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COMMERCE COMMISSION

Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)

Decision 626

Determination under section 30M of the Telecommunications Act 2001

The Commission: Dr Ross Patterson
Donal Curtin
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Date of Determination: 27 June 2008

CONFIDENTIAL MATERIAL IN THIS DETERMINATION IS CONTAINED IN SQUARE BRACKETS

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EXECUTIVE SUMMARY[1]

i. The unbundled copper local loop backhaul (telephone exchange to interconnect point) service (**UCLL Backhaul Service**) is a service that provides transmission capacity in Telecom's network between Telecom's local telephone exchange (or equivalent facility) and the access seeker's nearest available point of interconnection (**ASNAPOI**). The UCLL Backhaul Service is for the purpose of providing access to, and interconnection with, Telecom's UCLL network.

ii. In this final STD, the Commission has determined the price and non-price terms for the UCLL Backhaul Service. It contains sufficient terms to allow Telecom to make the service available to an Access Seeker without the need for the Access Seeker to enter into an agreement with Telecom for provision of the service. The key terms are summarised below.

Definitions of POI Site and ASNAPOI

iii. The Commission has accepted the Telecommunications Carriers Forum (**TCF**) agreed 29 interconnection points. These 29 points are classified as POI Sites for the purposes of this STD.

iv. The definition of ASNAPOI is a key term for the UCLL Backhaul Service. The Commission considers that the approach outlined below will enable ASNAPOIs to be determined as a simple question of fact. The Commission has considered each of the elements of this term and concluded that the following applies:

a. A POI Site is the ASNAPOI in respect of an Local Exchange for an Access Seeker if:

    i. the POI Site is an available point of interconnection; and
    ii. the POI Site is the nearest, as measured by Telecom's network path, of the available points of interconnection to the Local Exchange

b. A POI Site is an available point of interconnection for an Access Seeker if one of the following holds:

    i. the Access Seeker is physically interconnected using the Access Seeker's own equipment with Telecom's Network at that POI Site; or
    ii. the Access Seeker has an agreement with a backhaul provider (either Telecom or a third party provider) allowing interconnection at that POI Site to the Access Seeker's Network.

c. The Access Seeker must establish an ASNAPOI at a minimum of one POI Site, but may establish an ASNAPOI at more than one POI Site.

[1] This executive summary does not form part of the Commission's Standard Terms Determination.

Market definition and competition assessment

v. The conditions for the UCLL Backhaul Service require the Commission to identify the markets in which the UCLL Backhaul Service is supplied to assess whether Telecom faces limited, or is likely to face lessened, competition in those markets. The Commission has determined that the wholesale markets in which the UCLL Backhaul Service is supplied are:

- transmission capacity on each Primary Link (local telephone exchange to Parent POI Site) of the UCLL Backhaul Service; and
- transmission capacity on each Secondary Link (Parent POI Site to ASNAPOI) of the UCLL Backhaul Service.

vi. Based on its competition assessment, the Commission has determined that Telecom currently faces limited competition in the provision of transmission capacity on 20 Primary Links of the UCLL Backhaul Service, out of the 57 Primary Links that the Commission has assessed in the competition assessment in this STD. These 20 Primary Links will be subject to the UCLL Backhaul Service.

vii. The Commission has determined that Telecom faces limited competition on the following Secondary Links:

- Kerikeri-Whangarei;
- Whangarei-Glenfield;
- Whangarei-Torbay;
- Torbay-Glenfield;
- New Plymouth-Hamilton;
- New Plymouth-Palmerston North;
- New Plymouth-Porirua; and
- All South Island Secondary Links except Riccarton-Christchurch and Christchurch-Wellington.

These Secondary Links will be subject to the UCLL Backhaul Service.

viii. The Commission intends to review, under s 30R of the Act, its assessment of competition periodically in order to ensure that the regulated UCLL Backhaul Service is available only on links where Telecom faces limited, or is likely to face lessened, competition.

Price terms

ix. The Commission has determined the following monthly rental rates for the UCLL Backhaul Service:

Distance Step	**Bandwidth**	
	100 Mbps	**1 Gbps**
0 km < radial distance ≤ 5 km	$964	$2,344
5 km < radial distance ≤	$1,683	$4,091

10 km		
10 km < radial distance ≤ 15 km	$2,181	$5,301
15 km < radial distance ≤ 20 km	$2,586	$6,287
20 km < radial distance ≤ 25 km	$2,938	$7,142
radial distance > 25 km	price set according to: *price* = exp{4.6300 + (0.5071 x ln(*radial distance*)) + (0.3858 x ln(*bandwidth*))}*	

* Where ln is the natural log.

x. The monthly rental rates apply separately to each Primary Link and Secondary Link. However, when the Primary Link and the Secondary Link are the same bandwidth then one monthly rental rate applies for both the Primary Link and the Secondary Link, based on the combined radial distance of both the Primary Link and the Secondary Link.

xi. The Commission has determined that the new connection charge for the UCLL Backhaul Service is $4,030 for a new connection at one end and $8,059 for a new connection at two ends.

xii. A number of other prices have also been determined for other core charges and sundry charges.

Non-price terms

xiii. The Commission has also determined non-price terms. In determining the non-price terms, the Commission has generally adopted:

- those non-price terms that were unanimously recommended by the TCF, only making changes to those recommendations where there was a compelling reason to do so; and
- those non-price terms that relate to well established Telecom operational systems in place (eg fault prioritisation) which would be expensive to adjust prior to the applicable milestone dates set out in the Separation Undertakings.

Implementation plan

xiv. The Commission has determined that the implementation timeframe is 100 Working Days after the release date of this STD.

