional mark-up (EPMU) approach, as this is the approach that is widely used in practice in TSLRIC modelling and is also supported by all submitters.

293. For network costs, the data required to implement the capacity-based approach depends on the service and network asset being considered. In most instances we had the data available to implement this approach, with the exception being the allocation of costs related to fibre links between the cabinets and the exchanges, and between the exchanges and the FDS. In the absence of the relevant data, we have relied on TERA's expertise. Accordingly, our draft decision is to allocate the cost of links:

293.1 between the active cabinets and their parent exchange as 2/3 to the bitstream services (these include the regulated bitstream services and the non-regulated bitstream services) and 1/3 to other services; and

293.2 between exchanges and FDS exchanges as 1/3 to the bitstream services and 2/3 to other services.

294. Attachment J provides a detailed discussion of how we have reached our draft decisions.

Detailed implementation

295. In the following section we summarise how TERA has approached modelling the core network, including where it has implemented the draft decisions we have made above. TERA's model reference and model specification papers, which have been published alongside this draft determination, provide further detail.

Architecture of the TSLRIC models

296. The TSLRIC model is made up of four main files:

296.1 one Microsoft (MS) Access file used to dimension the passive network; and

296.2 three MS Excel files used to determine:

296.2.1 opex;

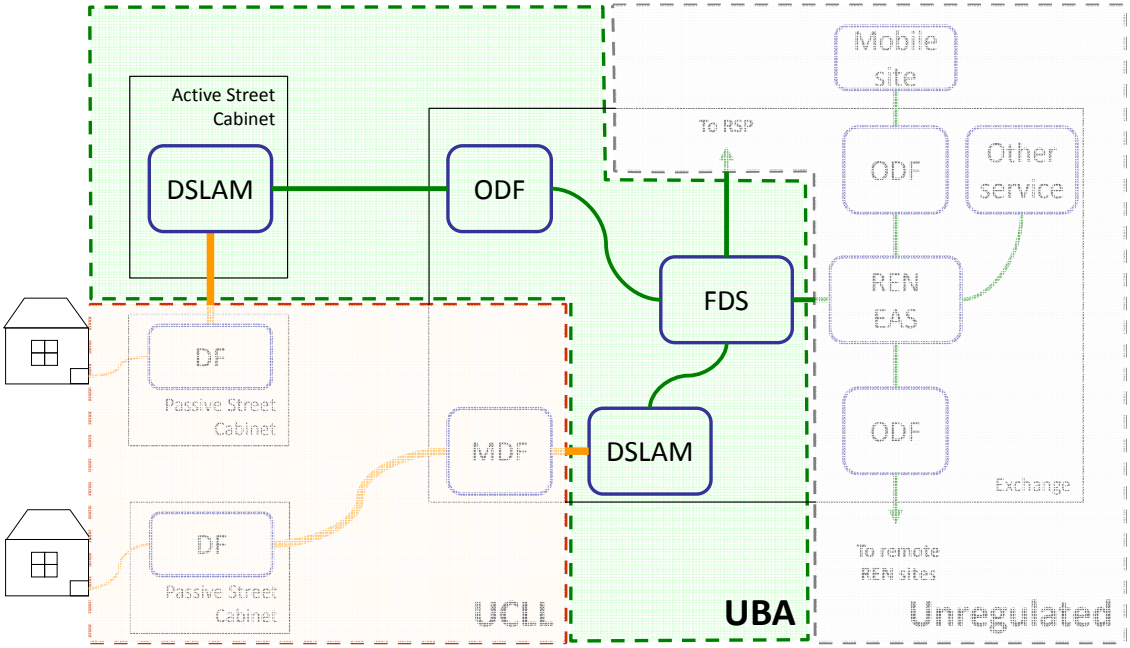
296.2.2 capex of the access network;[149] and

296.2.3 the cost of the core network and prices.

Dimensioning the core network

297. The core network model covers the provision of the active part of the UBA service. The passive part of the UBA service (the local loop) is dimensioned in the access network cost model. The figure below illustrates the scope of the core model:

Figure 2: Core network model scope



[149] We summarise TERA's implementation of the capex of the access network in Commerce Commission "Draft pricing review determination for Chorus' unbundled copper local loop service" (2 December 2014).

298. As noted above, we have decided to adopt a modified scorched node. Given our view that the UBA service must be delivered over copper, TERA has modelled a modified scorched node approach as follows:

298.1 The copper network is made up of three layers of nodes – the main distribution frame (MDF), the street cabinets (SC), and the distribution point (the copper cable terminal (CCT)).

298.2 The country has been split up into MDF coverage areas provided by Chorus. TERA has then determined cabinet coverage areas as Chorus has been unable to provide that information.

299. Once the network has been split into coverage areas, the model calculates the demand at each existing node in the network. Network assets are then dimensioned to meet demand and provide the UBA service.

300. The model includes several different pieces of active equipment:

300.1 DSLAMs at the cabinet;

300.2 DSLAMs at the exchange; and

300.3 First data switches.

301. The model applies engineering rules, provided by network operators, to dimension the active equipment.

302. For cables on DSLAM-exchange links, TERA has modelled 12F underground fibre cables. The routes have been determined using the shortest path algorithm. TERA has modelled 24F underground fibre cables for other core network levels (exchange to FDS and inter Ethernet aggregation switches).

Costing the core network

303. Having determined the network inventory required to dimension the core network, as described above, the model then calculates the cost of the core network.

304. The first step in the network costing phase is to determine unit costs for the assets required to dimension the core network. Our starting point is to use the data provided from Chorus through section 98 notices. TERA has then compared the Chorus data against other countries.

304.1 TERA notes that the unit costs of active assets in the core network are quite uniform across jurisdictions as there is an international market for these assets.

304.2 TERA also notes that trenching costs, which is one of the main cost categories of a fixed network, is difficult to benchmark due to its country-specific nature. TERA has determined the efficient unit cost for trenching based on the efficient costs provided by Beca.

305. TERA has then applied the unit costs it has determined to the inventory of assets determined above to calculate total capex for the core network.

306. Following this, the model calculates an annualised cost for the network by applying an asset specific depreciation formula to the network capex, which takes into account:

306.1 asset lives;

306.2 price trends;

306.3 tax depreciation rates;

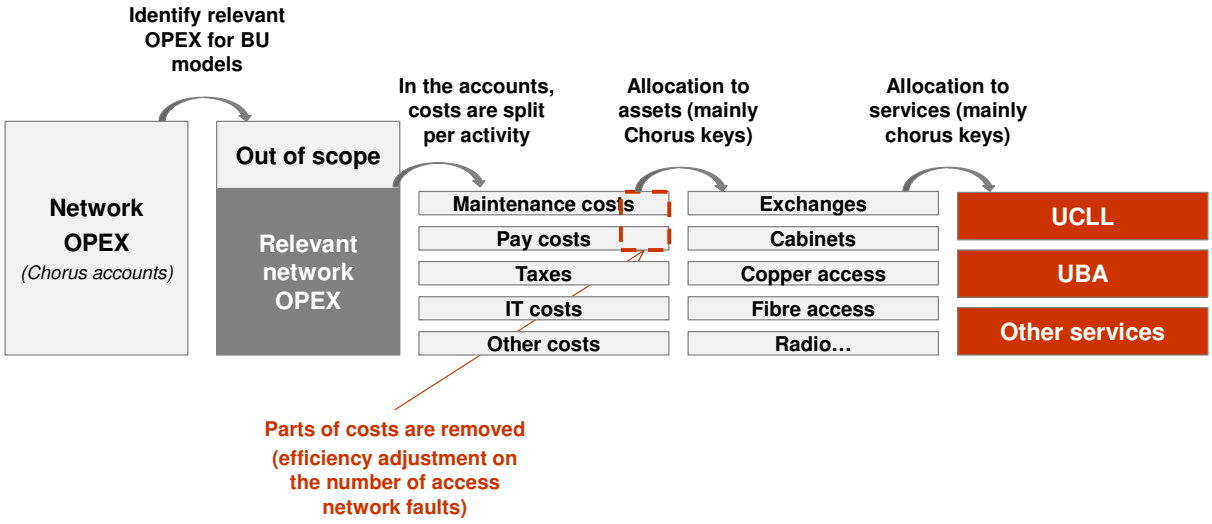
306.4 the corporate tax rate; and

306.5 the post-tax WACC; and

306.6 the time to build the network, which is six months.[150]

307. TERA has also built a separate model to calculate the opex for the network. The network opex calculation includes the following steps:

Figure 3: Network opex calculation steps



308. Our starting point for the opex model was Chorus' accounts. TERA then applied an efficiency adjustment to reflect the likely lower fault rates of the hypothetical efficient operator's new network.

309. In order to forecast opex, the costs have been divided into two categories – labour related opex and non-labour related opex. TERA has calculated labour related opex based on the LCI. As explained above, we have treated non-labour related opex as constant in nominal terms over the regulatory period.

150 Technically this reflects the time between the moment the investment is paid and the network generating revenues.

Cost allocation

310. As set out above, we have used a capacity-based approach to allocate network costs. TERA has applied an allocation key used for each asset type consistent with its dimensioning driver.

311. Active assets involved in the provision of the UBA service may be shared with other bitstream services such as HSNS. As DSLAMs in the core network are dimensioned based on the number of customers, the allocation key is the relevant number of customers.

312. The FDS is also used for interconnection with the Regional Ethernet Network (REN) for RSPs who purchase a tail extension service. This means part of the FDS costs must be allocated to interconnection links. Accordingly, TERA has partly allocated FDS costs to interconnection links based on the number of ports used as follows:

    312.1 to connect the FDS to the REN (allocated to other services);

    312.2 to connect the RSP (allocated to other services); and

    312.3 to connect the DSLAMs (allocated to the UBA service).

313. As explained above, the following allocation rules have been applied to fibre links in the network:

    313.1 Active Street Cabinets with 12-Fibre cable link to the next exchange, of which 2/3 of active fibres are used by the bitstream services. The bitstream (regulated and commercial) services, therefore, bear 2/3 of the costs.

    313.2 Exchanges sites without FDS are linked to a parent exchange with FDS using a 24-Fibre cable link, of which 1/3 of the active fibres are used by the bitstream services. The bitstream services, therefore, bear 1/3 of costs.

314. Having allocated total core network costs to services, we have calculated the unit cost for the UBA service, which we discuss in Chapter 3.

Chapter 3: Calculating the TSLRIC-based price for UBA

Purpose

315. The purpose of this chapter is to set out:

315.1 our approach to transforming TSLRIC costs we have modelled for our MEA into prices, in order to update the prices in the UBA STD;

315.2 the key transformations we have undertaken to convert total annualised TSLRIC costs for the UBA increment to constant nominal monthly prices over the regulatory period; and

315.3 the requirements of the Act, in respect of section 18 and relativity considerations.

316. The FPP for UBA is:[151]

> The price for Chorus's unbundled copper local loop network plus TSLRIC of additional costs incurred in providing the unbundled bitstream access service.

317. Those "additional costs" incurred in providing the UBA service are also referred to as the "UBA increment". This chapter is about determining the price for the UBA increment and not the total UBA price (being the price of UCLL plus the UBA increment).

Overview of our approach to converting TSLRIC costs to prices

318. This section provides an overview of our approach to convert total annualised TSLRIC costs for the UBA increment to prices for the UBA STD. Our draft decisions and reasons for each of our steps explained below are provided in more detail in this chapter.

319. We begin with the total annualised TSLRIC costs figures for the UBA increment after we have allocated common costs and shared costs with other services. That cost allocation is discussed in Attachment J.

320. To convert the annualised TSLRIC costs to monthly unit costs we followed the following steps:

320.1 We first estimated the annualised TSLRIC costs for the UBA increment for each of the five years during the regulatory period. We have not determined separate urban and non-urban prices from our model. Rather, we only determine the national TSLRIC costs for the UBA increment.

320.2 To arrive at average monthly TSLRIC costs for each of the five years, we then divided the annualised TSLRIC costs by 12, ie the number of months in a year.

---

[151] Telecommunications Act 2001, Schedule 1, Part 2, Subpart 1.

320.3 To calculate the monthly unit TSLRIC costs for the UBA increment for each of the five years we divided the monthly costs by the demand profile. This demand profile is discussed in Attachment A.

321. Our draft decision is to set a constant nominal monthly price over the regulatory period. To determine a constant nominal price, we levelise the national monthly unit TSLRIC UBA costs determined for each of the five years over the regulatory period.

322. We used a gradient approach to determine the price differentials between BUBA and EUBA variants. We use the gradient in place from 1 December 2014 that was determined in the UBA IPP for purposes of this draft determination and invite submissions on any alternative approaches to determine the appropriate gradient.

323. We then considered whether the TSLRIC cost estimate determined for the UBA increment best gives, or is likely to best give, effect to the section 18 purpose statement. Our draft decision is that we do not consider there to be a case to apply an uplift to the UBA increment to incentivise unbundling. Any remaining reasons for considering an uplift relate to the UCLL price, and are considered in the UCLL FPP draft determination.

324. Our draft decision for BUBA and the EUBA variants is summarised in Table 1 below.

Table 1: Constant nominal prices for BUBA and EUBA, 2015-2019 [NZ$]

	2015-2019
BUBA	38.39
EUBA 40	40.57
EUBA 90	41.10
EUBA 180	42.06

Source: Commission's TSLRIC model for draft decision

Total annualised TSLRIC costs for the UBA increment

325. Table 2 below shows the total TSLRIC costs for the UBA increment based on our TSLRIC model for each of the five years during the regulatory period. These figures are after we have allocated common costs and shared costs between other services, as discussed in Attachment J.

Table 2: Total annualised TSLRIC costs for the UBA increment based on our TSLRIC model, 2015-2019

[NZ$, billions, nominal]

	2015	2016	2017	2018	2019
Total annualised TSLRIC costs	138.94	138.77	138.68	138.69	138.80

Source: Commission's TSLRIC model for draft decision

Converting total annualised TSLRIC costs to monthly unit TSLRIC costs

326. In this section we explain how we convert the total annualised TSLRIC costs for the UBA increment to monthly unit TSLRIC costs for each of the five years during the regulatory period.

327. As explained in Chapter 1, clause 4A of Schedule 1 of the Act requires that we must determine prices that apply throughout the geographical extent of New Zealand. As we explained there, we consider that we would only need to calculate the average of geographically non-averaged prices if we had geographically non-averaged prices to begin with.

328. This is not the case for the UBA increment – we have modelled the price of the UBA increment on a national basis. In the past we have not set different urban and non-urban prices for the UBA increment. As the TSLRIC model determines a single cost for the UBA increment without producing geographically non-averaged costs, no further calculation (to determine a national cost) is necessary. We will add that UBA increment to the geographically averaged UCLL STD price to determine the total price for the UBA service.

329. The total annualised TSLRIC costs for the UBA increment are shown in Table 2 above.

330. To calculate the monthly TSLRIC costs for each of the five years, we divided the annualised TSLRIC costs by 12, ie the number of months in a year.

331. Table 3 below presents the monthly TSLRIC costs for each of the five years during the regulatory period.

Table 3: Monthly TSLRIC costs for the UBA increment, 2015-2019 [NZ$, millions, nominal costs]

	2015	2016	2017	2018	2019
UBA increment	11.58	11.56	11.56	11.56	11.57

Source: Commission's TSLRIC model for draft decision

332. To calculate the unit monthly TSLRIC costs for each of the five years, we divided the monthly TSLRIC costs by the UBA demand profile in our TSLRIC model.

333. Table 4 below presents the monthly unit TSLRIC costs for each of the five years during the regulatory period.

Table 4: Monthly unit TSLRIC costs of the UBA increment, 2015-2019 [NZ$, nominal costs]

	2015	2016	2017	2018	2019
UBA increment	10.19	10.18	10.17	10.17	10.18

Source: Commission's TSLRIC model for draft decision

Determining the price for BUBA and EUBA

334. In this section we calculate the prices for the BUBA and EUBA variants based on the monthly TSLRIC unit costs for the UBA increment determined in the previous sections.

335. The UBA STD specifies four different variants to the UBA service: BUBA (also referred to as EUBA0) and three EUBA variants (EUBA40, EUBA90, and EUBA180), offering a real time class of service (CoS) in addition to the best efforts BUBA service.

336. The EUBA variants were included within the UBA STD to enable access seekers greater flexibility in terms of the services they can support at the retail level. Alternative services would provide further opportunities for service differentiation and therefore are likely to promote competition.[152]

337. The TSLRIC costs for UBA provide no cost differential between Basic UBA and EUBA variants. The main reason for this is that bandwidth is not a cost driver for UBA. It is therefore difficult to identify real unit cost differences between the variants.

[152] Commerce Commission "Standard Terms Determination for the designated service Telecom's unbundled bitstream access" (12 December 2007), Decision 611, paragraph [109].

338. There are a number of ways to set prices for UBA and EUBA variants. We considered the following approaches:

338.1 Approach 1: No price differential between the variants and set the price for each variant equal to the average calculated TSLRIC cost for the UBA increment;

338.2 Approach 2: Determine a price differential based on a price consisting of two components, i.e. the price per customer plus a uniform price per Mbps; and

338.3 Approach 3: Determine price differentials based on a gradient.

339. We explain each of the approaches below and our draft decision to use the gradient approach.

Approach 1: average calculated TSLRIC cost in the model

340. The first approach consists in setting the same price for BUBA and all the EUBA variants. The price set will be the average calculated TSLRIC cost for the UBA increment.

341. Our draft decision is that this approach is not appropriate. The most efficient recovery of fixed costs is unlikely to be achieved through an averaged price. We note that a price differential is consistent with current international practice.

Approach 2: One price made of two components, i.e. a price per customer plus a uniform price per Mbps

342. The second approach defines one price made of two components:

342.1 a uniform price per customer; and

342.2 a uniform price per Mbps at peak hour.

343. This approach implies that for each operator, traffic at peak hour would be measured and if an operator has, for example, 100 customers generating a total of 30 Mbps (300kbps per customer), then the operator will pay 100 multiplied by the uniform price per customer plus 30 multiplied by the uniform price per Mbps.

344. This second approach is used internationally in some countries, including France, Ireland and Italy.

345. However, this approach has two main drawbacks:

345.1 a distinguishing feature of the EUBA variants is guaranteed throughput for real time applications, and therefore traffic at peak hour is not a cost driver; and

345.2 to calculate the uniform price per Mbps, it is necessary to make traffic forecasts and these are very difficult to make, especially over five years. Alternatively, in the absence of traffic forecasts, it is necessary to adjust the price every year. In both cases, this pricing approach is volatile.[153]

Approach 3: the gradient approach

346. The third approach uses gradients to determine price differentials for UBA variants. In other words, we would set BUBA and EUBA40, EUBA90 and EBUA180 prices so that the average revenue from these products equals the average TSLRIC cost, and the difference between the prices for the variants is calculated based on an appropriate gradient.

347. The gradient aims to reflect customers' relative willingness to pay for the different variants. Prices remain cost oriented because total revenues for UBA equal the TSLRIC costs. However, price differences do not reflect specific cost differences.

348. Our draft decision is to adopt a gradient approach to determine price differentials for UBA variants. This is consistent with current international practice.

The gradient should only include regulated products

349. Before we define the gradient, we must consider which services are included in the gradient calculation. In particular, whether we only include regulated EUBA variants (EUBA40, EUBA90 and EUBA180), or also include commercial UBA variants.

350. At this stage our draft decision is to only include regulated UBA variants in the gradient calculation. There are currently no relevant commercial services to use in the gradient calculation. Furthermore the gradient relates to real time service but commercial services may relate to internet service.

351. We recognise that a consequence of this approach is that the prices for regulated UBA variants will not change with migration from regulated to commercial variants.[154] If we wished to recognise the impact of migration to commercial variants then we would need to incorporate commercial variants into the gradient.

[153] We understand that this issue is the driver of Ireland re-considering its approach.

[154] Although we note that prices for regulated UBA variants may change if migration to commercial variants alters the distribution between the regulated variants.

The gradient in place from 1 December is appropriate

352. We next consider what gradient to apply. We considered the following options:

352.1 gradient based on guaranteed throughput;

352.2 gradient based on throughput at peak hour;

352.3 gradient based on retail-minus ratios that applied before 1 December 2014; and

352.4 gradient in place from 1 December from the IPP determination, based on international benchmarking.

353. We consider each of the options below and explain our draft decision that the gradient in place from 1 December is appropriate, but we invite submissions on alternative approaches to determine the gradient to reflect price differentials for EUBA variants.

Gradient based on guaranteed throughput

354. This option uses the guaranteed throughput for each of the regulated UBA variants:

354.1 32kbps for BUBA;

354.2 32kbps plus 40 kbps for EUBA40;

354.3 32kbps plus 90 kbps for EUBA90; and

354.4 32kbps plus 180 kbps for EUBA180.