Confidential information cited in this determination is subject to the confidentiality order made by the Commission under s 15(i) of the Act and s 100 of the Commerce Act 1986 ('the Order'). The Order in relation to the UCLL Backhaul STD process is dated 10 October 2007.

Information in relation to Telecom's restricted information is denoted as [ ] **TNZRI**. Access seeker's restricted information is denoted in a similar way, for example, TelstraClear's restricted information is labelled [ ] **TCLRI**. Commission only information is denoted as [ ] **COI**.

All restricted and Commission only information is subject to the Order and has been extracted from the public version of this determination.

Key documents are available on the Commission's website at:
http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/StandardTermsDeterminations/UnbundledLocalLoopBackhaulService/DecisionsList.aspx

THE DETERMINATION FRAMEWORK

1. This standard terms determination (**STD**) for Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point) (**UCLL Backhaul**) comprises this decision report and the appended:

    - UCLL Backhaul Terms comprising:
        (a) UCLL Backhaul General Terms
        (b) Schedule 1 – UCLL Backhaul Service Description
        (c) Schedule 2 – UCLL Backhaul Price List
        (d) Schedule 3 – UCLL Backhaul Service Level Terms (SLA)
        (e) Schedule 4 – UCLL Backhaul Operations Manual
        (f) Schedule 5 – UCLL Backhaul POI Site Related Information (including radial distances and Links that will be subject to the UCLL Backhaul Service).
    - Implementation Plan.

Purpose

2. In making an STD, the Commission must consider the purpose set out in s 18 of the Telecommunications Act (the Act). Section 18 describes the purpose of Part 2 and Schedules 1, 3, and 3A as follows:

> **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.
>
> (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.

3. Section 19 of the Act directs the Commission to consider, when making a determination under Part 2, to satisfy itself that the determination best gives, or is likely to best give, effect to the purpose set out in s 18. Section 19 states:

> **19 Commission and Minister must consider purpose set out in section 18 and additional matters**
>
> If the Commission or the Minister (as the case may be) is required under this Part or any of Schedules 1, 3, and 3A to make a recommendation, determination, or a decision, the Commission or the Minister must—
>
> (a) consider the purpose set out in section 18; and

(b) if applicable, consider the additional matters set out in Schedule 1 regarding the application of section 18; and

(c) make the recommendation, determination, or decision that the Commission or Minister considers best gives, or is likely to best give, effect to the purpose set out in section 18.

Background to the determination process

4. On 30 April 2007 the Commission initiated the STD process in relation to UCLL Backhaul under s 30C of the Act.

5. The Commission conducted a scoping workshop on 25 May 2007. The workshop was open to all parties to the STD. The purpose of the workshop was to provide the Commission with information to assist it in specifying:

- a reasonable period of time within which Telecom must submit a standard terms proposal (STP) under s 30F; and
- any additional requirements for that proposal under 30F(2).

6. On 19 June 2007 the Commission gave written notice to Telecom requiring it to submit to the Commission, an STP by 28 September 2007 that complied with s 30G of the Act. In the notice (as amended), the Commission specified a number of additional requirements that Telecom was required to provide in its proposal.

7. On 28 September Telecom submitted a STP for the UCLL Backhaul Service. Public notice was given and interested parties were invited to make submissions.

8. On 9 November 2007 three submissions on the UCLL Backhaul STP were received from TelstraClear, Vodafone/ihug and Orcon/Kordia/CallPlus.

9. On 8 February 2008 the Commission issued its draft UCLL Backhaul STD in accordance with s 30K of the Act. Submissions were received on 7 March 2008 from Telecom, Vodafone, Orcon/Kordia/CallPlus, TelstraClear, Vector Communications, and CityLink. On 26 March 2008 cross-submissions were received from Telecom, Orcon/Kordia/CallPlus, TelstraClear, Vodafone/ihug, Vector Communications and FX Networks.

10. On 10 and 11 April 2008 the Commission held a public conference, pursuant to s 30L of the Act, to seek additional information on particular aspects of the submissions and to provide interested parties with an opportunity to give a brief overview of their position, by presenting opening and closing submissions.

11. Key documents (including transcripts) are available on the Commission's website at:

http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/StandardTermsDeterminations/UnbundledLocalLoopBackhaulService/DecisionsList.aspx

The service description

12. This STD relates to the UCLL Backhaul Service as set out in subpart 1 of Part 2 of Schedule 1 of the Act. This service is defined as follows:

Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)

Description of service:

A service (and its associated functions, including the associated functions of Telecom's operational support systems) that provides transmission capacity in Telecom's network (whether the transmission capacity is copper, fibre, or anything else) between the handover point in Telecom's local telephone exchange (or equivalent facility) and the access seeker's nearest available point of interconnection, for the purposes of providing access to, and interconnection with, Telecom's unbundled copper local loop network (including any necessary supporting equipment)

Conditions:

Both of the following:

(a) any of the following:

(i) an application for a determination by the access seeker of the service is pending in respect of Telecom's unbundled copper local loop network; or

(ii) a standard terms development process has been initiated under subpart 2A of Part 2 in respect of Telecom's unbundled copper local loop network; or

(iii) the access seeker of the service is a party to a determination under section 27 that has not expired, or is a party to a standard terms determination under section 30M, in respect of Telecom's unbundled copper local loop network; or

(iv) an agreement for Telecom's unbundled copper local loop network (or similar unbundled local loop network service) is in force between the access seeker of the service and Telecom; and

(b) either—

(i) Telecom faces limited, or is likely to face lessened, competition in a market for transmission capacity between Telecom's local telephone exchange (or equivalent facility) and the access seeker's nearest available point of interconnection; or

(ii) Telecom does not face limited, or is not likely to face lessened, competition in a market for transmission capacity between Telecom's local telephone exchange (or equivalent facility) and the access seeker's nearest available point of interconnection, and the Commission has decided to

	require Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point) to be wholesaled in that market
Access provider:	Telecom
Access seeker:	A service provider who seeks access to the service
Access principles:	The standard access principles set out in clause 5
Limits on access principles:	The limits set out in clause 6
Initial pricing principle:	Benchmarking against prices for similar services in comparable countries that use a forward-looking cost-based pricing method
Final pricing principle:	TSLRIC
Requirement referred to in section 45 for final pricing principle:	Nil
Additional matters that must be considered regarding the application of section 18:	Nil

The meaning of "access seeker's nearest available point of interconnection"

13. This section addresses the interpretation of the phrase "access seeker's nearest available point of interconnection" (**ASNAPOI**) in the service description of the designated access service, UCLL Backhaul.

14. The key features of the Commission's interpretation of ASNAPOI in the draft UCLL Backhaul STD were:

- The TCF agreed 29 points of interconnection are classified as "POI Sites" for the purposes of this STD and the Access Seeker may designate any one of those sites as an ASNAPOI for the purposes of UCLL Backhaul;
- That an Access Seeker may interconnect at a single POI Site to obtain access to UCLL Backhaul;
- Where the Access Seeker is interconnected at more than one POI Site, Telecom must handover transmission capacity for UCLL Backhaul to the ASNAPOI that is geographically nearest to the handover point in Telecom's local telephone exchange from which the UCLL Backhaul Service is supplied; and
- Each local exchange has a fixed association with a POI Site (ie its Parent POI Site) and Telecom must handover transmission capacity for UCLL Backhaul in accordance with the Parent POI rules set out in the UCLL Backhaul Service Description in Schedule 1.

15. The Commission has carefully considered all submissions received in relation to the approach to ASNAPOI as outlined above, which were relevant to both the UBA Backhaul Service and the UCLL Backhaul Service. A summary of submissions is found in the UBA Backhaul STD. These submissions apply with the necessary modification that they are also relevant to UCLL Backhaul.

Legal Framework for ASNAPOI

16. The description of service for UCLL Backhaul in subpart 1 of Part 2 of Schedule 1 of the Act outlines the extent to which Telecom's network is regulated by the Act and provides as follows:

> A service (and its associated functions, including the associated functions of Telecom's operational support systems) that provides transmission capacity in Telecom's network (whether the transmission capacity is copper, fibre, or anything else) between the handover point in Telecom's local telephone exchange (or equivalent facility) and the access seeker's nearest available point of interconnection, for the purposes of providing access to, and interconnection with, Telecom's unbundled copper local loop network (including any necessary supporting equipment)

17. The Commission is required to ascertain the meaning of "access seeker's nearest available point of interconnection" in the context of both the immediate and general legislative context of the Act, including the purpose statement set out in s 18.[2]

18. The Commission has carefully considered the context and purpose of the Act, the definitions of "nearest" and "available" in the Oxford English Dictionary, the definition of "Access Seeker" in s 5 of the Act, and the parties' submissions, in order to ascertain the meaning of the term.

Access Seeker

19. The first element "Access Seeker", is defined in s 5 of the Act to mean:

> (a) in relation to a designated service or specified service, the person named or described in Part 2, or Part 3, of Schedule 1 as the access seeker for the designated service or specified service…

Nearest

20. The second element "near", is defined as "close at hand, not distant in space or time; close.[3]

[2] Section 5 of the Interpretation Act 1999 makes text and purpose the key drivers of statutory interpretation and requires that the meaning of an enactment must be ascertained from its text and in light of its purpose. In the Supreme Court case of *Commerce Commission v Fonterra Co-Operative Group Limited* [2007] NZSC 36 Justice Tipping observed that "the meaning of an enactment must be ascertained from its text and in the light of its purpose. Even if the meaning of the text may appear plain in isolation of purpose, that meaning should always be cross checked against purpose in order to observe the dual requirements of s. 5. In determining purpose the court must obviously have regard to both the immediate and the general legislative context. Of relevance too may be the social, commercial or other objective of the enactment."

[3] Shorter Oxford English Dictionary, (Oxford University Press, fifth edition, 2002)

21. The Commission considers that "nearest" relates to the trunk side of Telecom's local telephone exchange. This means that where interconnection is available at more than one point, the point nearest to the handover point of Telecom's local telephone exchange from which the UCLL designated access service is supplied is the relevant point.

22. Which of two interconnection points is "nearest" to Telecom's local telephone exchange must be calculated in network terms rather than radial physical distance.[4] This means that the actual distance of network between two points in Telecom's network must be used to determine which of two interconnection points is "nearest" to Telecom's local telephone exchange. The UCLL Backhaul Service Description requires Telecom to include a list of the distances in Telecom's network path between local telephone exchanges and POI Sites and between POI Sites. This list must be made available to Access Seekers via a secure web portal.

Available

23. The third element "available" is defined in the Oxford English Dictionary as "capable of producing a desired result; effectual, valid; able to be used or turned to account; at one's disposal, within one's reach, obtainable".[5]

24. The UCLL Backhaul Service requires transmission capacity between the handover point of Telecom's local telephone exchange and the access seeker's nearest available point of interconnection.