355. This means that the EUBA40 price will be 72/32 times higher than the BUBA price, the EUBA90 price 122/72 times higher than the EUBA40 price, and the EUBA180 price 212/122 times higher than the EUBA90 price.

356. A major issue with this approach is that a gradient based on throughput does not reflect customers' willingness to pay. Willingness to pay might be quite different compared to, for example, a relationship based on the guaranteed throughput of EUBA40 being 72/32 times higher than BUBA. Accordingly, this relationship may not be appropriate to reflect in STD prices.

Gradient based on throughput at peak hour

357. The throughputs quoted above are guaranteed throughputs but they do not reflect actual throughputs experienced at peak usage. Even if peak hour throughput is not a cost driver for UBA in New Zealand, we are advised by TERA that it is a cost driver in other countries. As a consequence, throughputs at peak usage could be used to calculate the gradient.

358. However, this approach has disadvantages:

358.1 it requires knowing average peak traffic for each bitstream offer (UBA variant), which is not available; and

358.2 average peak traffic changes quickly so prices could become out of date.

Gradient based on retail-minus ratios

359. This option uses historic ratios established under the former retail-minus approach. The retail-minus ratios were established by reference to retail services in the United Kingdom.

360. Given that we are undertaking a pricing review determination of prices set using the IPP of international benchmarking we consider it would be undesirable to revert to ratios set under the previous pricing principle of retail-minus.

Gradient based on price differentials in place from 1 December from the IPP determination

361. This option uses price differentials in place from 1 December from the IPP determination, which are based on international benchmarking. These will be the price differentials in place at the time of our final determination (though we note the possibility of backdating the FPP prices, as mentioned in the Introduction). We consider that continuing with the existing gradient is the best approach given that TSLRIC costs for UBA do not provide a cost differential.

362. In the UBA IPP determination, we identified that Belgium has a wholesale bitstream transport service with a real time CoS profile.[155] In order to calculate the percentage difference for the additional cost of the EUBA variants, we have calculated the percentage mark-up of the costs required to provide a real time CoS in addition to the costs of providing a best effort CoS to the Belgian distant handover point.[156]

[155] Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraph [290].

[156] We assumed a 32kbps best effort CoS as the base service on top of which we have calculated the additional costs of the real time services.

363. The gradient determined in the UBA IPP, based on Belgium, is presented in Table 5 below:[157]

Table 5: Gradient determined in UBA IPP, based on Belgium

Bitstream service	Price (EUR)	Mark-up
32kbps best effort service	4.56	
32kbps best effort service + 40kbps real time service	5.53	21.32%
32kbps best effort service + 90kbps real time service	5.77	26.57%
32kbps best effort service + 180kbps real time service	6.20	36.02%

Source: Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraph [292]

Prices determined for BUBA and EUBA variants based on the gradient approach

364. Table 6 below provides the prices determined based on our TSLRIC model and the gradient determined in UBA IPP determination.

Table 6: Prices for BUBA and EUBA, 2015-2019 [NZ$, nominal prices]

	2015	2016	2017	2018	2019
BUBA	10.18	10.17	10.17	10.17	10.17
EUBA40	12.36	12.34	12.33	12.33	12.34
EUBA90	12.89	12.87	12.87	12.87	12.88
EUBA180	13.85	13.84	13.83	13.83	13.84

Source: Commission's TSLRIC model for draft decision

Price profile

365. We need to determine the price profile for the UBA price over the regulatory period.

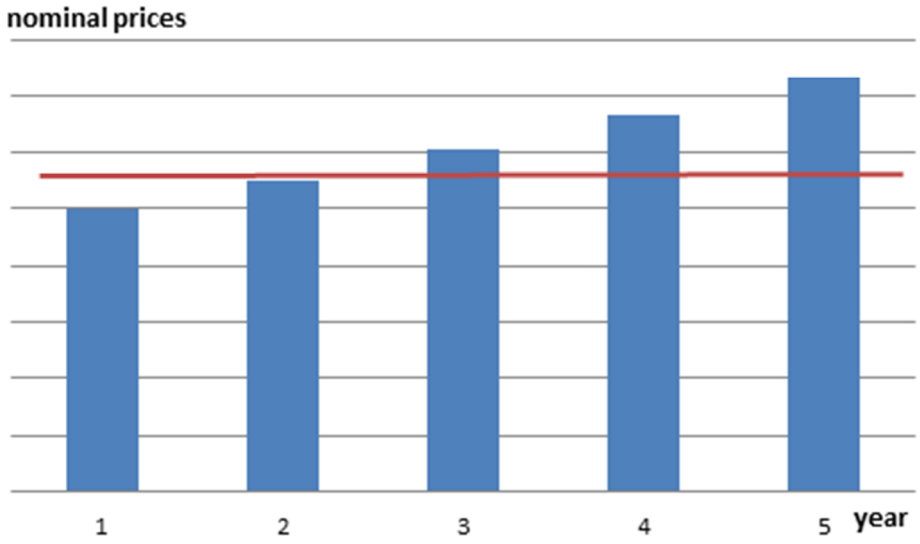
366. Our July 2014 regulatory framework and modelling approach paper set out our preference to set a constant TSLRIC-based price in nominal terms over the regulatory period.[158]

[157] The Belgian 32kbps base service is calculated assuming a 32kbps best efforts dedicated Ethernet VLAN to the regional handover point. The real time services also include a real time dedicated Ethernet VLAN.

[158] Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraphs [259] and [260].

367. The implication is that we need to determine the nominal price for each year in the regulatory period, and then levelise the prices over the regulatory period. This is illustrated in Figure 4 below. The nominal prices for a service are represented by the blue bars, and the red line represents the levelised prices. The effect of this approach is that prices are higher in the earlier years of the regulatory period, and lower in the later years, relative to an approach where prices are not levelised.

Figure 4: Illustration of price profile decision



368. Chorus agreed with our preliminary view to set a constant nominal price over the regulatory period. Chorus submitted that this is a pragmatic proposal that will provide stability over the regulatory period. Chorus submitted that it assumes that we will set a flat nominal price such that over the regulatory period it has the same net present value (NPV) as a tax-adjusted tilted annuity over the same regulatory period. [159] We note that this was our proposed approach in our July 2014 regulatory framework and modelling approach paper.[160]

369. WIK on behalf of Spark and Vodafone argued that, when a tilted annuity approach is applied, the amounts of depreciation change from period to period in step with the expected changes in the prices of the network elements. It follows that the prices based on these cost components will also have to change from one period to the next.[161]

---

159 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [145].

160 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraphs [259].

161 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [73].

370. Vodafone submitted that we should allow TSLRIC price profiles for UBA to vary across time periods. The reason was that depreciation varies from period to period based on expected changes in the prices of the network elements. Accordingly, it follows that prices based on the related cost components will therefore vary across time periods.[162]

371. We agree with both WIK's view and Vodafone's view that the nominal prices will change from one year to the next. This is illustrated in Figure 4 above by the bars. Our preference is, however, to levelise the calculated nominal prices over the regulated period. This results in a constant nominal price, illustrated by the red line in Figure 4 above. This can be implemented to ensure NPV neutrality, in the sense that the NPV of the cash flows arising from the levelised prices over the regulatory period is the same as the NPV of the cash flows arising from the modelled nominal (tax-adjusted tilted annuity) prices over this period.

372. Network Strategies queried whether our model is in nominal or real terms, and argued that there is no best method to use real or nominal costs. Network Strategies submitted that we need consistency in modelling approach. For example, if we use nominal costs in our model, we should use a nominal WACC.[163] We can confirm that our model is in nominal terms and we are using a nominal WACC.

373. In response to submissions, our draft decision is to set a constant nominal price for the regulatory period, because doing so provides price stability over the regulatory period.

374. To determine a constant nominal price, we levelise the price over the period based on the monthly unit costs determined for each of the five years.

---

[162] Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G10.1].

[163] Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 54.

375. Our formula to determine the levelised prices for UBA, for each of the five years is:

$$Price = \frac{\sum_{i=1}^{5} \frac{Price_i}{\left(1 + WACC_{posttax}\right)^i}}{\sum_{i=1}^{5} \frac{1}{\left(1 + WACC_{posttax}\right)^i}}$$

Where
- **Price** is the levelised price
- **Price$_i$** is the monthly TSLRIC unit cost determined for each of the 5 years
- **WACC$_{posttax}$** is the post-tax WACC used as an input to the TSLRIC model, applied as a discount rate
- **i** is the year of the determined price, ie year1=1, year2=2….year5=5

375.1 This formula allows for the same time cost recovery and stable prices over the regulatory period.

375.2 The effect of this formula is we set a constant nominal price over the regulatory period such that the stream of cash flows arising from this price has the same NPV as the stream of cash flows arising from the nominal prices (the latter being a tax-adjusted tilted annuity) over the regulatory period.

375.3 We consider that for the hypothetical efficient operator, this NPV neutrality requires that the post-tax WACC is applied.

376. Table 7 below presents the constant nominal prices for BUBA and EUBA variants.

Table 7: Constant nominal monthly prices for the UBA increment, 2015-2019 [NZ$]

	Price
BUBA	10.17
EUBA 40	12.35
EUBA 90	12.88
EUBA 180	13.84

Source: Commission's TSLRIC model for draft decision

Section 18 considerations to setting the price for UBA

377. In this section we consider whether our requirement to make a determination that we consider best gives, or is likely to best give, effect to the section 18 purpose statement will move us away from setting our price as the central estimate of the TSLRIC price that is produced by our model. We conclude it does not.

378. In summary, as explained in Chapter 3 of the UCLL FPP draft determination, we consider there is a rationale for an adjustment to the price from our modelled estimate of the TSLRIC price to reflect asymmetric costs.[164] However, we believe making any adjustment to the UCLL price is likely to best give effect to the section 18 purpose statement in respect of asymmetric costs, rather than through any adjustment to the UBA increment.

379. In particular, were the concerns with asymmetric costs to reside with any migration effect to other networks, the UCLL price will more directly address that risk. The UBA increment may have two potentially conflicting effects on migration:

    379.1 in combination with the UCLL price it will determine the price of access to Chorus' network relative to alternative networks. Therefore a higher price will make alternative networks relatively more attractive to end-users; and

    379.2 it will directly affect the incentives for access seekers to unbundle Chorus' copper network and, potentially, thereby reduce migration to alternative networks.

380. Consequently our draft decision is that any uplift that should occur to address asymmetric costs with respect to migration would remain with the section 18 considerations for the UCLL service and we discuss these considerations in more detail within the UCLL FPP draft determination.

381. This draft decision is different to the approach we took in our most recent section 30R reviews of the UCLL and UBA IPP prices, where an uplift was applied to the UBA IPP price only.[165] Our approach in the UCLL and UBA IPP determinations reflected our evolving thinking regarding asymmetric costs after the 2011 amendments to the Act – the UBA IPP determination implementing the new cost-based pricing principle was completed almost a year after the UCLL IPP determination, and took account of further submissions and expert advice on this point.

382. We consider that the approach we are taking in the FPP draft decisions regarding where any uplift would be most effective is preferable.

383. Our FPP TSLRIC modelling provides us with a central estimate of the 'true' TSLRIC cost for the UBA services, from which we can determine a range with an upper and lower bound. Although the model is conceptually capable of expressing a range, we have not done so in our draft pricing review determination, as we consider that that central estimate is appropriate for section 18 reasons.

---

164 As noted in the UCLL FPP draft determination, we have previously referred to this concept as both "asymmetric risk" and "asymmetric costs". In order to differentiate this concept from the asymmetric risks associated with asset stranding, throughout this draft determination we refer only to "asymmetric costs" in regards to this particular concept.

165 Commerce Commission "Final determination on the benchmarking review of the unbundled copper local loop service" (3 December 2012), NZCC 37; Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20.

384. As outlined above, we do not consider a section 18 uplift is appropriate in the current circumstances. We consider that this qualitative assessment is open to us under section 18.

385. If however we are persuaded by submissions that a section 18 uplift would be appropriate, we consider that it would be open to us to move above the central estimate within the upper bound.

Further considerations on whether our TSLRIC estimate best gives, or is likely to best give, effect to the section 18 purpose statement

386. We have further considered whether there any other reasons why we are likely to best give effect to section 18 through an adjustment to the UBA increment. This is most directly relevant to whether incentivising unbundling promotes competition to the long-term benefit of end-users.

387. In the UBA IPP, we noted that the UBA increment is the most important regulated price for incentivising unbundling. We also noted that unbundling has increased competition and brought significant benefits to end-users.[166]

388. We note that existing unbundlers have been protected to some degree by the transitional arrangements that that applied until 1 December 2014. In particular, the arrangements have provided the opportunity for unbundling investments to be recovered. Our draft decision on the UBA increment suggests that significant recovery has, de facto, occurred.

389. In the UBA IPP we considered that there may be some benefit to an uplift to the UBA increment to promote competition through unbundling, although this depended on certain assumptions regarding Spark's behaviour in respect of unbundling, and as such the benefit was highly uncertain.[167] We concluded the case for an uplift was based on considerations of dynamic efficiency and asymmetric costs, and applied to the total UBA price (ie UCLL plus the UBA increment).[168]

166 Commerce Commission "Unbundled Bitstream Access Service Price Review - Update on matters relevant to the UBA price review" (13 August 2013), paragraph [87].

167 Commerce Commission "Unbundled Bitstream Access Service Price Review - Update on matters relevant to the UBA price review" (13 August 2013), paragraph [92].

168 Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraph [231].

390. In this respect we note that historically, in the context of a vertically integrated incumbent Telecom and retail-minus price regulation on UBA, unbundling has been important in promoting competition and in turn through competition acting to provide lower prices and higher quality broadband services to end-users. Looking forward we expect to see increasing migration to alternative fibre networks. We continue to hold the view that an additional uplift to the UBA increment to actively promote unbundling would not be in the long-term best interest of end-users in this context. In particular we would need to be persuaded that additional benefits to consumers from quality or other factors outweighed the direct cost caused by such an uplift.

Conclusion on section 18

391. In conclusion, we consider that the unadjusted estimate of the TSLRIC price for the UBA increment produced by our model is likely to best give effect to the section 18 purpose statement.

Relativity

We must consider the relativity between the UCLL service and the UBA service

392. Section 19(b) requires us to consider any additional matters specified in Schedule 1 regarding the application of section 18. For the UCLL/UBA service, that additional matter is the relativity between the UCLL service and the UBA service.

393. The UCLL and UBA services relate to each other because access seekers can "unbundle" a cabinet or exchange. To unbundle, access seekers install their own DSLAM in the cabinet/exchange. To provide a broadband service to end-users served by that cabinet/exchange, they only need to purchase the UCLL service from Chorus and not the UBA service. Where access seekers do not unbundle, then they purchase the UBA service from Chorus in order to provide a broadband service to end-users.

394. The relativity of the price of UCLL service to the price of UBA service will therefore affect incentives to unbundle. The price of UBA service is the price of UCLL service plus the price of additional costs incurred in providing the UBA service, which we term here "the UBA increment". The greater the UBA increment is, the greater the incentive on access seekers to unbundle. The UBA increment is the cost access seekers avoid by unbundling.

395. The Act requires us to consider relativity, including incentives to unbundle, regarding the application of section 18, and section 18 is concerned with competition for the long-term benefit of end-users.[169] The ability of access seekers to unbundle allows access seekers to compete with Chorus in relation to the UBA service. Access seekers can purchase the UBA service from Chorus or install their own DSLAMs to avoid the need to purchase that service.

[169] Telecommunications Act 2001, s 19(b) and Schedule 1, Part 2, Subpart 1.

396. In our further consultation paper of 14 March 2014, we sought views on the role of relativity throughout the FPP pricing review determination processes for the UCLL and UBA services, and in particular whether parties consider that there are additional matters or evidence that we should take into account regarding relativity in the FPP pricing review determinations.[170]

397. In its submission, Chorus disagreed with the proposition that applying TSLRIC pricing rules to the UCLL and UBA services can be assumed on its own to satisfy the relativity consideration. In its view, relativity should be used in the exercise of judgement that is involved in applying TSLRIC and making a decision that best promotes section 18.[171] Chorus argued that relativity requires us to "…grapple with the ladder of investment and copper to fibre migration implications",[172] and lists a range of factors to which we "will presumably wish to turn [our] mind" as follows:[173]

> …UCLL in the market, the absence of SLU unbundling, that some say the ladder of investment is dead, the significant shift in the industry structure and FTTH policy and implications for migration to fibre and other change in the industry, what [the Commission] considers is efficient investment and what it does not and how [the Commission] makes those judgements.

398. Chorus submitted that the relativity consideration has further complexity if the UCLL STD and SLU STD prices differ (as they do under the IPP benchmarked approach), because in those circumstances there is a different uplift/differential between SLU and UBA, and between UCLL and UBA.[174] A related point in Chorus' submission is whether the UBA price is the same for cabinetised and non-cabinetised lines (as is currently the case), or disaggregated across UCLL and SLU lines.[175] On this point, we do not consider that it would be in the long-term benefit of end-users to have different prices for UBA on cabinetised and non-cabinetised lines, which we explain in Chapter 3 of the UCLL FPP draft determination.

---

170 Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014), paragraph [4].

171 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraphs [151]-[153].

172 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraph [153].

173 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraph [154].

174 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraphs [34] and [164].

175 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraph [139.2].

399. Chorus also submitted that we need to ask whether the relativity consideration is sufficient to allow efficient investment, taking account of density considerations and having regard to relevant matters to form that view.[176]

400. CallPlus agreed with Chorus that applying TSLRIC pricing rules to the UCLL and UBA services cannot be assumed on its own to maintain relativity considerations.[177] CallPlus submitted that we should favour investment when considering relativity. CallPlus referred to:[178]

> …competitors on the ladder whose business models rely heavily on their ability to leverage their unbundled investments in order to create compelling consumer propositions both copper and fibre. Without the ability to refresh, keep current and make a return on those investments the ability of those competitors to transition to the fibre world will be seriously impacted.

401. Conversely, Spark submitted that prices determined under TSLRIC were not always susceptible to further adjustment on relativity grounds.[179] Spark submitted that although the ladder of investment may have formed part of the policy framework for the 2006 reforms to the Act, it has little relevance to today's legislative framework following the 2011 amendments.[180] In Spark's view, relativity requires us to take a consistent approach to determining a TSLRIC cost-based price of each relevant service.[181]

---

176 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraphs [35] and [140].

177 CallPlus "Cross Submission on the further consultation on issues relating to chorus' UCLL & UBA services" April 2014, paragraph [22].

178 CallPlus "Cross Submission on the further consultation on issues relating to chorus' UCLL & UBA services" April 2014, paragraph [26].

179 Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [77].

180 Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [80].

181 Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [83].

402. We further consulted on relativity in our July 2014 regulatory framework and modelling approach paper, where we provided a preliminary view that "…the relativity consideration guides us less towards attempting to promote further investment in the form of unbundling, and more towards the efficiency aspect of the section 18 purpose."[182] Alongside this paper we also published an expert report from Professor Ingo Vogelsang, which examined the effects of the UCLL contribution to the UBA aggregate price on competition.[183] This complements the expert advice provided during the UBA IPP pricing review.[184]

403. We have received further submissions on our approach to relativity laid out in the July 2014 regulatory framework and modelling approach paper and on the expert report of Professor Vogelsang. Several submitters supported our preliminary position without further commenting on the framework of relativity, including Chorus,[185] Spark[186] and Vodafone.[187]

404. CallPlus submitted that relativity remained a critical issue for its business and consequently an important consideration for competition in New Zealand.[188] CallPlus and Orcon had previously submitted that, while they accept that if both the UCLL and UBA prices are cost-based then this should provide for relativity, we should consider the risk that the prices calculated for the FPP may differ from true forward-looking costs and may result in margin squeezes that could have an anti-competitive effect.[189]

---

182 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [79].

183 Ingo Vogelsang "The effects of the UCLL contribution to the UBA aggregate on competition for the long-term benefit of end-users in New Zealand Telecommunications markets" (2 July 2014).

184 Ingo Vogelsang ""What effect would different price point choices have on achieving the objectives mentioned in s 18, the promotion of competition for the long-term benefit of end-users, the efficiencies in the sector, and incentives to innovate that exist for, and the risks faced by investors in new telecommunications services that involve significant capital investment and that offer capabilities not available from established services?" (5 July 2013).

185 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" (6 August 2014), paragraph [210].

186 Telecom ,"UCLL and UBA FPP: consultation on regulatory framework and modelling approach" (6 August 2014) paragraph [78]

187 Vodafone "Comments on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" (6 August 2014) [paragraph E1.5]. Vodafone noted that it had a different view on the nature of efficiencies at play. Vodafone, "Cross-submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and CULL service" (20 August 2014), paragraphs [B3.1]-[B3.4]. We believe this issue concerns the implementation of relativity rather than the framework for addressing relativity.