25. Telecom submitted that interconnection at any given ASNAPOI was available to Access Seekers in either of two ways:

    (a) physical interconnection between Telecom's network and the Access Seeker's network at a particular POI; or

    (b) commercial agreement between the Access Seeker and a choice of backhaul providers (either Telecom or a third party) competing at the POI and therefore capable of providing transmission services from that POI to another ASNAPOI or other nominated point.

26. The Commission agrees with this submission, and is of the view that a point of interconnection is "available" where an Access Seeker has a commercial UCLL backhaul arrangement with a third party backhaul provider from the POI Site to the Access Seeker's network.

27. For clarity, the Commission notes that a local exchange has a fixed association with a POI Site for the purposes of routing transmission capacity in this STD, and that POI Site is described as the local exchange's Parent POI Site. Terms and conditions relating to

[4] While the nearest interconnection point is assessed in terms of network distance, the price for Primary and Secondary Links is assessed in terms of radial distance.
[5] Shorter Oxford English Dictionary, (Oxford University Press, fifth edition, 2002)

POI Sites and Parent POI Sites are outlined in the UCLL Backhaul Service Description in Schedule 1 of this STD.

28. Telecom's submission went further to argue a point of interconnection was available where an Access Seeker was not physically interconnected or had commercial arrangements in place, but "could" do so, eg by negotiating a commercial arrangement with a third party provider who had capacity at a POI where the Access Seeker had no arrangements in place. In the Commission's view this takes the concept of availability too far because it would in effect transform the availability requirement into a de facto competition test.

29. It follows from the Commission's view that the service description requires transmission capacity between the handover point of Telecom's local telephone exchange and the ASNAPOI that there be a physical (or third party) connection, because data transmission is unable to occur through a POI Site that an Access Seeker is not connected to, but could connect to. When there is no connection (either physical or by commercial arrangement) the point of interconnection would not be "able to be used"; that is, it would not be available. In addition there would be a high degree of uncertainty as to the circumstances in which an Access Seeker "could" interconnect where it does not have existing arrangements in place. In the Commission's view the contention that the ASNAPOI is one that the Access Seeker *could* connect to is contrary to the requirements of the UCLL Backhaul Service, and s 18 of the Act.

30. The Commission's approach also has the benefit of simplicity and certainty for all parties. The identification of the ASNAPOI in any given case will be a simple question of fact – the POI to which the Access Seeker is physically connected or has in place third party backhaul arrangements which is nearest to the handover point of Telecom's local telephone exchange from which the UCLL designated access service is supplied.

Points of Interconnection

31. The last element, "point of interconnection", describes the point on Telecom's network where Telecom hands over traffic to the Access Seeker's network.

32. The Commission has decided to accept the TCF agreed 29 interconnection points for the purposes of this STD as POI Sites.

Statutory requirements for an STD

33. The Commission makes this STD in accordance with ss 30M, 30O, 30P and 30Q of the Act.

34. In this determination, s 30P(1)(a) and (b) do not apply and, therefore, the Commission has determined the prices in accordance with the applicable initial pricing principle for the designated UCLL Backhaul Service (s 30P(1)(c)).

35. Section 30O specifies the matters to be included in the final STD as follows:

> **30O Matters to be included in STD: general**
>
> (1) A STD must—
>
> (a) specify sufficient terms to allow, without the need for the access seeker to enter into an agreement with the access provider, the designated access service or specified service to be made available within the time frames specified under paragraph (b); and
>
> (b) state the time frames within which the access provider must make the service available to—
>
> (i) every person who is already an access seeker when the STD is made; and
>
> (ii) every person who becomes an access seeker after the STD is made; and
>
> (c) specify the reasons for the STD; and
>
> (d) specify the terms and conditions (if any) on which the STD is made; and
>
> (e) specify the actions (if any) that a party to the STD must take or refrain from taking.
>
> (2) To avoid doubt, a STD may also include, without limitation, terms concerning any or all of the following matters:
>
> (a) dispute resolution procedures:
>
> (b) the consequences of a breach of the determination (including provision for set-off or withholding rights, or liquidated damages):
>
> (c) suspension and termination of the service:
>
> (d) procedures for, or restrictions on, assignment of the service.
>
> (3) The Commission must identify which of the terms (if any) specified in a STD are allowed to be varied, on an application made under section 30V by a party to that determination, under a residual terms determination.

Timeframe for supply to access seekers

36. The Commission is required by s 30O(1)(b) to specify in the STD, the timeframes within which the access provider must make the service available to:

- every person who is already an access seeker at the time the STD is made; and
- every person who becomes an access seeker after the STD is made.

37. The timeframes within which Telecom must make the service available are contained in the Implementation Plan in Appendix A.

Telecom as Access Seeker

38. In its draft STD the Commission indicated its view that, in respect of Telecom[6] as the Access Provider of UCLL Backhaul, the Act does not contemplate that the Access Provider and an Access Seeker are intended to be the same organisation. This view was consistent with the STDs for the UBA Service and UCLL Services.

39. While the Commission notes that it is not required to give a view on this issue, the Commission maintains its view and in the interests of clarity makes the following points:

- The Access Provider, in addition to Access Seekers has a 'voice' in respect of any changes to an STD. Telecom, defined broadly as the Telecom Corporation of New Zealand (which includes Chorus), is the Access Provider in relation to the UCLL Backhaul Service.
- Operational Separation does not establish Telecom business units as separate legal entities. This would only be achieved by structural separation or subsequent sale of a business unit.
- The Commission consults interested parties if they are materially affected by a change and so if necessary may consult specifically with Chorus.
- The scheme and purpose of the Act support the view that in respect of UCLL Backhaul an Access Seeker and an Access Provider cannot concurrently be the same legal entity.