188 CallPlus Limited "Submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA & UCLL services" (6 August 2014), paragraphs [3]-[4].

189 CallPlus and Orcon "Submissions by CallPlus and Orcon following the further consultation paper and the workshops" (11 April 2014), paragraphs [10.1]-[10.19].

405. Wigley and Company raised several concerns with the Commission's preliminary view and approach to relativity. In particular it raised the consideration of margin squeeze and the danger of asymmetric costs of inadvertently setting the UCLL and UBA prices such that relativity was too small. To implement this it advocated considering further the use of a real world access seeker to test a "relativity standard".

406. Wigley and Company further submitted that allowing for relativity does not necessarily increase prices to end-users because the UCLL price could be reduced rather than the UBA price increased.[190]

407. Our view remains that the correct position on relativity may lie somewhere in between the approaches articulated by the various submitters. Relativity regarding the application of section 18 is a mandatory consideration in its own right under the Act (s 19(b)). It is the relativity of the price of UCLL services to the price of the UBA service that is relevant to incentives to unbundle. Relativity in respect of uniform incentives for unbundling across cabinetised and non-cabinetised lines is reflected in our approach to determining the SLU price such that the regulated price is the same across cabinetised and non-cabinetised lines, as discussed in the UCLL FPP draft determination.

408. In relation to CallPlus' submission, we note that the 2011 amendments to the Act were expected to dis-incentivise further unbundling in urban areas, but that existing unbundlers were protected to some degree by the transitional arrangements that would apply until 2014.[191,192]

409. We note that the ladder of investment is not only reflected in the relativity principle, but in the staggered nature of the designated access services described in Schedule 1 of the Act.[193]

---

190 Wigley+Company Solicitors "Submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL", August 2014, paragraphs [234]-[255].

191 Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [82].

192 Our draft decision on the increment between the UCLL and UBA prices would suggest that significant compensation has, de facto, occurred over this period.

193 Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014), Attachment A (James Every-Palmer "FPP determination: Issues re service description and the modern equivalent asset" (12 March 2014)), paragraphs [23]-[27].

410. As we have previously noted, Spark's submissions on the UBA IPP Price Review Conference illustrated that there are other drivers, apart from unbundling, that are relevant to access seekers' incentives to invest in local loop services.[194] In particular, the migration to fibre is affecting access seekers' investment intentions in a way that means that we cannot be sure that any incentives we attempt to introduce through these pricing review determinations in favour of unbundling will in fact lead to unbundling, or will instead simply result in end-users paying more. In terms of our obligations under sections 19 and 18, we must do what we consider best gives, or is likely to best give, effect to promoting competition in telecommunications markets for the long-term benefit of end-users. Accordingly, we would need to be persuaded that attempting to incentivise unbundling would promote efficient investment decisions in a way that is likely to benefit end-users.

411. For similar reasons and because we are considering the wider efficiency effects as well as competitive effects when considering the section 18 purpose statement, we do not believe setting relativity against the actual costs of an existing access seeker would necessarily be in the long-term benefit of end-users. We note also that, as mentioned above, the transitional arrangements in respect of the UBA price have allowed unbundlers some compensation in respect of their unbundling investments.

[194] Commerce Commission "Unbundled Bitstream Access Service Price Review - Update on matters relevant to the UBA price review" (13 August 2013), paragraph [104]. See also John Wesley-Smith's comments on behalf of Telecom at the UBA Price Review Conference on 13 June 2013 (Transcript at 240): "I want to be really clear about this, we do not want to undertake large-scale unbundling. We see that as creating a disincentive for migration to fibre. It requires a large upfront investment on Telecom's part which is not in keeping with an overall strategy of driving our customer base towards fibre. That is - that's categorical… the greater the increment above UBA cost that you put the IPP and the FPP at, the greater the incentive on us to unbundle will be, and we will resist that for as long as we can because we want to support UFB."

Attachment A: Demand for UBA

Purpose

412. This attachment sets out our earlier views, industry responses, subsequent analysis and draft decisions relating to the demand for UBA.

Our draft decisions

Demand footprint

413. We are modelling the UBA footprint on Chorus' actual UBA demand.

Demand take-up and migration

414. Our draft decision is to model a hypothetical efficient operator that does not need to compete to gain or retain customers. Accordingly, we are modelling:

414.1 instant take-up of demand on the hypothetical efficient operator's network;

414.2 a fully loaded network – 100% demand; and

414.3 constant demand during the regulatory period.

Demand footprint

415. The demand footprint of the network determines the number of connections over which total modelled costs will be spread, and informs the number of assets required to provide the UBA service.

416. Chorus has submitted that the hypothetical efficient operator should use Chorus' copper inputs, but that potential fixed wireless in Rural Broadband Initiative (RBI) areas was not relevant to our calculation. Chorus' argument for excluding RBI was that end-users within the geographic scope of the UBA STD in RBI fixed wireless areas are currently served by Chorus using ADSL or ADSL2+.[195]

417. Spark agreed that we should model UBA incremental to the local loop network, but considered that the degree to which the UBA service can be assumed to be based on the existing layer 1 services will depend on our UCLL pricing review approach.[196] Spark also considered that wireless technologies may have a role in determining an optimised MEA.[197]

---

195 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled bitstream access service in accordance with the Final Pricing Principle" 21 February 2014, paragraphs [24]-[28].

196 Telecom "Process and issues paper for determining a TSLRIC UBA price Submission" 21 February 2014, paragraph [16].

197 Telecom "Process and issues paper for determining a TSLRIC UBA price Cross submission" 5 March 2014, paragraph [23].

418. Vodafone did not support our preliminary view that the appropriate MEA for the UBA service should utilise Chorus' copper based inputs, potentially with RBI fixed wireless in place of copper in some rural areas. That was because it considered that "a single (optimised) MEA should be adopted for the cost model for both the UCLL and UBA services" and that "a TSLRIC cost-price should not permit Chorus to be compensated for any inefficiencies in its underlying copper network at the layer 2 level (the UBA uplift), as much as it should not be compensated for inefficiencies in the layer 1 level (the UCLL input)."[198]

419. As the modelled UBA service must be capable of working over Chorus' copper infrastructure, our view is that the hypothetical efficient operator will use Chorus' copper based inputs.

420. Our draft decision is to limit our consideration of the hypothetical efficient operator to Chorus' copper network, rather than adding fixed wireless, as the former is the network presupposed by the service description in the Act.

421. Our view is therefore that the modelled UBA footprint should match Chorus' actual demand for UBA.[199]

Demand take-up and migration

422. Demand take-up and migration is relevant for calculating unit costs over time. Our modelling assumptions will determine how rapidly the hypothetical network will reach full load, and then whether, as the result of changes in the market, migration to or away from the network should be modelled.

423. In the July 2014 regulatory framework and modelling approach paper we stated that we considered an EEO (Equally Efficient Operator) level of demand to be appropriate for UBA because it will be more likely to achieve a position of competitive neutrality, where unbundling will occur if it is efficient to do so. This involves modelling 100% of demand for the UBA service.[200]

424. We also stated in relation to UCLL, but we consider that it applies equally to UBA, that if migration away from Chorus' actual network to alternative networks is included within the model, this again will not reflect an efficient outcome.[201]

---

198 Vodafone New Zealand Limited "Submission to the New Zealand Commerce Commission - Comments on process and issues paper for the unbundled bitstream access service (UBA) final pricing principle" 21 February 2014, paragraph [D3].

199 Our treatment of RBI funding will be to remove capital costs relating to the number of DSLAMs and active cabinets deployed by Chorus under the RBI initiative.

200 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [245].

201 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [235].

425. Spark and WIK for Telecom and Vodafone agreed with the approach set out in the July 2014 regulatory framework and modelling approach paper.[202] However, Chorus and CEG for Chorus disagreed with our suggested approach of 100% of demand for the UBA service.[203]

426. Chorus argued that 100% demand, with no migration to other networks during the regulatory period, will result in modelled demand including Chorus' copper network, Chorus' UFB network, and services on non-Chorus LFC networks.

427. We consider that our assumptions of instant take-up with no migration are efficient because they result in a price that would cover for any piece-meal refurbishment, replacement, or expansion of the hypothetical efficient operator's network.

428. In this regard, Professor Vogelsang advised that:[204]

> TSLRIC is conceptually based on an expanding market, where additional capacity is being installed. Since a large portion of the copper-related costs are sunk and some overcapacities develop, true forward-looking costs will therefore be much lower than TSLRIC as traditionally calculated by regulators. Also in this stage of the market an operator in a competitive environment would wish to take advantage of wholesale demand to defend its position against competing technologies. But if TSLRIC were still measured based on the old technology this would lead to price increases because of the smaller quantity base over which then fixed costs would have to be spread. Summing up, in the face of long-term declining demand relying on the TSLRIC standard for the old technology would induce unnecessary over-capacities and allocative inefficiencies in copper networks.

429. We agree with Professor Vogelsang, and continue to hold the views that, modelling instant take-up to a fully loaded network and constant demand during the regulatory period is appropriate.

We have considered section 18 in reaching our decision

430. We recognise that as we are using actual Chorus demand for UBA, this will form a scale benchmark for unbundlers. We consider that this decision, in combination with a MEA provided over a FTTN network configuration, is likely to best give effect to the section 18 purpose statement. We discuss our consideration of section 18 in more detail in Chapter 3.

---

202 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [140]; and WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [58].

203 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph, paragraphs [81]-[107]; Competition Economists Group "Demand in forward-looking cost models" August 2014, paragraphs [1]-[80].

204 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" (25 November 2014) paragraphs [10]. Also see paragraphs [78]-[80].

Attachment B: Network optimisation

Purpose

431. This attachment sets out our draft decisions on the:

431.1 degree of optimisation in the model;

431.2 optimisation of exchange buildings in the model;

431.3 optimisation of active assets; and

431.4 use of private roads, motorways, access ways and railway corridors in the model.

Our draft decisions

Degree of optimisation

432. As is common internationally, we have adopted a modified scorched node approach for the modelled network. Accordingly, TERA has modelled an "optimally structured network" which is constrained by the existing number of nodes and their existing locations, and follows the road network.

433. TERA has recommended minor modifications to the exchange boundaries, as defined by Chorus, to take into account the location of notional exchanges and network connectivity constraints imposed by the adoption of a theoretical network that is based on the road network.[205] We agree with TERA's recommended approach.

Optimisation of exchange buildings

434. We have modelled the size of exchange buildings based on a bottom-up calculation of the required space and equipment.

435. Chorus has also provided data regarding relevant modern sites consisting of blueprints of a number of sites and linking their current sites with the relevant modern buildings. Where available, TERA has used this information alongside its bottom-up calculation to model the most efficient deployment.

Optimisation of active assets

436. The active assets in the core model have been optimised based on the relevant demand. Accordingly, TERA has calculated the necessary number of assets required to meet that demand. As such, the power consumption and the air-conditioning requirements reflect the modern assets being modelled.

[205] For a list of situations where TERA has made modifications see TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services – Model Reference Paper" November 2014, p. 19.

Treatment of private roads, motorways, and access ways

437. The model includes use of motorways, private roads and access ways as, in our view, an efficient operator would be likely to make use of these routes where it is efficient to do so.

Degree of optimisation

438. In December 2013 we set out the following approaches to optimising the modelled network:[206]

438.1 no optimisation (which occurs in a top-down or bottom-up approach). Under this option, the number, location, topology and function of exchanges and cabinets in the current network are retained in the analysis. Additionally, the existing network infrastructure (for instance ducts and poles) is also retained and the network is not optimised to reflect projected demand;

438.2 complete optimisation ("scorched earth"). Under this option, the network is fully optimised. This scorched earth approach allows complete redesign of the network, without considering any past investment and existing node locations/numbers. This approach removes all of the inefficiencies that may have arisen due to the historical development of the network. However, this approach may not reflect a number of real world issues such as the sunk, irreversible nature of some of the investments that the regulated operator has made, such as the number and the location of local exchanges;

438.3 scorched node optimisation. This approach lies midway between the previous two options. Under this option, the number, locations and functions of major network nodes (eg exchanges) are left as they are. The access network is then optimised with respect to the number, location and function of the minor nodes (eg cabinets) and the efficient routing and dimensioning of the local access network between these points and end-users' premises. This is therefore a trade-off between efficiency and real world/historic investment considerations; or

438.4 modified scorched node optimisation. This option is a variant of the scorched node approach. Under this approach, there is a greater degree of flexibility on the level of network scorching that occurs.

[206] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [93]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

439. We noted that a modified scorched node approach is widely used internationally by regulators. The approach has significant practical advantages as it corresponds to a more realistic efficiency standard and acknowledges (to a degree) real world investment decisions made by the network operator, while allowing for optimisation where efficiencies can be identified. It also allows for a greater degree of flexibility in approach.[207]

440. Wigley and Company, on behalf of Orcon, submitted that the Act requires us to model the MEA using a scorched earth approach, as any other approach would not reflect forward-looking costs.[208]

441. We disagree. Forward-looking costs reflect the costs that a network operator would incur if it built a new network today using assets collectively referred to as the MEA. As we noted in Chapter 1, the Act affords us discretion in the degree of optimisation built into the model.

442. We consider both a scorched node or modified scorched node level of optimisation to be consistent with "forward-looking". Our view is that while a scorched earth approach is also consistent with a forward-looking approach, we prefer the modified scorched node approach as better suited to meet our TSLRIC objectives. In particular:

    442.1 a scorched earth approach may set an unrealistic standard for incremental build-outs, for which a modified scorched node approach is better suited. Given a national roll-out is less likely than an incremental build, we consider that a modified scorched node approach is likely to better promote efficient investment; and

    442.2 regulators in other countries have also typically adopted a scorched node or modified scorched node approach.[209] In our view, a modified scorched node approach therefore better aligns with our TSLRIC objective of predictability, including the fact that it is an orthodox approach.

443. Accordingly, we have adopted a modified scorched node approach for the modelled network. This means modelling an "optimally structured network" which is constrained by the existing number of nodes and their existing locations and follows the road network.

444. TERA has recommended minor modifications to the exchange boundaries as defined by Chorus to take into account the location of notional exchanges and network connectivity constraints imposed by the adoption of a theoretical network that is based on the road network. We agree with TERA's recommended approach.

---

207 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [95]. See also Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" (7 February 2014), paragraph [8].

208 Wigley & Co Solicitors "UBA AND UCLL FPP Price Review Determinations – Memorandum for Cross-submissions on behalf of Orcon" 30 April 2014, paragraphs [2.1]-[2.26].

209 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [94].

445. TERA's model reference paper sets out the situations where modifications have been made to the scorched node approach, and why.[210]

Optimisation of exchange buildings

446. As a consequence of network equipment becoming smaller in size and exchange equipment no longer being used by Chorus, a number of Chorus' buildings will not be fully utilised leaving empty space within the buildings. This raises the issue of whether to maintain the size of Chorus sites to reflect the historical deployment or to model optimised sites that reflect what a hypothetical efficient operator would deploy, given the modern equipment available.

447. Modelling the actual size of Chorus' sites and basing the cost on this is equivalent to a top-down approach to costing buildings, where the costs are based on the cost of the actual buildings and on Chorus providing a service it no longer provides (PSTN-voice).

448. We consider that adopting this approach is likely to overestimate the cost for a hypothetical efficient operator, as it will include costs which are not relevant given the modern equipment available and the services provided. In addition, we would expect that with ongoing technological development these larger sites would not be required.

449. Modelling optimised sites and basing the cost on this will be equivalent to a bottom-up approach to costing buildings, where the costs are based on the space required for the services provided.

450. Accordingly, our approach is to model the size of buildings based on TERA calculating what is required given the modelled demand of the services provided and the modern equipment required to provide those services. We consider that this approach is consistent with how a hypothetical efficient operator would dimension exchange buildings and cabinets.

451. Basing the calculation of the size and therefore cost of required sites in the model on a bottom-up approach, reflects the efficient costs of building an equivalent service today as we consider that a hypothetical efficient operator would not be deploying sites larger than required.

452. Chorus has provided us with data regarding relevant modern sites consisting of blueprints of a number of sites and linking their current sites with the relevant modern buildings. Where available, TERA has drawn on this information to determine what, in its expert opinion, is the most efficient deployment.

[210] TERA Consultants "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services – Model Reference Paper" November 2014, p. 19.

Optimisation of active assets

453. The active assets in the core model have been optimised based on the relevant demand. Accordingly, TERA has calculated the necessary number of assets required to meet that demand. As such, the power consumption and the air-conditioning requirements reflect the modern assets being modelled.

Use of private roads, motorways and access ways in the model

454. As we note above, the optimised network follows the road network. Models overseas often exclude use of motorways as gaining access is generally prohibitively difficult. However, in New Zealand, network operators have access to motorways under the Act which defines a road as:[211]

> **road** includes—
>
> (a) a street and any other place to which the public have access, whether as of right or not; and
>
> (b) land that is vested in a local authority for the purpose of a road as shown on a deposited survey plan; and
>
> (c) all bridges, culverts, ferries, and fords that form part of any road, street, or any other place referred to in paragraph (a) or paragraph (b).

455. The National Code of Practice for Utility Operators' Access to Transport Corridors (legislated under the Utilities Act 2010), provides a mechanism for an application for a utility operator to have access to carry out works on a motorway corridor by applying for a Corridor Access Request.[212] Information provided by the telecommunication companies shows that fibre network is regularly placed on private land and motorways.[213] While there is no automatic right of access for utility companies to work on roads, we consider that it is common practice in New Zealand for telecommunications cables (copper and fibre) to be installed in road, rail and motorway corridors.

456. Accordingly, our model includes use of motorways as a hypothetical efficient operator would be likely to make use of motorways where it is efficient to do so. There are, however, likely to be additional costs incurred in laying fibre along motorways (consent and traffic management costs). Our model has also made use of private roads on the basis that a hypothetical efficient operator would pay consent costs and obtain access to lay fibre on private land where efficient to do so. Consequently, TERA have included a degree of weighting to minimise the use of private roads and motorways when calculating the shortest path from an individual property to an exchange building.

---

211 Telecommunications Act 2001, s 5.

212 National Code of Practice for Utility Operators' Access to Transport Corridors, paragraph [4.1.1].

213 Notice to Supply Information to the Commerce Commission Sections 98(a) and (b) Commerce Act 1986, 17 April 2014, paragraph [6.5].

Attachment C: Asset valuation

Purpose

457. This attachment outlines our earlier views, submissions, subsequent analysis and draft decisions regarding the asset valuation methodology used in our TSLRIC model. A key aspect of this is how we treat reusable assets, and civil engineering assets, such as ducts and trenches, that are unlikely to be replicated.[214]

Our draft decision

458. Our draft decision is to use optimised replacement cost (ORC) as our asset valuation methodology. We have not differentiated between reusable and non-reusable assets. The main reasons for this are:

458.1 we consider that adopting an alternative methodology would weaken the predictability of the regulatory framework. Such a move can have longer-term costs to end-users from its adverse impact on investment incentives; and

458.2 in our view, in practice, the alternative methodologies have limitations which may impact on their potential benefits. Most notably failure to recognise the opportunity costs of fully depreciated assets that are still in use.

We considered the asset valuation methodologies presented in submissions

459. In our July 2014 regulatory framework and modelling approach paper, our preliminary view was to value all assets at ORC, whether assets are reusable or not.

460. We based that preliminary view to value all assets at ORC on our concern to respect reasonable investor expectations.[215] As we have explained in Chapter 1, we no longer use the concept of "reasonable investor expectations" as an independent consideration when considering what best gives effect to the section 18 purpose statement. Our approach to the application of TSLRIC is to give weight to greater predictability of approach, by generally adopting an orthodox TSLRIC approach, but we no longer attempt to identify and give weight to reasonable investor expectations as a separate exercise.

461. Accordingly, we have reconsidered our preliminary views regarding asset valuation without a particular concern to respect reasonable investor expectations. We have reconsidered asset valuation under the regulatory framework outlined in Chapter 1. We seek your views on our reasons for our draft decision, which are outlined below.

---

214 We consider reusable assets as civil engineering assets owned by Chorus, and not third party assets.

215 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraphs [80], [86], [126], [147]-[148].

462. We received submissions outlining a number of asset valuation methodologies available to us, including the:

462.1 Anchor pricing methodology;

462.2 Dual asset valuation methodology, with ORC for non-reusable assets and historical indexation for reusable assets;[216]

462.3 Depreciated optimised replacement cost (DORC); and

462.4 Optimised replacement cost (ORC).

463. We have considered each of these asset valuation methodologies.

We do not consider that modelling forward-looking costs requires us to use an optimised replacement cost methodology

464. Chorus has submitted that we can only interpret the words “forward-looking costs” in the Act’s definition of TSLRIC as requiring current replacement costs[217] or ORC.[218] Other submitters suggest other approaches to asset valuation are open to us, such as DORC, and that we should adopt those approaches.