Access principles and limits on those principles

40. Clauses 5 and 6 of Schedule 1 to the Act apply in relation to the UCLL Backhaul Service. They provide:

> **5 Standard access principles for designated access services and specified services**
>
> The following standard access principles apply to designated access services and specified services:
>
> (a) *principle 1*: the access provider must provide the service to the access seeker in a timely manner:
>
> (b) *principle 2*: the service must be supplied to a standard that is consistent with international best practice:
>
> (c) *principle 3*: the access provider must provide the service on terms and conditions (excluding price) that are consistent with those terms and conditions on which the access provider provides the service to itself.
>
> (d) *principle 4*: the access provider must, if requested, provide an access seeker with information about a designated access service or specified service at the same level of detail, and within the same time frame, that the access provider would provide that information had it been requested by one of its own business units.

[6] Defined as Telecom Corporation of New Zealand and includes any of its subsidiaries, s5 of the Act.

6 Limits on application of standard access principles set out in clause 5

(1) Principles 1 to 4 set out in clause 5 are limited by the following factors:

(a) reasonable technical and operational practicability having regard to the access provider's network:

(b) network security and safety:

(c) existing legal duties on the access provider to provide a defined level of service to users of the service:

(d) the inability, or likely inability, of the access seeker to comply with any reasonable conditions on which the service is supplied:

(e) any request for a lesser standard of service from an access seeker.

(2) Principle 4 set out in clause 5 –

(a) does not extend to any information about identifiable individual customers of the access provider; and

(b) is subject to the requirement that any confidential information provided to the access seeker, in accordance with that principle, must be kept confidential to that access seeker.

Compliance with standard access principle 3

41. Clause 2.3 of the UCLL Backhaul General Terms incorporates the access principles and the limits on those access principles from clauses 5 and 6 of Schedule 1 to the Act.

42. Access principle 3 requires that Telecom provide UCLL Backhaul on terms and conditions (excluding price) that are consistent with those terms and conditions on which it provides the service to itself.

43. Telecom provided a high level explanation in its submissions as to how it would ensure consistency under this principle.

44. On 26 September 2007 the Minister of Communications and Information Technology (**Minister**) made the Telecommunications (Operational Separation) Determination 2007 (**Operational Separation Determination**). This provides further requirements with which the separation plan under Part 2A of the Act must comply and are in addition to those requirements in s 69D of the Act. Clause 9 of the Operational Separation Determination states that:

In this determination, unless the context otherwise requires, **equivalence of inputs** or **EOI**—

(a) means that, if Telecom is required to provide a relevant service to an access seeker,—

(i) Telecom must provide the access seeker and Telecom itself with the same service; and

(ii) Telecom must deliver that service to the access seeker and to Telecom itself on the same timescales and on the same terms and conditions (including price and service levels); and

> (iii) Telecom must deliver that service to the access seeker and to Telecom itself by means of the same systems and processes (including operational support processes); and
>
> (iv) Telecom must provide the access seeker and Telecom itself with the same commercial information about those services, systems, and processes; and
>
> (b) includes, if Telecom is required to provide a relevant service to an access seeker, the use by Telecom of services, systems, and processes that access seekers must be able to use in the same way, and with the same degree of reliability and performance, as those services, systems, and processes are used by Telecom; and
>
> (c) is subject to clause 8.

45. On 31 March 2008 the Minister approved Telecom's Separation Undertakings (**Separation Undertakings**)[7], with the Separation Day defined as 31 March 2008. The Separation Undertakings define "Equivalence of Inputs" in clause 1.2.

46. The Commission considers that the implementation of the Separation Undertakings including full equivalence of inputs (EOI) under Part 2A of the Act complements the operation of access principle 3. That is, when services are provided on an EOI basis, Telecom must deliver the service to itself and the access seeker on the same time-scales and on the same terms and conditions (including price and service levels)[8]. As the services are migrated towards equivalence, those services will be provided on the basis of consistent non-price terms.

47. Prior to the implementation of EOI, Telecom's internal service provision can be compared at any time with the service provided to Access Seekers to check for consistency in the non-price terms and conditions, for example in relation to SLAs.

48. The Commission therefore does not consider that arguments made by Telecom that there may be inconsistent application of the UCLL Backhaul STD and operational separation are sound.

Information disclosure

49. As clause 2.3 of the UCLL Backhaul General Terms incorporates the access principles, the Commission may require Telecom, in accordance with s 69ZC, to prepare and disclose information about the operation and behaviour of any part of its business that provides prescribed designated or specified services.

50. In addition, the Commission may require Telecom to adopt, in the preparation or compilation of that information, any methodology that the Commission requires. The Commission may also require other information disclosure as further set out in s 69ZC of the Act. The purpose of such disclosure is specified in s 69ZC(1)(b) as follows:

> (b) for the purpose of enabling monitoring of , and facilitating compliance with, prescribed access principles –

[7] Telecom, *Telecom Separation Undertakings: As provided to the Minister of Communications on 25 March 2008 in accordance with section 69K(2)(c) of the Telecommunications Act 2001*, 25 March 2008.
[8] Refer to clause 1.2 of the Operational Separation Undertakings.

(i) that are incorporated in any determination, approved code, or registered undertaking; and
(ii) with which the access provider is required to comply.

51. At this stage, the Commission does not intend to seek information disclosure pursuant to s 69ZC as part of this determination, but may do so in the future.

Amendments to an STD

52. The Act provides a range of mechanisms to amend an STD including:
- a review under s 30R;
- a Residual Terms Determination (RTD) under s 30ZB;
- a pricing review determination under s 51;
- a clarification under s 58; and
- a reconsideration under s 59.

53. Section 30R allows the Commission, on its own initiative, to commence a review at any time of all or any of the terms of an STD. After review, the Commission may replace an STD, or vary, add, or delete any of its terms, if it considers it necessary to do so. The review can also address aspects of a service not covered in an initial STD and update the terms of an STD to reflect regulatory or technological change.

54. Apart from the requirements in s 30R, the Commission may conduct the review in a manner and within a timeframe as the Commission thinks fit. This enables the Commission to assess the appropriate form and degree of consultation on a case by case basis.[9] However, the Commission will give notice in the Government Gazette. The Commission expects that if there is unanimous agreement in the Telecommunications Carriers Forum (**TCF**) for a particular change, the consultation process is likely to be very short and completed quickly.

Variation of terms under a residual terms determination

55. The Commission is required by s 30O(3) of the Act to identify which of the terms (if any) specified in a STD are allowed to be varied on an application for a residual terms determination (**RTD**) made under s 30V. The purpose of a RTD is to allow the Commission to adjust the terms for the supply of a designated access service or specified service that are specified in the STD.[10]

56. A RTD is another regulatory instrument that allows the Commission to address matters that were not addressed in the STD and vary any terms that the Commission has identified under s 30O(3) as being allowed to be varied.[11] An application for a RTD may only be made where an STD is in place and it may seek either or both of the following;

(a) a determination of matters that were not addressed in the STD;

[9] This can be contrasted with the process under s 59(3) of the Act which requires that a reconsideration determination follow the same process as followed for the initial determination.
[10] Section 30U(1) of the Telecommunications Act 2001.
[11] Section 30U(2) of the Telecommunications Act 2001.

(b) a variation of any terms in the STD that the Commission has identified under s 30O(3) as being allowed to be varied.

57. From a policy perspective, a RTD is a regulatory alternative to a private bilateral agreement in situations where an Access Seeker had made reasonable attempts to negotiate with the Access Provider on the terms in question but was unable to reach agreement on those matters.

58. In addition, a RTD provides a mechanism for an Access Seeker to seek changes to the STD that may only apply on a bilateral basis between the Access Seeker and the Access Provider. Advantages of a RTD are that it may lead to a more urgent regulatory response to resolve disputes between parties on a bilateral basis and to avoid the need for generic changes to an STD applying to all parties.[12]

59. In the draft UCLL Backhaul STD, the Commission proposed that a number of terms should not be able to be varied for the purposes of a RTD.[13]

60. The Commission has considered the application of s 30O(3) in the context of what variations (if any) are likely to give best effect to s 18 of the Act. The relevant starting point is that consumers would be best served with maximum flexibility, and accordingly all terms should be variable for the purposes of an RTD unless there is good reason otherwise.

61. However, in some areas certainty outweighs flexibility. The Commission considers that some terms of the UCLL Backhaul STD must not be varied by a RTD. For example, as the Implementation Plan has immediate effect and then falls away after a period of time, it is appropriate that no regulated variation of bilateral arrangements via the RTD process take place during that stage. In addition, terms should not be variable if to do so would undermine the scheme and purpose of the Act. For example, the UCLL Backhaul Price List requires certainty as to what the prices will be for core charges, and the process for updating those charges.

62. On this basis the Commission has determined that all terms may be varied for an RTD application made under s 30V by a party to the UCLL Backhaul STD, apart from those listed below:

UCLL Backhaul General Terms

a) Section 2 – Guiding Principles
b) Clause 7.3 – Rights not excluded
c) Clause 7.4 – Amendment
d) Clause 9.1 – (in section 9 - Change Mechanism for UCLL Backhaul Operations Manual and UCLL Backhaul Service Level Terms)
e) Section 36 – Dispute Resolution

[12] Other amendments to an STD can occur via other provisions such as pricing under s42 of the Act.
[13] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, page 19, para 54.

Schedule 1 UCLL Backhaul Service Description

f) Clauses 2.1 and 2.2 (in section 2 – The UCLL Backhaul Service)

Schedule 2 UCLL Backhaul Price List

g) UCLL Backhaul Service Transaction Charges, Service Components 1.1, 1.2, and 1.8

h) UCLL Backhaul Service Recurring Charges, Service Components 2.1 to 2.12 and 2.15

Implementation Plan

i) All sections and clauses in the Implementation Plan

Operational separation

63. Telecom submitted[14] that its STP was prepared amidst significant uncertainty for Telecom and the industry given pending separation in accordance with Part 2A of the Act. This submission was made on the basis that the future Telecom organisational structure and operating environment within which the service (and its associated functions) will be provided, was unknown. Telecom's submissions noted that the pending operational separation undertakings will be legally binding on it. Accordingly, Telecom proposed that, if anything in the STD proves to be inconsistent with any requirement in either of those documents, Telecom will have no option but to seek amendment to the STD in order to give effect to the separation determination/plan and that it should not liable under the standard terms for such inconsistencies.

64. In addition, Telecom requested that, if anything in the STD proved to be inconsistent with the Operational Separation Determination and Separation Undertakings, Telecom should not be liable under the STD for any inconsistencies under proposed clause 45 of the UCLL General Terms.[15]

65. Following Telecom's submission of the STP the Minister has made the Operational Separation Determination. Following Telecom's submissions on the draft UCLL Backhaul STD the Separation Undertakings were approved by the Minister. The Commission has discussed the interaction of operational separation with this STD in paragraph 47.

66. The Commission also notes that there are a range of established mechanisms under the Act to allow amendments to a STD should the need arise. On this basis, therefore, it is inappropriate to provide such a broad exclusion of liability as proposed by Telecom in its STP.