465. Submissions, in response to our July 2014 regulatory framework and modelling approach paper, re-emphasised the difference between ORC and the modifications to the asset valuation methodology recommended by the European Commission (EC) and the regulator in Switzerland.

466. We disagree with Chorus that the words "forward-looking" in the Act's definition of TSLRIC mean we are limited to only using current replacement costs or ORC to value all the assets in our model. We consider that forward-looking TSLRIC models can apply other approaches to asset valuation and it is open to us to choose such an approach.

---

216 This is the methodology recommended in the European Commission’s (EC) new Guidelines.

217 Chorus "Submission in response to the Commerce Commission’s Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [266]. See also Chorus "Submission in response to the Commerce Commission’s Process and issues paper for determining a TSLRIC price for Chorus’ unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [78]. See also Analysys Mason "Report for Chorus - Response to Commission" 12 February 2014, pp 1-4.

218 Chorus "Submission in response to the Commerce Commission’s Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [269].

We consider that any asset valuation methodology should consider opportunity costs

467. WIK submitted that "reusable legacy civil engineering assets still in use but fully depreciated are not to be included in the RAB".[219]

468. CEG argue that if an asset is still being used it has not reached the end of its life. It is, therefore, not fully depreciated in any meaningful economic sense.[220] In this regard, CEG argue that "One significant (and economically incorrect) aspect of WIK's proposal to value reusable assets is its view that fully depreciated assets should be excluded."[221]

469. Frontier expressed a similar view to WIK:[222]

> Typically in the access network there are assets of over 50 years, such as ducts, which are still used, even where the assumed asset life is shorter than this. Similarly copper cables, with a typical design life of 20 years, are not currently being replaced meaning that a number of cables may be fully depreciated. The investment in fully depreciated assets will already have been recovered through downstream prices. Including such assets in the asset base used to set prices will result in an over-recovery of costs.

470. We agree with CEG. We think it is incorrect to exclude assets that are unlikely to be replicated, but still in use. If an asset is still in use, it should be included.

471. Professor Vogelsang noted that using the dual asset valuation methodology would mean that fully depreciated assets would no longer be valued. This dual methodology does not recognise the opportunity costs of such assets. Professor Vogelsang advised that if we were to allow for re-use in a TSLRIC context we would have to calculate the remaining lifetime of such facilities and calculate the forward-looking costs based on a later replacement.[223]

472. We consider that opportunity costs are important to incentivise efficient investment decisions. As such, for the purpose of TSLRIC we consider that our asset valuation methodology should recognise opportunity costs and include assets that are fully depreciated, unlikely to be replicated, but still in use.

---

219 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [16].

220 Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraphs [33]-[35].

221 Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraph [33].

222 Frontier Economics "Cross-submission on UCLL TSLRIC modelling principles - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 16.

223 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 25 November 2014, paragraphs [15] and [90].

We prefer optimised replacement cost

473. Our draft decision is to use ORC to value the assets of the hypothetical efficient operator.

474. This is unchanged from our preliminary view in our July 2014 regulatory framework and modelling approach paper, which was to value all assets at ORC, whether assets are reusable or not.[224] Our reasons, are:

    474.1 ORC is consistent with the interpretation of forward-looking costs in the context of TSLRIC;[225]

    474.2 ORC is consistent with our previous approach to TSLRIC and therefore our TSLRIC objective of predictability;[226] and

    474.3 in our view ORC is likely to best incentivise the efficient build or buy choice and so is consistent with our objective of efficient investment.[227]

We consider that accumulated gains from providing UBA is not relevant to our TSLRIC modelling exercise

475. One of the main reasons the EC recommends a dual asset valuation methodology is to avoid over-recovery. WIK raised this in its submission, noting that the EC's recommended methodology avoids the risk of a cost over-recovery because major parts of the legacy civil infrastructure are often fully depreciated. The locking-in of the asset base ensures that once an asset is fully depreciated, this asset is no longer part of the asset base.[228]

476. Submissions also argued that using only ORC may result in windfall gains for Chorus:

    476.1 WIK recommended that compensation for ducts and poles be based on an appropriately indexed historic cost value, net of accumulated depreciation, in order to prevent over-recovery. [229]

---

224 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [148].

225 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [129].

226 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [138].

227 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [138].

228 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [17].

229 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph[16].

476.2 Vodafone submitted that because reusable legacy civil engineering assets are unlikely to be replicated, there is a significant risk that valuing those assets at ORC would risk over-recovery (especially on assets that are fully depreciated).[230] Vodafone further argued that the European approach to allowing asset re-use "supports the outcomes which TSLRIC is intended to deliver", by ensuring that there is no over-recovery of those assets.[231]

476.3 Spark submitted that an efficient cost would reflect the re-use of existing assets.[232]

476.4 Frontier Economics argued that the use of an ORC methodology will result in access prices that depart from Chorus' actual costs.[233]

477. On the other hand, CEG for Chorus, argued that adopting a dual asset valuation methodology may lead to an under-recovery of costs. [234] Incenta Economic Consulting for Chorus advised that there is no *a priori* conclusion that ORC/DORC would lead to a windfall.[235]

---

230 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [E3.4].

231 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [E3.4].

232 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [57].

233 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 15 and Vodafone New Zealand Limited "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, paragraph [D4.3].

234 CEG argued that declaring an asset 'non-replicable' and switching between a (back-loaded) economic depreciation profile to a (front-loaded) straight line depreciation profile part way through its life will, other things equal, result in under-compensation for the initial investment. See Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraph [21]. CEG also argued using a current valuation of old (partially or fully) depreciated assets (in accounting terms) is not biased in favour of delivering a windfall to Chorus. In contrast, if we were to follow WIK's advice and exclude those assets from the asset count it would not only be inconsistent with forward looking costs, but it would set up a method that was biased in favour of under compensation. See Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraph [44].

235 Incenta Economic Consulting "Memorandum to Chorus on TSLRIC for UCLL service – asset valuation issues" 28 February 2014, p. 3.

478. We sought the opinion of Professor Vogelsang, who advised that:[236]

> If an adjustment to the now justified asset lives were made that would solve the asset valuation problem for the future but the regulated firms would keep the past windfall profit. By adjusting the value of the assets to a "re-use" value the windfall profits could be fully eliminated, because not only the depreciation rate but also the asset base would be adjusted. To get this exact result a historic costing approach is needed. In contrast, under TSLRIC the value for such an adjustment would be the "depreciated replacement value". Thus, if the current historic book value after 20 years were just zero but the asset still had 30 years in it the depreciated replacement cost value would be 60% of the current full replacement cost (assuming linear depreciation). That, however, would not eliminate the windfall gain fully. In contrast, because of the use of the historic value the EU approach will value the asset at zero and that would fully eliminate the windfall gain. However, in my view, one needs to distinguish a past mistake (the misjudgement of asset lives) from a systematic property of TSLRIC (the change in replacement cost and the forward-looking feature of TSLRIC cost accounting).

479. We consider that it is difficult to talk about windfall gains without drawing a line as to the valuation date. Trying to retrospectively impose a normal profit on Chorus is not possible in a forward-looking TSLRIC model.

480. Although we recognise that Chorus may have accumulated gains from providing UBA over time, we do not consider that this is a TSLRIC issue, and so do not consider it relevant to our forward-looking TSLRIC modelling exercise.

We consider that optimised replacement cost is the orthodox asset valuation methodology

481. Chorus submitted that we should use ORC, with no differentiation between reusable and non-reusable assets. Chorus argued that using ORC for all assets is predictable, consistent with the Commission's previous approach, and best incentivises the efficient build or buy choice.

482. L1 Capital also supports the use of ORC for all assets in the TSLRIC model. L1 Capital submitted that this asset valuation methodology is widely adopted in other jurisdictions, is consistent with our past guidance and investor expectations about the network that was being modelled.[237]

483. We consider that ORC is the orthodox methodology based on New Zealand and international practices.

---

236 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 8 September 2014, paragraph [92].

237 L1 Capital "Cross submission on regulatory framework and modelling approach consultation paper" August 2014, p. 3.

New Zealand practice

484. In 2002 and 2004, we considered alternative forms of asset valuation and concluded that ORC was appropriate for a forward-looking TSLRIC methodology.[238]

485. Chorus submitted that ORC is consistent with our previous approach in 2002 and 2004.[239]

486. Spark submitted that relying on TSLRIC methodologies considered in 2002 and 2004 could be a failure to consider all relevant choices, and that we should instead seek guidance from recent international experience giving best effect to competitive outcomes.[240]

487. We agree with Spark because to rely entirely on our previous approach in 2002 and 2004 may create the risk that, between 2004 and now, the TSLRIC concept has evolved and what was orthodox in 2004 may be quite different in current practice. As a result, we have considered the approach to asset valuation taken in other countries. This is discussed below at paragraphs 498-504.

488. In 2010, we noted in our submission to the Government review of the Regulatory Implications of Structural Separation that:[241]

> **Forward looking (and replacement) costs.** The underlying rationale for valuing assets on a forward looking cost basis is that prices are set on the basis of a hypothetical provider of these services. By basing prices on this basis, the correct pricing signals are given for entry, build or buy decisions.
>
> […]
>
> In practice **TSLRIC** (total service long run incremental costs) can use a combination of these [current and historic cost] elements. Where elements of the cost are subject to realistic replacement, replacement costs can be used, where the costs are sunk, historic costs can be used; another important practical element within this is the identification and attribution of common and fixed costs to prevent double recovery. This is highlighted when considering specific services in isolation (such as UBA).

238 Commerce Commission "Implementation of TSLRIC pricing methodology for Access Determination under the Telecommunications Act 2001 - Principles Paper" (20 February 2004), paragraphs [133]-[137], and [142].

239 Chorus "Cross-submission in response to submissions on the Commerce Commission's Process and Issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop (UCLL) service in accordance with the Final Pricing Principle" 28 February 2014, paragraph [31] and paragraph [39.5] and Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [267] and [267.2].

240 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraphs [47]-[48].

241 Commerce Commission "Commerce Commission Response to MED Discussion Document 'Regulatory Implications of Structural Separation'" October 2010, p. [27].

489. Spark and Internet NZ submitted that our submission to the Government review shows that we have recognised that a TSLRIC model can use a combination of current and historic costs.[242]

490. While Spark and Internet NZ are correct that we have previously recognised the use of historic costs in TSLRIC models, our submission to the Government review does not establish that this approach is orthodox.

491. We also considered the Supreme Court's decision on TSO net costs. On 17 November 2011, the Supreme Court decision identified two key errors made by us in determining TSO net costs:[243]

491.1 the first error was the choice of valuation methodology; and

491.2 the second error was, having failed to adopt the correct valuation methodology, failing to model mobile technology.

492. The majority of the judicial opinions were critical of our adoption of an economic replacement cost methodology; in particular, our decision not to use a historic cost valuation methodology for sunk legacy assets.[244]

493. Spark indicated that the Supreme Court decision demonstrated that the New Zealand courts have also considered the difficulties associated with seeking to apply replacement cost methodologies to existing assets and potential revaluation gains. Spark submitted that this suggests that any approach that simply results in windfall revaluation gains to providers is unlikely to be acceptable in the New Zealand context.[245]

494. Chorus submitted that 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 purpose of TSLRIC prices for access services, and the clear Parliamentary intent and regulatory precedent, is to identify a forward-looking cost.[246]

---

242 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [25]. InternetNZ, Consumer NZ and TUANZ "Cross submission by InternetNZ, Consumer NZ and TUANZ in relation to UCLL FPP Issues and Process Paper" 28 February 2014, paragraph [46].

243 *Vodafone New Zealand Limited v Telecom New Zealand Limited* [2011] NZSC 138, at [68].

244 *Vodafone New Zealand Limited v Telecom New Zealand Limited* [2011] NZSC 138, at [70].

245 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [28].

246 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [14].

495. We agree with Chorus that the Supreme Court decision was made in a different context and related to determining the TSO net costs, which is backward-looking. Although the Supreme Court decision supported a historic cost approach to asset valuation in that particular context, we consider that this would be inconsistent with our forward-looking approach in this TSLRIC context. The TSO net costs calculation represented the efficient cost of Telecom providing services to commercially non-viable customers in a given past period. The majority judgement explained the effect of adopting the ORC methodology to partly or wholly depreciated assets which were not likely to be replaced and optimised as follows:[247]

> It is sensible to revalue on an optimised basis, say, a switch by attributing to it the lower value (price) of a new switch which performs the same or better function but is able to be acquired at a lesser price. It is quite another thing to attribute a modern equivalent value to an old asset which is not actually being replaced and for which no replacement could sensibly be introduced. All that does is to artificially inflate the value of the old asset and provide a windfall….

496. The judgement went on to quote the opinion of the Australian Competition Tribunal on the use of ORC, nothing that it was:[248]

> not satisfied that the use of a "hypothetical new entrant" valuation model was capable of generating appropriate estimates of the TSP's real costs, noting that such modelling "does not reflect costs actually faced by [the TSP], which has trenches, ducts, etc already in place". Nor would such a price reflect the TSP's legitimate business interests, which were "to receive a commercial return on its prudent (past) investment in the infrastructure used … not a hypothetical new investment".

497. The context in which we are required to select an appropriate methodology for the purpose of the FPPs is different. The use of a replacement cost methodology does not afford Chorus an unjustified windfall gain in this context, but is consistent with our task to model the network of a hypothetical efficient operator on a forward-looking basis.

---

247 *Vodafone New Zealand Limited v Telecom New Zealand Limited* [2011] NZSC 138, at [70].

248 *Vodafone New Zealand Limited v Telecom New Zealand Limited* [2011] NZSC 138, at [71], quoting *Application by Telstra Corporation Ltd* [2010] ACompT 1 at [242], [244].

International practice

498. Spark submitted that the models used by international regulators have been shown to best give effect to competitive outcomes and that if we consider recent models used by international regulators, we would find it difficult to justify a departure from the new EC Guidelines.[249]

499. CEG submitted that a replacement cost-based tilted annuity is consistent with the profile of compensation for these assets determined in the past based on benchmarked prices.[250]

500. We agree with CEG. In our review of the current international practice, we found that although the EC recommended a change in asset valuation for reusable assets, most countries are still using ORC for all assets.[251] The only country we are aware of that is currently applying asset re-use in a TSLRIC context is Croatia.[252]

501. We note that some countries are in the process of implementing a dual asset valuation methodology. In particular, we note:

501.1 National Regulatory Authorities, NRAs, are expected to implement the new guidelines by 2016;[253]

501.2 Sweden is in the process of considering the new EC Guidelines and will implement changes in 2016;

501.3 Denmark does not have any reusable assets as they bury cables directly in the ground, so it would not change its methodology; and

501.4 Switzerland is also in the process of changing its asset valuation methodology. In July 2014, Switzerland changed its rules to an infrastructure renewals accounts methodology. The regulator in Switzerland indicated that they have no practical experience of this approach yet and are in the process of planning and implementing the changes.

502. However, we consider that ORC is the predominant methodology currently in use and has been tried and tested, and benefitted from repeated interactions over time.

503. Submissions also referred to countries that do not use TSLRIC models. We do not consider these are relevant as we are required to use a TSLRIC model. [254]

---

249 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [48].

250 Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraph [7].

251 We looked at the regulatory authority notification to the European Commission to enable us to understand the methodology used to set regulated prices between 2012 and today. We also had direct correspondence with the regulators in Sweden, Denmark and Switzerland.

252 The approach followed in Spain is unclear and was criticised by the EC.

253 As confirmed by the regulator in Sweden.

504. Table 8 below provides a summary of countries we have considered and their approach to valuing reusable assets.

Table 8: Other countries approach to valuing reusable assets

	Belgium[255]	Denmark	Sweden[256]	Switzerland[257]	Turkey	Italy[258]	Germany	Czech[259]	Cyprus[260]
Does it consider asset re-use?	No but the approach in Belgium is very specific because a bottom-up model is developed and this model reconstructs the history of the deployment of the network in Belgium. So it is not a pure bottom-up LRIC model	No	No	Yes, but in the process to implement this. No practical experience yet.	No (if the model developed in 2008 is still in use)	No	To our knowledge, no but the documentation is very old so we are not 100% sure[261]. Recent European Commission decision on Germany does not contradict this.	No	Based on information available, Cyprus is using a BU-LRIC model but details are not available. In 2013, the European Commission wrote: *" Currently, civil engineering is valued at current costs in the cost model which according to OCECPR lead to relatively high cost-oriented access when compared to retail prices."*
Cost methodology for reusable assets	-	-	-	UK renewal accounts approach	-	-	-	-	
Whether historic costs or current costs	-	-	-	See above	-	-	-	-	
Since when	-	-	-	1st July 2014	-	-	-	-	
Do these models have shorter asset lives	-	-	-	No information	-	-	-	-	

254 Wall Communications Inc, (2 October 2012) "A Study of Wholesale Costing Methodologies in Selected Countries" at p. 56. This report surveyed costing methodologies in Australia, France, Germany, Sweden, the United Kingdom and the United States. It considered the three FAC methodologies as a Hybrid HCA/CCA Regulatory Asset Base (RAB) model for Australia and the UK, and CCA for France and indicated that these models are not TSLRIC models.

255 Report for BIPT Consultation document for the draft NGN/NGA models 23 December 2011.

256 European Commission, Case SE/2011/1205.

257 Federal Communications Commission, Switzerland.

258 European Commission Case IT/2013/1489-1490.

259 European Commission Case CZ/2013/1451.

260 European Commission Case CY/2012/1396.

261 An Analytical Cost Model for the Local Network - Consultative Document - Prepared by WIK for the Regulatory Authority for Telecommunications and Posts: 4 March 1998.

We have not selected anchor pricing

505. Network Strategies for Spark and Vodafone, proposed Ofcom's anchor pricing methodology. They described the methodology as: [262]

> The price (and quality) of existing services are 'anchored' by the legacy technology, even if the services are provided over the new technology. This approach is intended to give the regulated firm incentives to invest in new technology only when providing services over the new technology would lower its overall costs, or would enable it to provide higher quality services for which consumers are willing to pay.

506. Network strategies argued that the anchor pricing methodology used by Ofcom indicates that an assumption of less than full replacement cost in asset valuation is appropriate in the context of a largely depreciated access network, and is consistent with dynamic efficiency.[263]

507. Frontier for Spark, Vodafone and CallPlus, describes Ofcom's 'anchor pricing' methodology as a methodology that sets prices for copper services on the basis of the hypothetical operator continuing to operate the legacy network.[264]

508. Our understanding of the anchor pricing methodology is similar to Frontier's submission, but differs from Network Strategies' submission in that there is no MEA involved in applying the anchor pricing methodology. We consider that anchor pricing involves modelling the costs and asset values based on existing technology.[265]

We consider that anchor pricing is incompatible with our particular TSLRIC modelling exercise

509. We consider that the anchor pricing methodology is incompatible with our particular TSLRIC modelling exercise because we believe the forward-looking costs would incorporate efficient modern equivalent assets and not legacy assets. We explain this in more detail in Chapter 1. Such an approach also better fits with our approach to give weight to predictability, which we also explain in Chapter 1.

510. As such, we consider that the anchor pricing methodology is not appropriate in our context.

---

262 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 5.

263 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 5.

264 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 24, box 1.

265 Final determination- Verizon UK Limited V Office of Communication- 12 December 2013 http://www.competition-commission.org.uk/our-work/directory-of-all-inquiries/verizon-vodafone-appeal and Ofcom's business connectivity market review in March 2013 http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/summary.

We have not selected depreciated optimised replacement cost

511. In 2002, we defined DORC as optimised replacement costs written down for past depreciation.[266]

512. Frontier for Spark, CallPlus and Vodafone, submitted that we should adopt DORC for long-lived assets, such as ducts, that can be re-used. Frontier argued that reusable assets should be valued differently from other assets because:[267]

- It provides a better reflection of the expenditures made by the access provider, and so provides some protection against the access provider being compensated for incurring costs which they in fact never did, and never will, incur.
- It facilitates the rolling in of future capital expenditures at their forecast efficient levels, which will be the actual costs so long as those costs are shown to be prudent.

513. Frontier proposed the following DORC approach:[268]

- First assessing the total expected life of an asset.
- Next, assess the expected remaining life of the asset. This could be done using information obtained either from Chorus' financial records, or through an independent engineering study of the state of existing assets.
- Then, take the ratio between the expected remaining life of the asset and the expected total life of the asset.
- Finally, multiply the ORC valuation by the ratio obtained in the previous step.