Breach of an STD

67. The UCLL Backhaul STD provides a range of dispute resolution procedures.[16] However, the STD does not prevent any party from seeking remedies available to it

[14] Telecom, *Standard Terms Proposal for Telecom's Unbundled Copper Local Loop Backhaul*, 28 September 2007, paras 8 and 9.
[15] Ibid, *General Terms,* p64.
[16] See s 36 UCLL Backhaul General Terms.

under the Act.[17]

68. Under s 156N(b) of the Act, an STD is an enforceable matter. As such, Telecom and/or the Access Seeker may make a written complaint to the Commission alleging a breach of the STD. The Commission must then decide what action, if any, to take, including whether to take action in the High Court.[18] Telecom and/or the Access Seeker may also take action in the High Court under s 156P(1) of the Act.

69. On the application of the Commission, the High Court may, in addition to any other remedies, order a pecuniary penalty if there has been a breach of the STD.

[17] See clause 36.13 UCLL Backhaul General Terms.
[18] See ss 156O, 156P, 156Q and 156R of the Act.

SERVICE DESCRIPTION

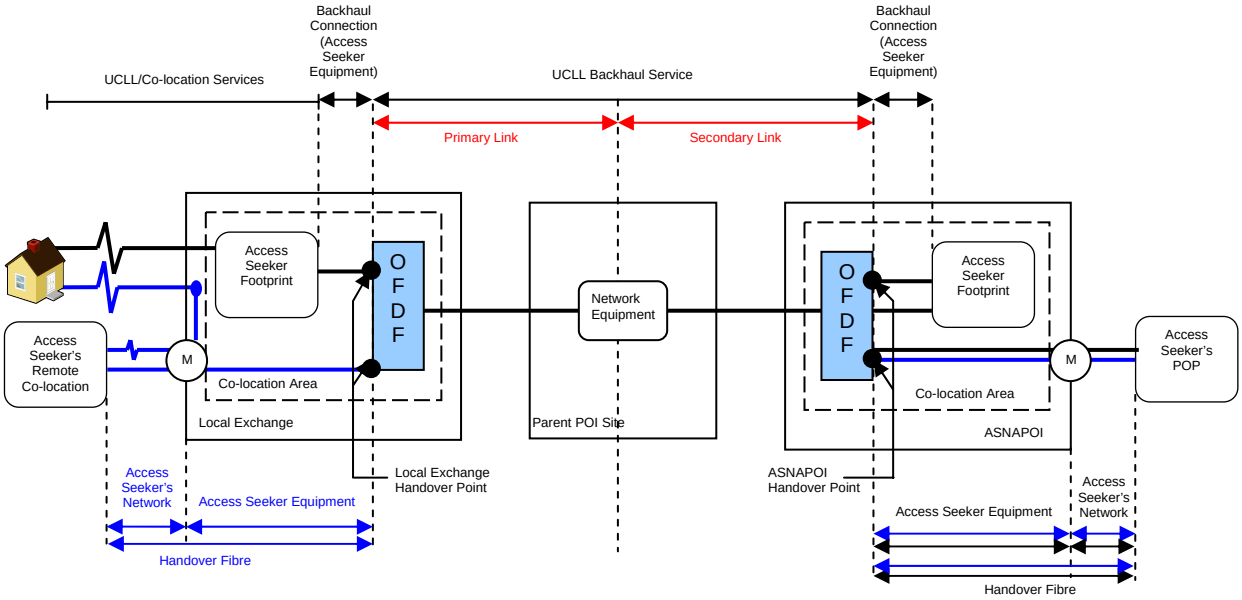
70. The UCLL Backhaul Service is described in Appendix A: Schedule 1 – UCLL Backhaul Service Description as follows:

The UCLL Backhaul Service is a service (and its associated functions, including the associated functions of Telecom's operational support systems) that provides transmission capacity in Telecom's network (whether that transmission capacity is copper, fibre or anything else) between the local exchange Handover Point and the ASNAPOI Handover Point. The UCLL Backhaul Service is for the purpose of providing access to, and interconnection with, the regulated UCLL Service.

71. The Handover Points for the UCLL Backhaul Service are:

- The ASNAPOI Handover Point – the Access Seeker side of the OFDF in the ASNAPOI; and
- The Local Exchange Handover Point – the Access Seeker side of the OFDF in the Local Exchange, in which the Access Seeker's Equipment is either co-located or is remotely located.

72. The UCLL Backhaul Service, where both a Primary Link and Secondary Link are purchased[19], is illustrated in the diagram below:



Note:
- Black lines between the end user and OFDF in the Local Exchange illustrate the traffic flow between UCLL and UCLL Backhaul where the Access Seeker is co-located within the Local Exchange.
- Blue lines between the end user and OFDF in the Local Exchange illustrate the traffic flow between UCLL and UCLL Backhaul where the Access Seeker is remotely co-located outside the Local Exchange.
- Black lines between the OFDF in the ASNAPOI and the Access Seekers' POP illustrate the traffic flow between UCLL Backhaul and the Access

[19] Additional diagrams illustrating the purchase of a Primary Link only and a Secondary Link only are included in Appendix A: Schedule 1 – UCLL Backhaul Service Description: Appendix A.

Seekers' Network where the Access Seeker is co-located within the ASNAPOI.