514. This approach was supported by Spark and Internet NZ.[269]

515. Internet NZ argued that the Act is sufficiently broad and flexible to enable Frontier's proposed approach,[270] and Spark argued that Frontier's proposed approach is forward-looking.[271]

---

266 Commerce Commission "Application of a TSLRIC Pricing Methodology - Discussion Paper" 2 July 2002, paragraph [188].

267 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, section 4.1 p. 35.

268 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 36.

269 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraphs [23]-[28], and InternetNZ, Consumer NZ and TUANZ "Cross submission by InternetNZ, Consumer NZ and TUANZ in relation to UCLL FPP Issues and Process Paper" 28 February 2014, paragraph [46].

270 InternetNZ, Consumer NZ and TUANZ "Cross submission by InternetNZ, Consumer NZ and TUANZ in relation to UCLL FPP Issues and Process Paper" 28 February 2014, paragraph [46].

271 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [25].

516. We do not disagree. While we note that DORC relies on historic information and therefore reflects historic recovery of costs. Basing a valuation on an assets current age is not necessarily backward-looking, as DORC can provide a proxy for the current market price of an old asset where economic depreciation is used. However, this would assume the hypothetical efficient operator is re-using or purchasing, rather than building, the network.

517. We discuss in Chapter 1 that we consider a TSLRIC-based price should promote efficient investment and that such an approach emphasises forward-looking costs that reflect the efficient costs of building an equivalent service today. Hence a move to a DORC methodology moves us away from modelling the efficient cost of building the network.

518. We consider our approach to modelling a hypothetical efficient operator is better placed as an operator who has to build its assets which is more aligned to how TSLRIC is implemented currently. Although we accept DORC is open to us, it does not align with our hypothetical efficient operator approach and so overall we do not prefer it.

We consider that the EC approach is not compatible with New Zealand circumstances

519. We consider that the primary driver of a change in asset valuation methodology in the ECs new Guidelines reflects issues in Europe which differ to New Zealand. Differences include:

519.1 unlike Europe, there is no mandated duct access in New Zealand; and

519.2 in New Zealand, UFB investment is assured by contract and subsidies received by UFB investors, while in Europe investment in next generation networks is incentivised, not assured.

520. In the July 2014 regulatory framework and modelling approach paper, one of the reasons we rejected a dual asset valuation methodology was that there is no mandated access to ducts in New Zealand.[272] WIK responded:[273]

> The issue of mandating access to ducts addresses whether third party operators have access to the legacy infrastructure or not. Both concepts are only related through the impact which mandated access might have on the amount of re-usable assets which can be used in deploying the new MEA network. Not mandating access to ducts does by no means conceptually exclude the re-valuation of re-usable assets.

521. We agree with WIK to the extent that this approach is open to us. However, we consider that our views on the differences between the ECs recommended approach and New Zealand remain.

---

272 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [146].

273 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [19].

We have not selected dual asset valuation

522. The new EC Guidelines have adopted a dual asset valuation methodology, recommending ORC for non-reusable assets and a different asset valuation methodology for reusable and unlikely to be replicated civil engineering assets such as ducts and trenches.[274] The asset valuation methodology for reusable assets was described by WIK as follows:[275]

> "… when building the BU LRIC+ model, NRAs should not assume the construction of an entirely new civil infrastructure network for deploying an NGA network". In order to avoid over-recovery of costs, the methodology outlined in the recommendation foresees the determination of a Regulatory Asset Base (RAB) for reusable legacy civil engineering assets (ducts, poles, etc.) through the indexation method:
>
> - this method relies on historic data on expenditure for the reusable assets, accumulated depreciation and asset disposal as well as the indexation through an appropriate price index;
>
> - reusable legacy civil engineering assets still in use but fully depreciated are not to be included in the RAB.
>
> Thus, the Regulatory Asset Base (RAB) consists of the historic costs of the reusable civil engineering assets not completely depreciated, net of the accumulated depreciation at the time of calculation and indexed by an appropriate price index. The indexation ensures that historic costs are "updated" to reflect today's value of the investment, i.e. prices that would have to be paid today for these assets.

523. Frontier submitted that the ECs Guidelines suggest an approach that is essentially a DORC methodology, involving indexing forward the historic cost of assets, and then subtracting from this value accumulated depreciation.[276]

524. WIK for Vodafone and Spark argued that an efficient operator would not replicate the existing ducts and pole assets in Chorus' network and as such, to prevent over-recovery, argued that we should adopt the ECs dual asset valuation methodology, and that this was a proper implementation of TSLRIC in circumstances of migration from copper.[277]

---

274 European Commission "Commission recommendation of 11.9.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment" 11 September 2013.

275 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [16].

276 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 36.

277 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraphs [3], [13], [19] and [59]. The link to migration WIK is trying to draw is not clear from its submission.

525. CallPlus agreed with WIKs recommended "brownfield approach".[278] Similarly, Vodafone agreed with WIK that we should consider the dual asset valuation methodology as a starting point.[279]

We consider that dual asset valuation is not compatible with our hypothetical efficient operator approach

526. WIK proposed the ECs recommendation, where compensation for reusable assets should be valued based on indexed historic costs taking into account accumulated depreciation.[280] In our view, this is not consistent with our forward-looking approach.

527. Professor Vogelsang viewed the ECs dual asset valuation methodology as an "inflation-adjusted" historic cost methodology rather than a forward-looking methodology. Professor Vogelsang notes:[281]

> While, in my opinion, the switch from replacement cost to inflation-adjusted historic cost in the case of non-replicable assets can be viewed as a break with the classical TSLRIC approach and can therefore be seen as interfering with predictability.

528. TERA advised us that, in its view, the ECs recommended dual asset valuation methodology could be viewed to be closer to current costs than historic costs.

529. We consider this to be a variant of the DORC methodology discussed in the previous section. Here we distinguish between two types of assets, replicable and non-replicable assets. Here the potential impacts of failing to promote efficient, alternative, investment are likely to be small given these are assets that are unlikely to be replicated. However, we do not believe moving to such an approach will aid predictability which may bring with it longer-term costs to end-users through harming investment incentives more broadly.

530. On balance, we do not propose to adopt a dual asset valuation methodology.

---

278 CallPlus "Cross-submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA & UCLL services" 20 August 2014, paragraph [12b].

279 Vodafone New Zealand Limited "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, paragraph [D4.6]. See also Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [E3.8].

280 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [14].

281 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 8 September 2014, paragraph [17]. Also see Wall Communications Inc "A Study of Wholesale Costing Methodologies in Selected Countries" (2 October 2012) p. 20.

We consider that we are not required to quantify the impact of our decision

531. CallPlus submitted that we need to fully analyse different approaches to understand the effect.[282] Spark also submitted that we need to quantify the effect of the decision before we make the decision.[283]

532. We agree it would be open to us to do so, but we do not think it is required, and we were not persuaded to do so for the reasons documented above in this attachment. We also note that is also difficult to:

    532.1 draw the line between reusable and non-reusable assets; and

    532.2 price reusable assets. For example, we are unsure how we would price fully depreciated assets.

[282] CallPlus "Cross-submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA & UCLL services" 20 August 2014, paragraphs [4], [12(b)] and [16].

[283] Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach – Submission Commerce Commission " 6 August 2014, paragraphs [8], [41], [42], [59], [103].

Attachment D: Asymmetric risk

Purpose

533. This attachment outlines how we have considered asymmetric risks in our model.

Our draft decisions

534. Our draft decisions are that:

534.1 an ex ante allowance for specific prudent costs is appropriate for catastrophic risks, as is recognising the risks of asset stranding due to technological change by shortening asset lives; and

534.2 an ex ante allowance is not appropriate for risks of asset stranding due to competitive developments and asset stranding due to re-optimisation.

Relevance of asymmetric risks to TSLRIC

535. A firm faces asymmetric risk when its distribution of returns is truncated at the one extreme, without an offsetting truncation at the other end. There are two main forms of asymmetric risk:[284]

535.1 risks that arise through infrequent events that could produce large losses, such as natural disasters and terrorist threats; and

535.2 risks that derive from events such as the threat of competitive entry or expansion.

536. We have previously considered asymmetric risks in the context of regulating services under Part 4 of the Commerce Act 1986. Such risks will exist within the telecommunications sector. While a number of the relevant issues we need to consider will be the same in the Part 4 and telecommunications contexts, we note that:

536.1 asset valuation under TSLRIC is based on optimised replacement costs for a hypothetical efficient operator. This is quite different to regulation under Part 4 where actual investment is recorded in the RAB and a return of and on capital preserved which significantly mitigates asset stranding risk; and

536.2 our expectations are that the rate of technological change in telecommunications is greater than for services regulated under Part 4, which carries with it a greater risk of investments becoming obsolete.

[284] See Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons paper" (22 December 2010), paragraph [H12.4].

537. Consequently, we consider asymmetric risks are relevant to our TSLRIC considerations. In this respect CEG for Chorus, has submitted that the "hypothetical service provider" faces the following potential asymmetric risks to cash flows:[285]

537.1 Demand for services within a regulatory period may be more likely to be lower than the mid-point forecast (than higher), because of low frequency but high impact events (such as earthquakes) ie, catastrophic risks.

537.2 Costs of providing services within a regulatory period may be more likely to be higher than forecast due to: (1) low frequency but high impact events (such as earthquakes); or (2) the asymmetric relationship between demand and costs.[286]

537.3 Technological and competitive developments in the broadband sector may result in the future stranding of the provider's assets. This can occur if the provider simply cannot recover its costs from future customers even if the regulator removes any restrictions on pricing.

537.4 Future regulatory decisions may also strand the value of the service provider's assets.[287] Similarly, future Government policy may have the same effect.

We have considered each of the asymmetric risks identified by CEG

538. We categorised the asymmetric risks identified by CEG as follows:

538.1 ex post allowance for asymmetric risks, which we have not considered further;

538.2 ex ante allowance for the following risks:

538.2.1 catastrophic risks;

538.2.2 asset stranding due to technological change;

538.2.3 asset stranding due to competitive developments; and

538.2.4 asset stranding due to re-optimisation.

539. We outline our approach to each of these asymmetric risks below.

---

285 CEG, "Response to Commerce Commission UCLL/UBA WACC consultation paper" (March 2014), paragraph [325].

286 For example, CEG notes that if demand for UBA services grows then the provider may incur additional costs in installing and maintaining additional electronic equipment in exchanges. However, if demand for UBA services falls, the provider may be unable to make equivalent cost savings (given that much of the costs of existing capacity is sunk). This makes higher demand less profitable than the losses associated with lower demand, creating a source of asymmetry.

287 For example, CEG states that the regulator may decide to effectively write down the value of the provider's assets based on an estimated reduction in the costs of modern equivalent assets – even if the regulator's previous pricing had not anticipated and allowed compensation for the depreciation in the value of the provider's assets.

We have provisionally decided that an ex ante allowance for specific expenditure that mitigates against catastrophic risk is appropriate

540. We have provisionally decided that an ex ante allowance for catastrophic risk is appropriate given that TSLRIC pricing is not compatible with ex post compensation. We consider that an appropriate approach is to recognise an allowance for catastrophic risk as a relevant cost.

541. We consider that an allowance to compensate for catastrophic risk is a relevant cost because:

541.1 our price decisions should reflect the efficient costs we would expect the hypothetical operator to incur; and

541.2 the hypothetical operator may prudently insure against catastrophic risk.

542. This type of allowance is consistent with our reasoning when we considered catastrophic risk under our Orion customised price-quality path (CPP) determination ie, an allowance to compensate for catastrophic risk is a prudent and efficient cost.[288]

543. Under the IMs, we did not make any explicit adjustments to the WACC for catastrophic risk.[289] Instead, we indicated that it may be appropriate to deal with asymmetric risks through other forms of adjustment or mechanisms.[290]

544. We do not consider there is reason to depart from this view. As such, we have decided that an adjustment to the WACC to reflect asymmetric risks is not appropriate. The March 2014 submission from CEG supports this view.[291]

545. We have included compensation for catastrophic risk in our model as follows:

545.1 we have included costs for seismic bracing and backup generators; and

545.2 we consider it is appropriate to use Chorus' insurance costs, which provide cover for catastrophic events.

---

288 *Setting the customised price-quality path for Orion New Zealand Limited* [2013] NZCC 21, Attachment B and C.

289 "The IMs do not make any adjustments to the cost of capital for asymmetric risk. However, the Commission does consider that it may be appropriate to deal with asymmetric risks through some other forms of adjustment or mechanisms, such as adjustments to regulatory cash flows with the use of flexible depreciation (e.g. a front-loaded depreciation profile in the event that asset standing becomes apparent)." Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons paper" (22 December 2010), paragraph [H12.1].

290 For example, adjustments to regulatory cash flows with the use of flexible depreciation (eg, a front-loaded depreciation profile if asset standing becomes apparent).

291 CEG "Response to Commerce Commission UCLL/UBA WACC consultation paper" (March 2014), paragraphs [337] and [338].

545.3 Although the hypothetical operator may not be insured for demand risk, we consider that demand risk is diversifiable. This is consistent with the our view in the Orion CPP decision that:[292]

> investor diversification minimises the impact of demand risk. To well-diversified investors, only the demand risks that affect all investments matter. The demand risks specific to one investment can be expected to be offset by those of other investments, and unexpected positive and negative shocks may be experienced by individual businesses over time. Such shocks are therefore of little consequence to a well diversified investor.

546. As such, we have decided that no additional compensation is required for catastrophic risk beyond that outlined in paragraph 545 above.

We have provisionally decided that an ex ante allowance for asset stranding due to technological change is appropriate

547. On balance, we have provisionally decided that an ex ante allowance for compensation for the asymmetric components of asset stranding risk due to technological change is appropriate.

548. CEG consider that technological change in the broadband sector may result in future stranding of the provider's assets.[293]

549. Spark have noted they believe that:[294]

> …the asymmetric risks of asset stranding for Chorus will be correctly compensated for both as part of the Commission's WACC estimation process (systematic risk component) and the tilted annuity calculations (non-systematic risk component). No additional adjustment is warranted for such asymmetric risks by the selection of a WACC percentile uplift.

550. We agree with Spark that certain elements of asymmetric asset stranding risk which are systematic will be incorporated into our WACC estimate.[295] There may also be non-systematic elements which may require compensation either through the depreciation profile, or otherwise. Although Spark's cross-submission was not received as part of the FPP process, we consider that the points raised are directly relevant, and so we have considered them in making this determination.

551. Furthermore, as we discuss in Attachment A, we have also considered the implication of our hypothetical efficient operator as a replacement network for copper and fibre networks. The risk of the main cost of trench and duct being stranded in this context may be low.

---

292 *Orion New Zealand Limited Customised Price-Quality Path Determination [2013] NZCC 21*, at [C5.1].

293 CEG "Response to Commerce Commission UCLL/UBA WACC consultation paper" March 2014, p. 81.

294 Spark New Zealand, "Proposed amendment to the WACC percentile for electric lines services and gas pipeline services: response to Chorus submission: cross-submission", 12 September 2014, paragraph [37].

295 Within the WACC estimated as part of this FPP, our asset beta will capture the systematic component of risk which may include elements of asset stranding and other asymmetric events. We also note that the TAMRP will incorporate investors' required returns across the market portfolio, which may include elements of catastrophic risk.

552. Nonetheless, we recognise the greater level of technological change in the telecommunications sector and, on balance, agree with Chorus that there may be some asymmetric risk of asset stranding which requires *ex ante* compensation. In particular, as we noted in paragraph 536.1, investment in a TSLRIC context by Chorus or a hypothetical efficient operator is not afforded the same protection as offered under the Part 4 RAB model.

553. We considered the following approaches to compensate for the asymmetric risks of asset stranding:

553.1 **Option value**: The value of the ability to defer investment. Professor Vogelsang advised that real options are currently not included in TSLRIC calculations anywhere;[296]

553.2 **Flexible depreciation**: A front loaded depreciation profile could be used to address asymmetric risks from asset stranding. Front loading depreciation keeps the lifetime revenues NPV neutral but changes the time-profile of cost recovery to reduce the risk; or

553.3 **Adopt asset lives that recognise the risk of asset stranding**: Our approach in the TSO was to revise the expected economic life of the asset on an annual basis. Further, Plum consultants, in their research on fibre migration, noted that asset stranding risk could be addressed in asset lives.[297]

554. Our preferred approach is to adopt asset lives that recognise the risk of asset stranding as this is the simplest and most practical method of providing compensation.

555. Chorus' 2014 Financial Statements note that:[298]

> The determination of the appropriate useful life for a particular asset requires management to make judgements about, amongst other factors, the expected period of service potential of the asset, the likelihood of the asset becoming obsolete as a result of technological advances, the likelihood of Chorus ceasing to use the asset in its business operations and the effect of government regulation.

296 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 25 November 2014, paragraph [61].

297 Plum Consulting "Costing methodology and the transition to next generation access" (March 2011), p. 43.

298 Chorus "Financial Statements for the year ended 30 June 2014" (August 2014), p. 10.

556. We have decided to use Chorus' asset lives and, as noted above, these incorporate the likelihood of the assets becoming obsolete as a result of technological advances. The only exception to this is for DSLAMS, and submarine links, where TERA has used international benchmarks because the asset lives provided by Chorus seemed out of line with what has been observed in other jurisdictions, or were not provided.[299] We are satisfied that the asset lives incorporated into the model already adequately compensate our hypothetical efficient operator for the asymmetric risks associated with asset stranding.

557. Our approach to setting asset lives is discussed further in Attachment E.

We decided that an additional separate ex ante allowance for asset stranding due to competitive developments is not appropriate

558. We decided that an additional ex ante allowance to compensate for potential asset stranding due to competitive developments is not appropriate.

559. As indicated above, CEG for Chorus, submitted that the hypothetical service provider faces asymmetric risks to cash flows as a result of competitive developments in the broadband sector, and this may result in future asset stranding.[300]

560. In principle we agree that new entry could reduce demand and leave assets stranded. However, we do not consider that it is appropriate to provide an additional allowance for the potential loss of scale due to competition. In this respect technological change and the risk of asset stranding through competitive developments cannot be easily separated. It is primarily competition which promotes the use of new, better technology that may strand assets in a competitive market.

561. We have already provided an additional allowance for asset stranding risk through asset life assumptions.

---

299 Indicators of the likely significance of asset stranding risk is the irreversibility of the investment, the significance of the investment and the length of asset lives. In respect of DSLAMS, which are an important component of UBA, asset lives are not significantly long, and they are subject to continual replacement across multiple installations and this will naturally mitigate asset stranding risk.

300 CEG "Response to Commerce Commission UCLL/UBA WACC consultation paper", March 2014, paragraph [325].

We decided that an ex ante allowance for asset stranding due to future regulatory decisions is not appropriate

562. We decided that an ex ante allowance for asset stranding due to future regulatory decisions is not appropriate.

563. CEG for Chorus argued that the regulator may decide to effectively write down the value of the provider's assets based on an estimated reduction in the costs of modern equivalent assets even if the regulator's previous pricing had not anticipated and allowed compensation for the depreciation in the value of the provider's assets.[301]

564. In our view, CEG's argument relates to actual costs rather than the hypothetical efficient operators costs. We also do not consider it is appropriate to provide an allowance for future regulatory decisions that may strand assets because a TSLRIC model explicitly includes expected asset price trends. Such windfall gains may occur in either direction and consequently we have no evidence of any material asymmetry. We would also be concerned about potential double-counting where any write down in asset value reflects the introduction of new technology.

565. As outlined at paragraph 555, we note that Chorus has considered the effect of government regulation in determining its asset lives. Although we have used Chorus' asset lives as our starting point, TERA has tested their reasonableness and used international benchmarks where the asset lives provided by Chorus seemed out of line with what has been observed in other jurisdictions, most notably within the life of DSLAMs.

566. We have also considered the submissions on any asymmetric risk arising from demand, cost, and government policy. No evidence has been provided that shows such risk is material and warrants any additional compensation above that provided for asset stranding. We also note that our hypothetical efficient operator is a replacement for the current copper and fibre networks.[302]

[301] CEG "Response to Commerce Commission UCLL/UBA WACC consultation paper", March 2014, paragraph [325].

[302] This is further discussed in Attachment A.

Attachment E: Setting asset lives

Purpose

567. This attachment sets out our approach to determining the asset lives used in our model.

568. We have set asset lives to depreciate the hypothetical efficient operator's assets over their economic lives. Asset lives are also relevant when taking into account asset stranding due to technological change, as discussed in Attachment D.

569. Using asset lives that understate the economic lives for assets such as civil engineering assets (ie ducts and trenches) would result in the hypothetical efficient operator being over-compensated, as we are modelling the deployment of new assets rather than re-using existing assets. Ingo Vogelsang has also noted that, when using new assets (rather than re-using assets), it is important that the assumed asset lives are sufficiently long.[303]

570. Conversely, using asset lives that overstate the economic lives would result in the hypothetical efficient operator being under-compensated.

We consider the asset lives provided by Chorus are an appropriate starting point

571. We consider the accounting asset lives provided by Chorus are an appropriate starting point. We have used these as a proxy for the economic lives of the assets in our model. Chorus provided a list of asset categories and its estimation of the corresponding lives, as required by our section 98 notice. TERA has allocated all of the assets in the model into one of these categories and used the corresponding lives as the starting point.

We then adjusted Chorus' asset lives using international benchmarks

572. TERA then cross-checked these asset lives against TSLRIC models overseas. TERA selected international benchmarks where the asset lives provided by Chorus seemed out of line with what has been observed in other jurisdictions, or if no data was provided.

573. A list of the asset categories and lives used in the model, as well as TERA's reasons for using international benchmarks in some circumstances, can be found in TERA's Model Specification Paper at section 8.4.

574. Although we did not specifically seek views on this topic, we received a number of submissions in response to our July 2014 regulatory framework and modelling approach paper.

[303] Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 25 November 2014, paragraph [23].

575. Network Strategies, on behalf of Vodafone and Telecom, noted that the risk of over-compensating Chorus, to a certain extent, can be mitigated by assuming very long lives for the assets.[304] We agree that the risk of over-compensation can be mitigated in this way, but this should be balanced against the risk of under-compensating Chorus.

576. Network Strategies also asserted that cables are often assumed to have a lifetime of 40 years in regulatory modelling.[305] However, we are not aware of any models that use such a long lifetime for cables, and Network Strategies do not provide evidence to support this assertion.

577. Analysys Mason, on behalf of Chorus, noted that in order for an investor to have a reasonable expectation of cost recovery, the asset lives will need to take into account the possibility of future optimisation (or changes in MEA) stranding these assets.[306] We discuss asset stranding risk in Attachment D.

578. Following consideration of submissions and advice from TERA, we consider TERA's approach is a reasonable estimation of the economic lives of the relevant assets of the hypothetical efficient operator for the purpose of TSLRIC modelling.

304 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 15.

305 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, p. 31.

306 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA", 6 August 2014, p. 15.

Attachment F: Price trends

Purpose

579. This attachment explains how we have forecast price trends for active assets, passive assets, and opex, as well as how we have converted foreign currency to New Zealand dollars.

580. We are required to form a view on how costs might change over the regulatory period. We do this by forecasting price trends. Price trends in our TSLRIC model are used to forecasts costs, and applied with the tilted annuity depreciation.

Our draft decisions

581. We have decided to forecast price trends for:

581.1 active assets using international benchmarks;

581.2 passive assets using a cost escalation approach using the CPI as the default; and

581.3 labour related opex using a cost escalation approach using the LCI.

582. We have decided not to forecast price trends for non-labour related opex, and have treated it as nominally constant over the regulatory period. We expect that efficiencies are likely to offset general inflation.

583. We have decided to convert foreign currency to New Zealand dollars using purchasing power parity (PPP) rates. We have used a constant rate for PPP over the regulatory period.

We consider that price trends should include raw material costs and productivity improvements

584. Chorus submitted that forecasts need to extend beyond the regulatory period to avoid price spikes.[307]

> If changes in the MEA are left to the period in which the MEA is expected to change, then prices may need to jump sharply in order to account for the expected change in the MEA.

[307] Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [139].

585. In response to this, Network Strategies submitted that:[308]

> The cost trends may be due to changes in the costs of the raw materials, or may be due to productivity improvements or technological developments. While Chorus discusses technological developments only in terms of changes in MEA, the Commission should note that such developments may encompass less radical advancements as well. Asset cost trends should encompass all these factors, and the tilt should be defined accordingly.

586. We agree with Network Strategies that price trends should not be limited to the technical development of changes in the MEA, but should also include changes in raw material costs and productivity improvements.

We have considered different approaches to forecasting price trends

587. We have considered different approaches to forecasting price trends in our TSLRIC model, including:

587.1 using independent forecasts or relevant indices to estimate price trends (the cost escalation approach);

587.2 benchmarking forecasts used in TSLRIC models in other jurisdictions (the international benchmark approach); and

587.3 using historical trends to predict future trends (the historical trends approach).

588. We discuss each of these approaches below.

The cost escalation approach

589. The cost escalation approach involves using independent forecasts or relevant indices to estimate the price trends of network elements. Chorus proposed the following cost escalation approach:[309]

> 1 Determine whether or not there are reliable, independent and verifiable forecasts for the final network elements within the MEA network over the regulatory period. If these exist they should be used as the input price trends for these network elements. If not;
>
> 2 Develop an engineering assessment of the raw material inputs into the various network elements. This would include a breakdown of the cost of building the network elements (for example, type of labour (construction, specialist), cable, steel, concrete);

[308] Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, pp. 37-38.

[309] Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [134.1]-[134.4].

3 Source predictions of future prices either in the form of future prices or expert forecasts. For example, future prices and forecasts for copper can be used to inform the forecasts for the value of copper cable. Where futures are available and sufficiently liquid, we propose they be used in favour of forecasts on the basis that these represent the best forecast of prices by informed market participants; and

4 Calculate a weighted escalation factor or input price trend using the weights for the raw materials determined in the engineering assessment and the future prices and forecast for the raw materials.

590. Essentially, Chorus argued that where a single relevant index for a network element does not exist, we should use a weighted set of indices to estimate the price trend for the network element. For example, if the price of installing copper cables comprises of 50% wage costs and 50% copper price, we should use independent forecasts of the LCI and the copper index to estimate the copper cable price trends for our model.

591. Network Strategies, on behalf of Vodafone and Spark, submitted that Chorus' proposed methodology would entail a number of practical difficulties, for example:[310]

591.1 it would require the identification of all network elements and reasonable forecasts;

591.2 some forecasts may be problematic and have widely differing views, such as copper prices;

591.3 the approach requires detailed assumptions of the weightings of various components; and

591.4 the approach requires additional assumptions regarding the production function.

592. Network Strategies also raised concerns about the uncertainty and risk of error associated with this approach.[311] Vodafone agreed with Network Strategies, noting that Chorus' proposed approach would not deliver an improved outcome.[312]

310 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, pp. 30-31.

311 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, p. 31.

312 Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [F1.3].

593. We support using the cost escalation approach, although agree that there are some difficulties with it. As such, we have decided to use this approach only where independent and reliable data is available, and price trends are dependent on local circumstances - that is, where an international benchmark approach would not be appropriate.

594. We consider that this is a predictable approach as it is forward-looking, and is consistent with our approach in setting the default price-quality path (DPP) under Part 4 of the Commerce Act.

595. NZIER provided independent forecasts of relevant indices. The indices we requested are listed in Table 9 below.

Table 9: Independent forecasts from NZIER

Forecasts	**Use forecast to project this parameter(s) in the model**
CPI	Used for active assets which are not significantly based on wage
LCI	Mainly to derive trends for passive assets based on wages (for example, laying cables underground)
Aluminium sheeting	To derive the price trends for the following types of assets: cabinets (box), distribution point, racks, etc.
Fabricated steel	
Fibre optic cabling	To derive the price trends for fibre optic cables

The international benchmark approach

596. The international benchmark approach involves using the forecasts used in other TSLRIC models in other jurisdictions.

597. We consider that this approach is appropriate to forecast price trends for assets such as DSLAMs and switches, which a hypothetical efficient operator would be likely to purchase from worldwide suppliers. We consider that this information is available and reliable, and that this is a transparent approach.

598. However, a disadvantage to this approach is that it does not reflect local circumstances. As such, we have not used this approach for passive assets, such as trenches, the costs of which have a greater dependency on local circumstances.

The historical trends approach

599. The historical trends approach involves extrapolating historical data to predict future trends.

600. Advantages of the historical trends approach include:

600.1 a longer period of observations may be available to consider how costs have evolved over the last 10-20 years; and

600.2 it is useful if no other data is available.

601. A disadvantage of the historical trends approach is that technology can change significantly during the historical period under consideration making it inappropriate as a basis for making future forecasts.

602. Accordingly, we have only used the historical trends approach as a cross check.

We have used a combination of the cost escalation and the international benchmark approaches

603. We consider that it is pragmatic to use a combination of the cost escalation and the international benchmark approaches, depending on the asset or opex category. Each approach is suitable for different circumstances. We selected the approach to use depending on:

603.1 the availability of independent and reliable data; and

603.2 whether the price trend is dependent on local circumstances.

Price trends for active and passive assets

We forecast price trends for active assets using the international benchmark approach

604. We instructed TERA to use international benchmarking to forecast price trends for active equipment because Chorus has provided us with insufficient data on active assets. We instructed TERA to use relevant forecasts from NZIER as a cross check.

We forecast price trends for passive assets using the cost escalation approach

605. We instructed TERA to use the cost escalation approach to forecast price trends for passive equipment, using the CPI as the default.

606. We also commissioned Beca to provide independent forecasts for duct and trench price trends. This is because duct and trench costs are highly influenced by local circumstances. We felt that it was appropriate to engage a local company to generate forecasts that accurately reflect New Zealand-specific circumstances, such as post-earthquake Christchurch.

607. We decided to use this approach because passive equipment costs are influenced by local circumstances, so international benchmarks are less appropriate.

Price trends for opex

608. Chorus submitted that opex should also be forecast using its cost escalation methodology, as described above at paragraph 589.[313]

609. Network Strategies submitted that their preferred approach was to specify opex for a base year, and then apply a trend expressed as an annual percentage change in opex for the specified network element. Network Strategies preferred this to Chorus' approach, which it criticised for requiring the disaggregation of network elements into multiple components, resulting in greater uncertainty and risk of bias.[314] Vodafone agreed with Network Strategies.[315]

610. We consider that both Chorus' and Network Strategies' approaches are open to us, and consider that the outcome of each is likely to be similar.

We divided opex into labour related and non-labour related opex

611. TERA divided opex into labour related opex and non-labour related opex, with each being treated differently. Our rationale for how we have decided to treat each is outlined below.

We forecast price trends for labour related opex using the cost escalation approach

612. We instructed TERA to use the cost escalation approach to forecast price trends for labour related opex.

613. We decided to use only the LCI, rather than disaggregate opex into different components. That is, we consider that the weighting for the labour costs would be considerably larger than the weighting of any other components. The other components would therefore have a negligible effect on the price trend. Forecasts for the other components of labour related opex would also be very difficult to determine.

We have not forecast price trends for non-labour related opex

614. We decided not to forecast price trends for non-labour related opex. We expect that efficiencies are likely to offset general inflation. As such, we instructed TERA to treat non-labour related opex as nominally constant over the regulatory period.

We have used purchasing power parity to convert foreign currency to New Zealand dollars

615. We have used PPP rates to convert foreign currency to New Zealand dollars. We have used a constant rate for PPP over the regulatory period.

---

313 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [122]-[123].

314 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, p. 32.

315 Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [F1.4].

Attachment G: Depreciation

Purpose

616. This attachment outlines how we have treated depreciation in our model.

617. Most capital goods are used up in the process of producing output. Through physical deterioration and obsolescence, capital goods, with a few exceptions, eventually reach the end of their useful life. As assets deteriorate and are finally retired their productive capacity declines to zero. At the same time their market value declines.[316] This depreciation of value is a cost that needs to be recovered as part of a forward-looking cost-based price. Accordingly, depreciation needs to be reflected in the prices charged for the service(s) that use the capital goods.

618. Many of the costs incurred in providing the UBA service are on fixed infrastructure assets or capital goods that are useful over many years. A forward-looking cost-based price assumes that these costs are recovered over a number of years. Depreciation determines the amount of an asset that the network operator can recover each year through the regulated access price.

619. There are two broad forms of depreciation – economic and accounting:

    619.1 *economic-based depreciation* captures the change in factors that determine the value of an asset from one period to the next; whereas

    619.2 *accounting-based depreciation* is focussed on allocating the value of an asset across time periods.

Economic-based depreciation

620. Economic depreciation incorporates the various factors that affect the value of assets. There are a wide range of factors that determine the economic value of an asset, including expected revenue, asset prices, technological change and demand.[317]

621. Estimating economic depreciation is information intensive and requires forecasts of how the various factors that affect the value of an asset are expected to change over a long time period. Due to the inherent shortcomings of forecasting over long periods, it is unclear whether economic depreciation provides a more accurate depreciation allowance than accounting-based approaches to depreciation.

---

316 Charles R.Hulten and Frank C. Wykoff, (1996), "Issues in the measurement of economic depreciation: introductory remarks", *Economic Inquiry* 34, pp. 10–23.

317 Regulators in Belgium, The Netherlands and Norway apply forms of economic depreciation. Analysys Mason, "Report for BIPT: BIPT's NGN/NGA Model version v1.0 documentation for industry players" 23 December 2011; Analysys Mason, "Report for the Norwegian Post and Telecommunications Authority (NPT): Fixed Long Run Incremental Cost (LRIC), Model for Market 4 Response to operator consultation" 28 September 2012; Analysys Mason, "Report for OPTA: Conceptual approach for the fixed and mobile BULRIC models", 20 April 2010; Analysys Mason, "Report for Ofcom: Study of approaches to fixed call origination and termination charge controls", 15 May 2012.

622. There is also a risk of creating a circular argument, as the calculation of economic depreciation depends on the expected development in revenue, which in turn depends on the calculated depreciation charge included in the regulated prices.

Accounting-based depreciation

Straight-line depreciation

623. Straight-line depreciation distributes an asset's value equally across the assumed life of the asset to produce an annualised depreciation charge.

624. The straight-line depreciation formula provides limited flexibility to take into account factors that are expected to affect asset values. For example, the regulator can modify the assumed lifetime of the asset.

625. Straight-line depreciation is often used in economic regulation, particularly outside telecommunications, because (relative to other forms of depreciation) it is well understood, transparent and simple to calculate.

Annuities

626. An annuity combines an allowance for depreciation with the return on capital.[318]

627. A standard annuity calculates the charge that recovers the asset's total purchase price and financing costs in annual sums that are constant over time.

628. If the price of the asset is expected to change over time, a tilted annuity would be more appropriate. A tilted annuity calculates an annuity charge that changes between years at the same rate as the expected change of the asset value. This results in declining annualisation charges if prices are expected to fall over time, or vice versa when prices are expected to rise. Because of this feature, the tilted annuity approach is an approximation to economic depreciation as annual charges are brought in line with the expected value of the asset at each time of its economic life. As with a standard annuity, the tilted annuity should still result in charges that, after discounting, recover the asset's purchase price and financing costs.

629. A variation of the tilted annuity is the adjusted tilted annuity, which, in addition to price changes, is capable of taking changes to demand into consideration. As is the case for price changes in the tilted annuity, only constant annual changes to demand can be considered (eg five percent demand increase per year).

[318] The return on capital is calculated by multiplying the value of assets by the cost of capital (ie the financial return investors require from an investment given its risk).

We consider that a tilted annuity methodology is most appropriate for our TSLRIC model

630. In the December 2013 UCLL process and issues paper, we outlined our preliminary assessment that a tilted annuity approach should be used rather than straight-line or economic depreciation.[319] In that paper, we asked submitters whether an alternative depreciation approach to tilted annuity should be used and if so, why it would be preferable.

631. Submitters responded as follows:

631.1 Frontier Economics, for Vodafone, Telecom and CallPlus, submitted that a tilted annuity methodology should be used for depreciation, and that economic depreciation should not be used due to the complexities. In doing so, Frontier recommended against using straight-line depreciation given its tendency to front-load allowed revenues.[320]

631.2 Spark stated that economic depreciation would generally be preferred to the tilted annuity methodology in telecommunications cost models, but given that the economic depreciation methodology is difficult, a tilted annuity methodology may well provide an acceptable proxy for economic depreciation if all relevant factors are fully considered.[321]

631.3 Both Chorus and Analysys Mason (on behalf of Chorus) submitted that an adjusted tilted annuity (with an additional tilt for demand changes) and economic depreciation would both be superior to tilted annuity, given the possibility of a future migration to an alternative access technology. Chorus submitted that the adjusted tilted annuity may be an appropriate simplification to ensure the model results are delivered by December 2014.[322]

631.4 Vodafone argued that a standard or straight-line annuity should apply to re-used assets, while a titled annuity methodology (using CPI adjustments) should apply to assets valued at ORC.[323]

---

319 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraphs [167]-[168].

320 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 41.

321 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraphs [166]-[168].

322 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraphs [79] and [279]; and Analysys Mason "Report for Chorus - Response to Commission" 12 February 2014, p. [34].

323 Vodafone New Zealand Limited "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, recommendations 24 and 25, p. 28.

632. None of the submissions we received changed our view, and in our July 2014 regulatory framework and modelling approach paper we stated that our view was still that a titled annuity methodology is the most appropriate for our TSLRIC modelling exercise, because:

632.1 a tilted annuity methodology is the orthodox depreciation methodology used in electronic communications regulation, and we have previously adopted a tilted annuity methodology in the TSLRIC context. In our view this approach is therefore most consistent with our TSLRIC objective of predictability.

632.2 over the lifetime of the assets, a tilted annuity will result in a relatively constant rate of change in prices in a situation where a stable demand profile is modelled. This is expected to avoid windfall gains and losses being caused by changing network costs.

633. We also noted that:

633.1 While an economic depreciation methodology is considered to be the most robust methodology, it is the most complex to implement and the availability of the necessary information is limited.

633.2 The tilted annuity methodology is a good proxy for economic depreciation where the demand profile is stable. Given that we have adopted a stable demand profile, a tilted annuity methodology is likely to produce a similar result to an economic depreciation methodology.

633.3 Likewise, an adjusted tilted annuity methodology, as recommended by Chorus and Analysys Mason, is only superior to tilted annuity where demand is not stable.

634. In response to our July 2014 regulatory framework and modelling approach paper, we received a number of submissions:

634.1 Vodafone, Spark, and WIK, all supported a titled annuity approach, but submitted that we should include an adjustment factor for both expected price, and demand changes.[324]

[324] Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G8.1]; Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [142]; WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [59].

634.2 Chorus maintained its position that an adjusted tilted annuity is superior to a tilted annuity. Chorus submitted that we: [325]

> […] should be very careful when setting the depreciation profile so that it does not backload recovery of cost in a way that will make it practically impossible to recover the efficient cost of the network.

634.3 Chorus also submitted that:[326]

> In order to achieve expected NPV neutrality over the regulatory period, the input price trends must, in total, reflect the expected change in the replacement cost of the assets over the regulatory period. There are two factors that need to be taken into account to ensure this outcome is achieved – the expected escalation in costs of the MEA being modelled and any effects of a change in the MEA.

634.4 Vodafone also commented that static demand is not required for proper application of the tilted annuity approach.[327]

634.5 Analysys Mason submitted that we "should adopt a depreciation method which allows for the declining demand for UCLL as a result of fixed-mobile substitution and (as a minimum) loss of customers to non-Chorus LFC's."[328] We have responded to this in our draft decisions on demand, outlined in Attachment A.

635. As we stated in our July 2014 regulatory framework and modelling approach paper, the adjusted tilted annuity is only superior to the tilted annuity when demand is not considered to be constant.

636. As our preliminary view is that as a constant demand should be modelled, there is consequently unlikely to be a difference between using a tilted annuity or an adjusted tilted annuity.

637. The proposed price trends and asset lifetimes used in the model have been chosen to achieve cost recovery and NPV neutrality over the regulatory period and, as a consequence, the adjusted tilted annuity results in charges that, after discounting, recover the asset's purchase price and financing costs.

---

325 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [126, 129]. We note that the model does not significantly backload cost recovery because the UBA price increment is stable.

326 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [128].

327 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G8.2].

328 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.18].

638. As our MEA is a FTTH/FWA network, we consider the risk of technical obsolescence in the medium-term as very low and, therefore, not a reason for selecting one depreciation method over another.

639. The received submissions have not changed our view about calculating depreciation using the tilted annuity method.

Attachment H: Exclusion of certain capital costs

Purpose

640. We have considered whether the hypothetical efficient operator would incur all of the capital costs of providing the UBA service, or whether we should deduct some of the modelled capital costs for some parts of the network because the operator would not incur those costs itself. The operator could, as occurs in practice, receive a payment to induce it to build part of the network (a 'capital contribution').

Our approach to RBI subsidies

641. The Government has funded the Rural Broadband Initiative (RBI) to extend the broadband capability of the network to more remote, rural areas. Under the RBI, Chorus and Vodafone receive capital contributions to build infrastructure in these areas.

642. In its submission on behalf of Spark and Vodafone in response to our July 2014 regulatory framework and modelling approach paper, WIK argued in reference to RBI subsidies in particular, that:[329]

> The Commission should as a reference point assume that the hypothetical efficient operator will have access to such funds in the same way as operators active in the New Zealand market today reducing the investment requirements to build the new network.

643. We do not propose to take the full amount of the RBI subsidy that Chorus received into account, because we are not modelling Chorus' costs and revenues. However, it is relevant that the RBI leads to more active cabinets in Chorus' network.[330]

644. As we have explained in the framework chapter, our MEA for UBA is only for the "additional costs" of providing UBA and it presupposes Chorus' copper network. As we have explained in Attachment B, we have used a modified scorched node approach that retains the majority of cabinets on Chorus' copper network. Chorus' participation in the RBI means it has received subsidies to extend the broadband capability of its network to more remote areas where it is uneconomic to do so. We refer to these as RBI areas. As a result of the RBI, there are additional active cabinets and DSLAMs in RBI areas.

---

329 WIK-Consult, "Submission in response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"", 5 August 2014, paragraph [29].

330 We note that RBI came with a subsidy that recompenses Chorus for the cost of these assets directly.

645. We consider that the hypothetical efficient operator would be unlikely to provide bitstream in RBI areas without a capital contribution. Accordingly, we have accounted for the cost of providing bitstream in RBI areas by removing the modelled TSLRIC costs relating to the number of DSLAMs and active cabinets deployed by Chorus under the RBI initiative. However, because there are no DSLAM IDs in the model, we could not remove the specific individual DSLAMs in RBI areas. Instead, we:

645.1 removed the capital costs of the number of DSLAMs related to the RBI; and

645.2 removed the capital costs of active cabinets related to the DSLAMs in RBI areas.

646. Operating expenditure, such as power consumption for the DSLAMs in RBI areas, remains in the model because we are only removing the capital costs that we consider a hypothetical efficient operator would receive a capital contribution for. The cost of the feeders also remains, as we have assumed that there would have already been passive cabinets at those locations before the RBI.

Attachment I: Modelling basis for taxation

Purpose

647. This attachment outlines how we have treated tax in our TSLRIC model in the FPP price review.

Our draft decision

648. Our draft decision is that that the TSLRIC-based price we derive will be a pre-tax amount. Given that the price we derive needs to be a pre-tax amount, our draft decision is to adjust the tilted annuity capital charges for each type of asset by taking into account an appropriate tax depreciation rate.

649. The reason for our draft decision is to ensure that the result is not an inaccurate TSLRIC-based price due to an over estimation of the tax position of a hypothetical efficient operator which would occur if the tax model adopted a simple pre-tax calculation that assumed the corporate tax rate.[331]

Our earlier views on tax

650. In our July 2014 regulatory framework and modelling approach paper, we proposed to provide for tax costs in the TSLRIC price by deriving a tax-adjusted tilted annuity charge for each type of asset modelled. In addition to taking into account the relevant asset lifetime and asset price inflation rate, we proposed that each tax-adjusted tilted annuity charge will take into account a diminishing value tax depreciation rate appropriate to that type of asset.[332]

651. We preferred this approach to ensure that we determine an accurate TSLRIC-based price that does not result in an over estimation of the tax position of a hypothetical efficient operator.

Industry responses to our proposed tax approach

652. Chorus argued that our proposed approach assumes that 100% of interest and depreciation tax deductions will be deducted in the year they occur, and that this meant that our tax model assumed that there is a zero probability of the efficient operator ever being in a tax loss position. Chorus argued that this may not be reasonable.[333]

---

331 In New Zealand, a firm can reduce its taxation payments by deducting depreciation from the taxable earnings. This depreciation tax shield is computed as the amount of allowable depreciation multiplied by the tax rate. The use of accelerated depreciation methods during the early years of an asset's life will provide for a greater tax shield during the asset's early life and hence increase the NPV of the tax shield.

332 Commerce Commission, "Consultation paper on issues relating to Chorus' proposed changes to the UBA service" 9 July 2014, paragraphs [253]-[258].

333 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [141]-[144].

653. In its cross-submission, Network Strategies also argued that our approach implicitly assumes that the hypothetical efficient operator is not in a tax loss situation and submitted that it is a common approach in LRIC modelling. Network Strategies recommended that we make an explicit statement on the assumed tax situation of the hypothetical efficient operator.[334]

654. We consider that our model provides for the notional tax position of the hypothetical efficient operator because:

654.1 the price that we set is based on a subset of the notional tax position of the hypothetical operator. The overall tax position of the hypothetical efficient operator will include a wider group of other telecommunication services. Within this wider group of services there may be some subsets that incur tax losses, even when the hypothetical efficient operator's overall tax position is positive. This is consistent with the definition of TSLRIC referring to "the service provider's provision of other telecommunication services".

654.2 from a section 18 perspective, it is difficult to see why the competitive market price is likely to be dependent on the tax position of a particular market participant.

655. Analysys Mason, on behalf of Chorus, argued that if we adopt a software implementation using the Excel PMT function for defining the annuity calculation, we need to provide arguments for doing so to avoid the potential for later debate.[335,336]

656. Our response is that the Excel PMT function is a widely used and tested function that provides for transparency.

657. Vodafone, WIK, Network Strategies and Spark submitted that it is unclear how we propose to model tax related cash flows and use of nominal and real cost through the model.[337]

---

334 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, paragraph [7.2].

335 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, section 1.19.

336 PMT is a Microsoft Excel function that calculates the payment for a loan based on a specified number of constant payments, and a constant interest rate.

337 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraphs [143]-[145]; Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, pp. 55-56; WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraphs [70]-[71]; Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, section G.

658. In response to these submissions, we provide a further explanation of our approach in the subsequent section and we publish our tax model with the draft determination to provide more transparency on the approach. WIK submitted that it is common international practice to apply adjustments for tax in the WACC, but that our tax approach is unusual and proposed an alternative formula.[338]

659. Vodafone submitted that tax adjustments should be made within the WACC formula, as corporate taxes impinge on the return on equity capital.[339] Network Strategies recommended using a pre-tax WACC approach.[340]

660. Our response is that our tax approach and an approach to apply tax adjustments for tax in the WACC will result in an equivalent outcome. Our approach applies another way to adjust for tax in the WACC.

661. In its cross-submission, Chorus confirmed this view:[341]

> The derivation of this formula is not provided by the Commission which is perhaps why WIK and Vodafone appear not to understand it. However, it is useful to note that dividing a post-tax WACC of the above form by (1-t), which the Commission formula does, gives the same formula as WIK proposes in equation 13 reproduced above

662. Chorus also argued in its cross-submission that: [342]

> WIK and Vodafone's responses to the Commission's proposals on modelling the cost of tax appear to be based on the incorrect belief that a simple transformation of the WACC can be used to account for the fact that tax depreciation differs from the actual rate at which capital is returned (depreciated) within the tilted annuity.
>
> ….WIK and Vodafone are incorrect in relation to the second dot point. Differences between the rate of tax depreciation and regulatory depreciation (return of capital) must be accounted for separately – which is what the Commission's formula attempts to do.

663. We agree our proposed formula accounts for the differences between accounting depreciation and tax depreciation.

---

338 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [71]. Also see paragraphs [59]-[69].

339 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, Section G9.

340 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 53-54. Network Strategies also submitted that our proposed approach is different to the approach used in TSO determinations. We agree. In the TSO determinations, we used the post-tax nominal WACC based on corporate tax.

341 Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 20 August 2014, paragraphs [118] and [150].

342 Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 20 August 2014, paragraphs [117]-[119].

Our tax approach used in this draft determination

664. Our tax model is published with the draft determination.

665. As discussed in our responses to submissions above, our modelling basis for taxation leads to the same outcome as an approach applying adjustments for tax in the WACC.[343]

666. In summary, our approach for the tax adjustment is the sum of the full (infinite life) stream of diminishing value depreciation allowances (i.e. the sum of a power series). Box 1 explains our approach in more detail.[344]

667. We sourced the diminishing value tax deprecation rates for each asset class defined in our TSLRIC model from IRD.[345] We matched the asset classes defined in our TSLRIC model with the asset classes defined by IRD. For those asset classes defined in our model and not explicitly defined by TERA, we considered the default tax depreciation rate provided by IRD.[346]

668. Our matching exercise and diminishing value used for each asset class, is published as a separate Excel workbook with our draft determination.

---

343 Our TSLRIC model also includes some top-down costs, for example IT costs are valued top-down. Our model therefore includes the yearly costs and the cost of capital. The yearly cost is the yearly depreciated value as provided by the accounts. For these costs, we used a simple WACC transformation, i.e. Pre-tax WACC = Post-tax WACC / (1 – t), where t is the company tax rate of 28%. We note that the materiality of the costs valued top-down is low.

344 Further explanation of our view on tax adjustments is in Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" Attachment A, 9 July 2014.

345 http://www.ird.govt.nz/resources/6/5/6576ff004ba3cf748844bd9ef8e4b077/ir265.pdf.

346 We note that the model groups land and buildings together with the same depreciation rate, although in practice land is not depreciable for tax purposes.

Box 1: An explanation of our modelling basis for tax

Suppose we want to find a **pre-tax** tilted annuity factor *K* with which to multiply the capital cost *C* in each asset class to get the annual revenue requirement.

The sequence of revenues starting one year after the expenditure of C will be:

$KC(1+g); KC(1+g)^2; .....$

Where:
***K** is the pre-tax tilted annuity factor;*
***C** is the capital cost in each asset class;*
***g** is the asset price growth forecast;*

Tax depreciation allowances will be a sequence:

$dC; dC(1-d); dC(1-d)^2; .....$

Where:
***d** is the diminishing value rate*

The post-tax cash flows will be a sequence:

$KC(1-t)(1+g); KC(1-t)(1+g)^2; .....$
$+tdC; tdC(1-d); tdC(1-d)^2; .....$

Where:
***t** is the corporate tax rate*

The present values of these sequences, at the nominal WACC ***w***, should equal ***C***. The present values are:

$$\frac{KC(1-t)}{PMT(w-g, L, -1)}$$; and

$$\frac{tdC}{(d+w)}$$

The second term is the sum of the whole power series:

$$\frac{tdC}{(1+w)} + \frac{tdC*(1-d)}{(1+w)^2} + \frac{tdC*(1-d)^2}{(1+w)^3} + ...$$

out to infinity, not just to the asset life. Our view is that this is a good approximation because the rest of the diminished value can be claimed at the end of the asset life.

Attachment J: Cost allocation

Purpose

669. This attachment outlines our draft decisions, as well as earlier views, submissions and subsequent analysis, regarding:

669.1 the preferred approach in our TSLRIC model for allocating forward-looking common costs (being both network costs and non-network costs that are not directly attributable to any of the services being modelled) and including the allocation of costs relevant to clause 4B of Schedule 1 of the Act; and

669.2 the implementation of our preferred cost allocation approach.

670. In our July 2014 regulatory framework and modelling approach paper we distinguished between:[347]

670.1 costs directly attributable, which are those that can be wholly or solely associated with a single type of service; and

670.2 costs not directly attributable, which are all other costs, ie those that cannot be wholly or solely associated with a single type of service.

671. Costs that are directly attributable are not dealt with in this chapter.

672. Of those costs which are not directly attributable, we distinguished in our July 2014 regulatory framework and modelling approach paper between network costs and non-network costs. These costs require a method of allocation. For UBA network costs we need to consider an allocation within both active and passive assets. We then also have to allocate costs between regulated and commercial bitstream services.

Defining network and non-network costs

673. In our July 2014 regulatory framework and modelling approach paper we defined two cost categories within which we would consider how to allocate costs not directly attributable:[348]

673.1 network costs, encompassing common network elements such as exchange buildings; and

673.2 non-network costs, comprising corporate overheads such as finance, human resources, legal and planning departments.

---

347 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [270].

348 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [273].

674. WIK submitted in its report for Spark and Vodafone that we use the term "directly attributable" to refer only to costs for which an identifiable cost driver can be found, while all other costs for which no cost driver can be found are shared costs.[349]

675. Similarly, Spark refers to some ambiguity in our terminology related to different types of cost and costs categories, and seeks clarification of this terminology.[350]

676. We, therefore, consider it helpful to clarify our definition of cost categories. For a complete discussion we refer, in particular, to TERA's discussion of the different cost categories.[351] By way of summary of TERA's discussion, our cost allocation is concerned with the allocation of:

676.1 what TERA refers to as "joint and network common costs". These are costs which are incurred in producing a given set of services (joint costs[352]), or all services (network common costs). TERA notes that these costs have a causal relationship with a group of, or all, services (rather than only a single service). For consistency with the terminology in our July 2014 regulatory framework and modelling approach paper, we will refer to these costs in this draft decision as "**network costs**", although it is important to bear in mind that it is only the joint and common network costs that are of concern for our cost allocation exercise; and

676.2 what TERA refers to as "corporate overheads" or "non-network common costs". These are costs which are not directly incurred in providing network services, but are nonetheless required to operate a telecommunications company. TERA notes that these costs cannot be allocated in a non-arbitrary way to any particular service or services. For consistency with the terminology in our July 2014 regulatory framework and modelling approach paper, we will refer to these costs in this draft decision as "**non-network costs**".

---

349 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand – Submission – In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraphs [75]-[76]. See also Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraphs [G6.1]-[G6.3].

350 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [148].

351 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.

352 As noted in Chapter 1 at paragraph 86.2, we use the terminology "shared costs" to refer to these costs.

Allocating network costs: Capacity-based vs Shapley-Shubik

677. Where cost drivers cannot be identified, our preliminary view in our July 2014 regulatory framework and modelling approach paper for the allocation of network costs was to use either a capacity-based approach or a Shapley-Shubik methodology for the UBA service.[353] In contrast, where cost drivers can be identified, our preliminary view for the allocation of network costs was to adopt a causal approach to the allocation of network costs for the UBA service.[354]

678. In submissions discussing the issue of cost allocation where cost drivers can be identified, Analysys Mason submitted that the cost allocation approach adopted for each asset should be consistent across services.[355] WIK's report for Spark and Vodafone submitted that input-based approaches are output-based approaches "in disguise", and that even the capacity-based approach essentially amounts to an output-based allocation of costs.[356]

679. In submissions regarding cost allocation where cost drivers cannot be identified, all submissions prefer the capacity-based allocation approach over the Shapley-Shubik approach. For example, Analysys Mason submitted that the Shapley-Shubik approach "leads to an undesirable dependence of the result on the number of services modelled", as well as adding complexity, lacking transparency and being more time consuming.[357] Spark submitted that the most appropriate allocation methodology for network costs is a capacity-based approach rather than a Shapley-Shubik approach.[358] Vodafone submitted that the Shapley-Shubik approach is not in line with best practice in cost allocation.[359]

---

353 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [279].

354 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [277].

355 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.16].

356 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraphs [78]-[79].

357 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.17.2]. See also Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [111].

358 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [149].

359 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G6.6].

680. TERA has advised us that the Shapley-Shubik approach is not overly complex – while it requires running the model several times, this is an automatic process. Nonetheless, TERA recommends the use of a capacity-based approach over the Shapley-Shubik approach.[360]

681. We note that, consistent with the submission of WIK referred to above, a capacity-based approach might be considered to be a cost driver-based approach. Indeed, TERA notes that a capacity-based approach follows network cost drivers, where networks are dimensioned to support peak traffic loads.[361] For this reason, in our draft decision we are no longer proposing to distinguish between approaches for the allocation of network costs depending on whether or not cost drivers can be identified.

682. Our draft decision is to use a capacity-based approach for the allocation of network costs in all cases. Our rationale for the use of a capacity-based allocation is:

682.1 a capacity-based allocation is often used in TSLRIC models, and therefore is consistent with our objective of giving greater weight to predictability of approach;

682.2 a capacity-based allocation is a more transparent approach than the alternative Shapley-Shubik approach; and

682.3 our expert advisor TERA supports the use of the capacity-based approach, noting that this approach follows the cost drivers and allocates a proportionately larger share of network costs to services that have a proportionately greater network loading.[362]

683. We note that all of the submissions agree that we should implement a capacity-based allocation approach. This has also been persuasive.

[360] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.1.

[361] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.1.

[362] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.1.

Implementation of the capacity-based allocation approach for active and passive assets

Active assets

684. The different active assets involved in the provision of the UBA service are often shared with other services, such as SHDSL (eg, DSLAMs). This therefore requires an allocation of the cost of each active asset between these different services.

685. For each asset, a specific "allocation key" is determined, consistent with the capacity-based allocation approach. [363] Active assets of the core network are dimensioned based on the number of customers, and therefore the appropriate capacity-based allocation key will be the relevant number of customers.[364]

686. In addition, an allocation key is required for the FDSs, as these are used for both the UBA service and for interconnection to the Regional Ethernet Network (REN) for those RSPs also buying the Tail Extension Service. FDS costs are allocated to interconnection links based on the number of ports used.

Passive assets

687. The TSLRIC cost model determines the cost of the fibre links between the cabinets and the exchanges, and between the exchanges and the FDS. These links are used to provide UBA services, but are also shared with other services such as mobile site backhaul or dark fibre services. As such, the cost of these links needs to be allocated across the different services.

688. We issued section 98 notices to Chorus requesting data to allocate the costs of these links, but did not find the information provided to us gave us a reliable basis on which to determine the appropriate cost allocation.

689. Based on recommendations from TERA, our preliminary decision is to allocate the cost of the links:

689.1 between the active cabinets and their parent exchange as 2/3 to the bitstream services (these include the regulated bitstream services and the non-regulated bitstream services) and 1/3 to other services; and

689.2 between exchanges and FDS exchanges as 1/3 to the bitstream services and 2/3 to other services.

690. TERA advised us this approach was reasonable given the lack of definitive data available to us and based on its experience of cost modelling for equivalent services internationally. We consider TERA's proposed approach is a reasonable allocation based on the range of services sharing the links.

---

[363] An "allocation key" in the present circumstances is the specific measure of capacity used to allocate common network costs e.g., number of ducts, number of customers, etc.

[364] TERA provides the following example in its Model Specification Paper at section 8.7.2.1: "E.g. for a DSLAM located in a cabinet, the costs of the rack and the sub-racks will be allocated based on customers connected to the cabinet, a xDSL card will be fully allocated to the xDSL service and a SHDSL card will be fully allocated to the SHDSL service."

691. We note an alternative approach is to use a modified EPMU approach.

692. Traditionally, EPMU allocation is made based on accounting costs. This can be performed when costs are allocated to services in the regulatory accounts. We considered Chorus' accounts and our understanding is that the service breakdown is not available. The costs are only split by activity and not by service.

693. One proxy is to use the revenue breakdown (by service) from the regulatory accounts to make up this allocation, on the basis that prices are cost reflective. The costs are then allocated in proportion to the revenue being received from the services that share in the common costs. Such a modified EPMU would conform to the standard EPMU approach if the non-price regulated services are priced to achieve a normal return.[365]

694. We note that the advantage of this approach is that non-price regulated services would bear an appropriate proportion (relative to the traditional EPMU allocation) of shared/common costs if such services are priced to achieve normal return, and higher if priced to achieve an above normal return.

695. The disadvantage of this approach is that we may not have sufficient data to allocate the common and shared costs between services. For example, revenue may not be attributed to a single service but rather a bundle of services. Additionally, the approach relies on the assumption that revenue reflects network costs.

Allocating the passive asset costs of bitstream between regulated and commercial bitstream services

696. Chorus' existing DSLAM engineering provides for at least a single GigE backhaul per sub-rack. We consider that this is consistent with the level of capacity a hypothetical efficient operator would deploy. Accordingly, for the fibre links allocated to bitstream services, we have modelled a single GigE backhaul per sub-rack. Our draft decision is to allocate the share of these passive link costs on the basis of bitstream service volume (regulated and commercial), which essentially translates to a per line allocation. Of the 1.1 million bitstream lines, we have allocated 1 million to the bitstream services.[366]

[365] If services are priced to achieve above normal return then the sharing based on revenues would result in the non-price regulated services bearing a higher proportion of shared/common costs.

[366] Based on advice from TERA, we are not undertaking the allocation on the basis of bitstream service traffic, as this would be likely lead to distortionary effects between services. We note that under this approach, the proposed Boost VDSL would be allocated as forty times the cost of regulated UBA. This is based on Chorus providing an average of 250kbps under the UBA STD and Boost VDSL offering 10Mbps.

697. Chorus has advised us that on or after 1 December 2014 it proposes to offer Boost VDSL as a commercial service not subject to the UBA STD. The issue will then arise as to whether the introduction of Boost VDSL will have any implications for the UBA price. A specific issue is what steps, if any, we could take to ensure our UBA price determination addresses clause 4B in these circumstances. As outlined in Chapter 1 we could:

697.1 rely on the ability to undertake s30R reviews to reallocate the costs and update the UBA price, where we consider it becomes necessary; or

697.2 implement periodic updating under a price change mechanism where the average cost, per line, per month of the relevant shared backhaul link could be allocated to the regulated UBA service in proportion to the service's share of peak hour traffic as reported by Chorus; or

697.3 adopt a fixed ratio between the fixed costs recovered per line from regulated and commercial bitstream variants and to adjust the average cost of the relevant link accordingly.

Allocating non-network costs

Our choice of allocation approach

698. In our July 2014 regulatory framework and modelling approach paper, our preliminary view for the allocation of non-network costs was to use the EPMU methodology. We noted that EPMU was widely used, compared to an alternative Ramsey-pricing methodology which is rarely used in practice and is complex to apply.[367]

699. All those who submitted on this issue agreed that the EPMU methodology was preferable for the allocation of non-network common costs.[368] TERA also recommends the use of the EPMU approach.[369]

---

367 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraphs [284]-[285]. Ramsey-pricing allocates common costs in proportion to relative demand elasticities for the different services.

368 See, in particular, Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [112]; WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [80]; and Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [131]. Spark's agreement with the use of EPMU is caveated on the basis that appropriate care is taken to ensure that the relevant costs are small relative to other costs, so as to avoid a proportionate efficiency distortion.

369 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.2.

700. The EPMU approach is the orthodox approach used in TSLRIC models, and is therefore consistent with our objective of giving greater weight to predictability of approach. It is also relatively simple to implement, compared to the Ramsey-pricing methodology which requires estimates of demand elasticities.

701. Accordingly, we remain of the view that EPMU is appropriate to allocate non-network common costs.

Implementation of the EPMU allocation approach

702. The EPMU approach is typically implemented using accounting cost data from the regulated firm's accounts. To the extent that the regulatory accounts allocate attributable costs (both direct and indirect) across different services, then EPMU involves allocating each service a share of non-network common costs in proportion to that service's share of total attributable costs.[370]

703. We have reviewed Chorus' accounts, and a breakdown of costs by service is not available – costs are allocated to activities and not services.

704. However, Chorus' accounts do provide a breakdown of revenue by service. Our draft decision is therefore to use this revenue breakdown by service as a proxy for the EPMU approach. That is, we allocate a share of non-network common costs to each service in proportion to that service's share of revenue.

705. We recognise that this is not strictly how the EPMU approach is applied, but in the absence of the appropriate cost data we consider that the revenue approach is the best available proxy. The suitability of this approach as a proxy for EPMU relies on the assumption that revenue is distributed across services in similar proportions to total attributable costs.

706. Where this is not the case (which may be because the mark-up on costs is proportionately greater for some services than for others, for example, those services for which demand is relatively more inelastic), the revenue approach has some similarities with the Ramsey-pricing approach. Under this revenue-based allocation approach, relative to the traditional EPMU approach, an access provider would only under-recover its costs of providing the service for which we set a regulated price if it were to earn a greater profit margin on unregulated services relative to regulated services.

[370] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.2.

Avoiding double recovery in allocating costs between UCLL and UBA

707. We consider that clause 4B of the Act does not require us to use the same MEA for UBA and UCLL, though using different MEAs raises issues regarding potential double recovery.[371]

708. In the MEA paper by TERA, that was published with our July 2014 regulatory framework and modelling approach paper, TERA identified potential double recovery in using different MEAs for UBA and UCLL.[372]

    708.1 TERA identified potential double recovery arising from the backhaul cost, situated between a cabinet and a MDF.

    708.2 TERA argued that this part of the network is counted twice if we were to use a FTTN MEA for UBA and a FTTH MEA for UCLL.

709. Both Chorus and Spark submitted on the potential double recovery identified in TERA's paper:

    709.1 Chorus disagreed with TERA and argued that there is no double recovery of costs recovered in prices. Chorus submitted that the intention of the Act is that the UBA price should recover the cost of the copper and fibre feeder.[373] Chorus also argued that a new entrant providing UBA would be charged by the copper incumbent for the copper local loop and incur the additional costs of installing the fibre feeder.[374]

    709.2 Spark agreed with TERA and argued that there is a potential for double recovery. Spark's view is that we need to eliminate the double recovery because access costs are mapped to a number of services and this raises the potential for costs to be double counted.[375]

---

371 Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014), Attachment A (James Every-Palmer "FPP determination: Issues re service description and the modern equivalent asset" (12 March 2014)), paragraph [31].

372 TERA Consultants "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services: - Modern Equivalent Assets and relevant scenarios" July 2014, pp.73-74.

373 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [152].

374 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [153].

375 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [145].

710. We agree with Spark and TERA that there is a potential for double recovery in modelling a FTTN MEA for UBA and a FTTH MEA for UCLL.[376] That is because the same trench is covered more than once in the TSLRIC model for UBA and the TSLRIC model for UCLL. This is the trench and duct costs between an active cabinet and MDF.

711. We disagree that we have to model the copper feeder between the active cabinet and the exchange, on the basis that we consider that the hypothetical efficient operator would not deploy copper alongside fibre between the cabinet and the exchange.

712. Accordingly, to ensure that trench and duct costs between an active cabinet and an exchange are not included in both the UBA TSLRIC model and UCLL TSLRIC model, our proposed approach is to:

    712.1 Calculate the potential double recovery as a result of the trench shared between UBA and UCLL.

    712.2 Allocate trench and duct costs between UBA and UCLL. The cost allocation is based on the capacity-based allocation approach. The capacity of the trench is the number of cables or ducts that can be installed in the trench.[377]

    712.3 UBA TSLRIC costs should be reduced by the UCLL share to avoid potential double recovery.[378]

713. Our modelling experts, TERA, also identified another source of potential double recovery as a result of using different MEAs for UBA and UCLL. If we were to model the use of smaller fibre coverage areas compared to copper coverage areas, then we would have potential double recovery because we would have more exchanges in the fibre scenario than the copper scenario. However, this is not the case in our TSLRIC modelling exercise because the coverage areas in both MEAs are the same.[379]

---

376 We note that there is potential for double recovery even if we were modelling FTTN MEA for both services. The only difference is with a FTTN MEA, we would be able to identify the separate costs for the network components to avoid double recovery.

377 We used cable surface or duct surface when there are dedicated ducts to allocate the costs of.

378 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 8.9.2.2.

379 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 8.9.2.2.2.

Other issues: Common costs in UFB areas

714. Chorus has submitted that:[380]

> If UFB services are not included in the demand for the modelled operator (consistent with Chorus' proposal), then common costs (particularly trench and duct costs) in Chorus UFB areas will need to be allocated between copper and fibre.

715. Analysys Mason elaborates on this point, explaining that if the modelled regulated services are based on the demand for regulated copper plus UFB demand, then an allocation of costs in UFB areas to both copper and fibre services would not provide the modelled operator with expected cost recovery.[381] Only if demand for UFB services was not included in the modelled demand would such a cost allocation be necessary.[382] Analysys Mason states:[383]

> In short: if UFB demand is included in the modelled demand for regulated services, then it must not also be allocated costs separately. Conversely, if UFB demand is not included in demand for the modelled regulated services, then it could be allocated costs separately.

716. Our draft decision is for all end-user demand (whether using regulated copper or UFB) within UFB regions to be modelled. We are also not proposing to allocate costs in UFB areas between copper and fibre services. Accordingly, our draft decision is consistent with the first sentence of the Analysys Mason passage quoted immediately above. The remainder of the Chorus/Analysys Mason submission on this particular issue does not apply as it is predicated on us excluding UFB demand from the demand for the modelled operator.

---

380 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [114]. See also Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 20 August 2014, paragraph [129].

381 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.17.5].

382 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.17.6].

383 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.17.5].

Attachment K: Confidentiality and data processes

Purpose

717. In this attachment we set out our approach to data collection and the treatment of confidential information used in our TSLRIC modelling process, including:

717.1 the steps we have taken to collect data required for our modelling;

717.2 the steps we have taken to protect the confidentiality of information collected; and

717.3 how confidential information is treated in the model.

We have issued notices for information under section 98 of the Act

718. We have issued notices for information under section 98 of the Act to source modelling information we required.[384]

719. In response to these notices, we received data and files from third party information providers. Where further clarifications to this information were required, requests for these were logged and third parties submitted updated files and / or updated covering letters containing required information.

We have issued information protection orders for information obtained in relation to these proceedings

720. We have made orders under section 100 of the Commerce Act 1986 to enable us to share some of the information we have collected during this process that we consider would be relevant and useful to interested parties. The orders protect the confidentiality of information obtained in these proceedings. The orders include rules for access to, and the use of information, as well as rules for reviewing the status of information and who may access information. This section sets out the process we undertook before issuing the section 100 confidentiality orders.

721. We first set out our preliminary views on our approach to confidentiality at an industry workshop on 28 March 2014, and our indicative process for making a section 100 confidentiality order and determining the persons who would be entitled to access confidential information in accordance with the order.

[384] Notices issued by us are available on the Commission's website at http://www.comcom.govt.nz/regulated-industries/telecommunications/regulated-services/standard-terms-determinations/unbundled-copper-local-loop-and-unbundled-bitstream-access-services-final-pricing-principle/.

722. Parties submitted on their preferred approach to confidentiality orders in their submissions of 11 April 2014. Vodafone and Spark both supported an approach that would not limit access to confidential information to external advisors.[385] In explanation, Vodafone stated:[386]

> Vodafone very much hopes that the content of a s 100 order can be settled by agreement between the parties. However, we are strongly opposed to a confidentiality process that would limit access to confidential information to external counsel only. In our view this would:
>
> (a) drive significant cost and complexity for interested parties wishing to engage with the key assumptions which will necessarily underpin the TSLRIC model;
>
> (b) prevent parties from leveraging the (often unique) expertise, especially in relation to network services and cost modelling, which already exist within their organisations;
>
> (c) increase the difficulty for interested parties to adequately engage in what is already a tight timetable; and
>
> (d) would be inconsistent with both past processes handling confidential information (where certain, nominated, internal advisors have been permitted to access confidential information) as well as the process adopted in other domains (such as due diligence), where parties have consistently demonstrated their ability to deal with confidential information in an appropriate manner.

723. Chorus opposed a confidentiality framework that would allow access to confidential information to internal advisors, arguing that:[387]

> Providing wider access will not achieve predictability, as it is the Commission's view on the modelling approach and section 18 and the outcome of the modelling, not the raw data that provides predictability.

724. On 29 August 2014, we released draft section 100 orders for both the UBA and UCLL price review determinations, and sought parties' feedback. We also requested that parties provide us with the names and certain other information about their nominated counsel and the internal and external experts they considered should be allowed access to the confidential information made available under the orders. For internal persons, including any internal nominated counsel, we also required a statement as to the extent to which they participate in or contribute to strategic or commercial decision-making on behalf of their organisation.

---

385 Vodafone "Comments on further consultation papers on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle", (11 April 2014), at paragraph [E2]-[E3]; Spark "UCLL and UBA FPP: further consultation and supplementary paper" (11 April 2014), at paragraphs [82]-[84].

386 Vodafone "Comments on further consultation papers on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle", (11 April 2014), at paragraph [E3].

387 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (11 April 2014), at paragraphs [42]-[43].

725. Our view was that the draft orders:

725.1 would apply to all information identified as confidential in submissions made in the course of the proceedings, including information provided in response to a request for information made under section 98 of the Commerce Act 1986 in the proceedings;

725.2 would provide for two tiers of protection: restricted information, for information accessible to all persons listed in the orders, and additional protection, which would be made available to the persons listed in the orders only on terms and conditions we determined on a case-by-case basis;

725.3 all information made subject to the orders would be treated as restricted information unless a request for additional protection was received;

725.4 additional protection would be granted only in where it was evident that the protection of the restricted information under the terms of the orders would likely be inadequate to avoid unreasonable prejudice; and

725.5 would allow for limited numbers of internal experts to sign up to the orders where they could directly contribute to submissions on the draft determination, such as internal modellers, engineers, or economists.

726. Submissions on the terms of the orders were received on 12 September 2014, along with the requested list of nominated persons and counsels, and supporting information about their role, areas of expertise, and information about the extent of their participation in strategic or commercial decision-making.

727. Chorus proposed that:

727.1 internal experts be granted access only in exceptional circumstances where they have the requisite expertise and do not provide input into or make decision on commercial matters; and

727.2 the model only be made available to external economic experts.

728. Chorus considered that this approach would provide sufficient transparency for parties to effectively participate in the proceedings, and would strike a more appropriate balance with their confidentiality concerns. Chorus raised the concern that “internal regulatory experts, including economic experts and cost modellers, may have a degree of input into both regulatory and commercial decisions in their day-to-day roles”, and therefore:

> The practical risk is that confidential information could be directly or indirectly used for other purposes (whether intentionally or not), despite the best intentions of the Proposed Order and those signing the undertakings.

729. Chorus also considered that section 98 information should be excluded from the proposed orders unless it was included in the draft model or reasons paper. Chorus also considered that we should specify in the order the circumstances under which an internal expert would be granted access to restricted information, including a definition of what it means to act in a 'commercial capacity'. Chorus' view was that it was insufficient to limit access only to internal persons who make commercial decisions or are involved in commercial negotiations.

730. Spark supported setting a high threshold for additional protection, and that we should favour access to confidential information by both internal and external experts. They considered that:

> The need to achieve a high quality and durable regulatory decision requires a high level of engagement by a broad range of knowledgeable participants, a high degree of transparency in all material aspects of the decision, and a full opportunity to interrogate, test and challenge data and assumptions used.

731. Spark argued that there should be a very high materiality threshold before information was granted additional protection.

732. Spark also proposed that internal nominated counsel be able to access information over which additional protection was granted, so long as they were not directly involved with commercial decision-making.

733. Vodafone also supported allowing internal nominated counsel access to information given additional protection. Vodafone was otherwise generally supportive of the terms of the order:

> which in our view properly balance the interests of all parties in ensuring that confidential information that would or might cause harm to their interests if disclosed is protected, with the countervailing interest that all parties have in ensuring that information can be disclosed to the extent necessary to enable them to properly understand the reasons underlying UBA and UCLL price review determinations, to comment meaningfully on these reasons, and to participate in the decision making process.

734. Following receipt of lists of proposed nominated persons, we forwarded the non-confidential information relating to the nominated persons to each party, with a request that objections be received by 19 September 2019.

735. We considered the information provided was sufficient for other parties to be able to understand, in principle, the extent to which the nominated persons may contribute materially to strategic and commercial decision-making, and therefore may pose an increased risk of a breach of the section 100 orders through the use, explicit or implicit, of the confidential information that might be provided, and in a way that would be likely to cause commercial harm or prejudice.

736. Only Chorus submitted objections to the proposed nominated persons. Chorus objected to all nominated internal persons, other than internal counsel. In explanation, Chorus stated that:

> We are of the view the disclosure of restricted information to internal experts would be unduly prejudicial to our commercial position, irrespective of the best intentions of those signing the order or any restrictions imposed on the use/misuse of that information under the Proposed Order.

737. Chorus argued that the information provided in relation to the nominated persons was insufficient to persuade Chorus that their access to restricted information would not be unduly prejudicial.

738. Following consideration of Chorus' objections, we sought additional information from Vodafone, Spark, and CallPlus about their internal nominated experts. This additional information was taken into consideration, along with all submissions and Chorus' objections, in our decision on who would be entitled to sign up to the confidentiality undertakings in accordance with the orders.

739. In determining who should have access to restricted information in accordance with the orders, we have considered, amongst other things:

739.1 the individual's ability to provide specialist expertise or knowledge that may materially contribute our determination of the proceedings;

739.2 the individual's role in, or contribution to, strategic or commercial decision-making of the party nominating them; and

739.3 the likelihood of any commercial prejudice to a party should the person have access to restricted information in accordance with the orders.

740. A key consideration in our assessment was whether the person had sufficient specialist knowledge or expertise to meaningfully contribute to our proceedings. Mere familiarity is not enough – the nominated persons should be able to provide a meaningful contribution to a party's submissions in the proceedings.

741. In considering the likelihood of commercial prejudice, we were not persuaded by Chorus' argument that any form of commercial activity by the person should preclude them from access. Instead, we considered each individual's role in and ability to influence the setting of prices or negotiation of contracts, and whether there was a material risk that the individual could take advantage of any of the information in a way that might lead to commercial prejudice. Where the person does not normally contribute to such activities, we consider the likelihood of prejudice low, as self-monitoring and the deeds and protections under the section 100 orders should be sufficient.

742. Where the persons actively engaged in such activities to an extent that could lead to material detriment (whether through commercial prejudice to another party's position, or to an unfair commercial advantage), we considered that these persons should be precluded from access to the restricted information. We were particularly sensitive to cases where 'mere knowledge' might be sufficient to lead to commercial prejudice.

743. We issued section 100 confidentiality orders, along with the list of persons entitled to sign up to the orders, on 22 October 2014. We also requested that all parties submit any requests for additional protection in relation to information previously provided in relation to the proceedings by 4 November 2014. These requests were considered in our decision on what information to make available to the internal and external experts entitled to sign up to the orders.

744. We will keep the orders under review, including whether access to the information provided in the data room should continue after the due date for cross-submissions.

Summary of the section 100 confidentiality orders

745. The section 100 orders provide for two categories of information, restricted information (RI), and confidential information (CI) which qualifies for additional protection because of its commercial sensitivity.

746. Under the section 100 orders all section 98 information is RI unless it is public information or is CI.

747. We have designated documents/files as CI where they contain information which appears to be commercially sensitive and where its release could prejudice the owner of the information or a third party. This will include genuine trade secret and commercially sensitive information such as information about investment plans, strategic intentions, production volumes/capacity and prices that are not public.

748. In reaching our decisions on the information to be treated as CI, we have reviewed each document over which additional protection was sought. In making our assessment, we have also relied on the information provided by parties when claiming additional protection, in our analysis of potential harm.

749. Where information has been given additional protection, the section 100 orders provide a process under which parties can request that the scope of the additional protection be modified. In this way, parties may request an adjustment to our decisions on the additional protection that applies to information. If a party considers it necessary for an internal person to have access to information for which additional protection has been provided they can also seek the re-designation of the information designated as CI. We will assess any such requests on a case-by-case basis, and will make reasonable efforts to make a decision on such requests within two working days.

How confidential information is treated in our models

750. We have released two versions of the model (with the exception of the opex part of the model where we have only produced a confidential version) alongside our draft decision: a public version, and a version for which additional protection has been granted.

751. The public version of the model is a fully-functional version of the model, and therefore is capable of being interrogated, audited, and tested. Confidential information in the public version of the model has been altered by randomly changing the values of the input data.

752. As a result, the outputs (prices) of the public version of the model and its component parts will differ from the prices contained in our draft decision.

753. There is no public version of the opex part of the model. The opex part of the model reflects Chorus' internal financial costs and systems, which are confidential to Chorus. We have therefore only released a confidential information version of the opex part of the model.

754. We consider that the public version of the model is sufficient for interested parties, including internal modelling experts, to fully test the working assumptions and parameters of the model, without divulging the confidential information contained in the model. Nominated persons with access to the confidential information will be able to access that information in the virtual data room.

755. The complete model, which is subject to additional protection, contains all of the confidential information used in the model. Confidential information included in the model is highlighted in blue.

756. The model has been designed to ensure the accuracy and security of the confidential information contained in the model.

757. The sources of the confidential information are noted in the complete model and the accompanying documentation, and are available to the relevant nominated persons in the virtual data room we have established for the purposes of this consultation process.

758. Any additional information considered by the Commission and its consultants in relation to the model has also been made available in this data room.

759. In deciding on what information should be made available in the data room, we have balanced the interest of parties in protecting their confidential information against the need to ensure a participatory consultation process and to comply with our obligation to provide sufficient information for parties to meaningfully submit on our decisions. We have taken this approach to ensure that the process we adopt is workable and reasonably efficient.

Submissions on confidential information

760. Parties may use and refer to restricted information and confidential information in their submissions on the draft decision and model. All submissions must comply with the information protection orders we have issued.

761. We notified parties to the information protection orders on Wednesday, 19 November 2014 of our decisions on requests for additional protection we received in relation to section 98 information provided to us.[388] That notice identifies the information for which additional protection has been given, and the nature of that protection.

762. Parties should be mindful of the classification of information contained in the virtual data room or used in our draft model if any of the material is referred to or cited in submissions to us.

763. Where parties submit their own models, or revised versions of our models, they should clearly identify all confidential and restricted information contained in the model(s) in the manner required by our section 100 orders. Parties are expected to include a public version of any model submitted to us.

[388] We are still in the process of adding further information to the data room and assessing the confidentiality of that information.