- Blue lines between the OFDF in the ASNAPOI and the Access Seekers' POP illustrate the traffic flow between UCLL Backhaul and the Access Seekers' Network where the Access Seeker is not co-located within the ASNAPOI.
- M = manhole.
- In relation to that part of the above diagram that is governed by the UCLL Service and the UCLL Co-location Service, a more detailed diagram relating to each of UCLL Service and the UCLL Co-Location Service is found in the corresponding standard terms determination.[20]

[20] Commerce Commission, *Decision No. 609: Standard Terms Determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, p 23.

MARKET DEFINITION

Introduction

73. The conditions for the UCLL Backhaul Service are:

> That either –
>
> (a) Telecom faces limited, or is likely to face lessened, competition in a market for transmission capacity between Telecom's local telephone exchange (or equivalent facility) and the access seeker's nearest available point of interconnection; or
> (b) Telecom does not face limited, or is not likely to face lessened, competition in a market for transmission capacity between Telecom's local telephone exchange (or equivalent facility) and the access seeker's nearest available point of interconnection, and the Commission has decided to require Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point) to be wholesaled in that market

74. The Commission must accordingly identify the markets in which the UCLL Backhaul Service is supplied, and assess whether Telecom faces limited or is likely to face lessened competition in those markets.

75. For the purpose of undertaking an assessment of the level of competition within a market, the standard process of establishing market boundaries as applied by the Commission is one of identifying the smallest area of product, geographic and functional space over which a hypothetical monopolist could exert a significant degree of market power.[21] This approach focuses on all those close substitutes whose presence would prevent a hypothetical monopolist from exercising market power (eg by raising its price). Such substitutes must be included in the market within which the hypothetical firm is to be a monopolist. Included are both actual and potential substitutes on both the demand and supply sides of the market.

76. An appropriately defined market will include products which are regarded by buyers as being similar or close substitutes ('product' dimension) and in close proximity ('geographical' dimension), and are thus products to which they could switch if the monopolist were to attempt to exert market power. It will also include those suppliers currently in production who are likely, in that event, to shift promptly to offer a suitable alternative product even though they do not currently do so.

77. The Commission defines relevant markets in terms of the following characteristics or dimensions:[22]

- the goods or services supplied or purchased (the product dimension);
- the geographic area from which the goods or services are obtained, or within which the goods or services are supplied (the geographic dimension);
- the level in the production or distribution chain (the functional dimension);
- the temporal dimension of the market, if relevant (the timeframe); and
- the different customer types in the market (the customer dimension).

[21] In some instances, it may also be relevant to consider a temporal dimension of market definition.
[22] Commerce Commission, *Mergers and Acquisitions Guidelines*, December 2003, Section 3.

78. While telecommunications services often have a temporal dimension (for example the use of peak and off-peak pricing to manage capacity loads in the network), this is not considered relevant to the market definition in the current context. A new entrant would build a network to serve both periods. The customer dimension is also not considered relevant to this market definition because the service does not distinguish between customer types.

79. Most of the discussion on the relevant market for the UCLL Backhaul Service is in relation to the product and geographic dimensions of telecommunications markets, although the relevant functional levels are also briefly considered.

80. This section summarises the market definition in the draft UCLL Backhaul STD, and submissions by interested parties on the markets defined in the draft STD. The Commission then sets out its views on the markets that are relevant to this determination.

The Relevant Markets

Summary of the draft UCLL Backhaul STD

81. In the draft STD, the Commission focused on the product, functional, and geographic dimensions of the market in which the UCLL Backhaul Service is supplied.

Product dimension

82. In the draft STD, the Commission defined two relevant product markets for the provision of the UCLL Backhaul Service:

- the product market for transmission capacity on Primary Links; and
- the product market for transmission capacity on Secondary Links.

83. Primary Link transmission refers to the link between the Telecom local exchange in which the Access Seeker has co-located its equipment, and the associated Serving Exchange.[23] Access Seekers are able to interconnect, for the purposes of providing access to and interconnection with the UCLL Service, at any of Telecom's 29 Serving Exchanges.

84. A Secondary Link was defined in the draft STD to include transmission between any Serving Exchanges.

85. In the draft STD, the Commission noted that depending on the location of the ASNAPOI at which the UCLL Backhaul Service terminates, the Access Seeker may require a Primary Link only, or a combination of a Primary Link and Secondary Link, for the UCLL Backhaul Service.

[23] In the draft STD, the Commission referred to each of the 29 POI sites in Telecom's STP as a Serving Exchange.

Functional dimension

86. In the draft STD, the Commission noted that the UCLL Backhaul Service is an input used in conjunction with the UCLL Service to provide downstream retail services such as broadband internet services. The Commission concluded that the relevant functional dimension of the market in which transmission capacity on both the Primary and the Secondary Links of UCLL Backhaul Service is supplied is the wholesale level.

Geographic dimension

87. In terms of the geographic dimension, the Commission considered that Access Seekers are unlikely to regard Primary Links in different geographic locations as substitutes, as they are unlikely to switch between regions when faced with a relative price increase. The Commission drew the same conclusion for Secondary Links.

88. On the supply side, the Commission noted that the competitive dynamics in the supply of transmission capacity is likely to differ between routes, with Primary Links and Secondary Links between smaller cities more likely to be characterised by little or no alternative supply. In contrast, competition on Secondary Links within and between major city areas is likely to be more developed and feature greater competitive dynamics.

89. The Commission therefore indicated that there are likely to be differing levels of competitive intensity in different geographic regions, given the localised deployment of the competing infrastructure. Consequently, the Commission adopted a relatively narrow geographic dimension of the relevant markets, and defined a separate point-to-point market for each Primary Link and Secondary Link.

Summary of markets defined in draft STD

90. In the draft STD, the Commission concluded that the relevant markets for the provision of the UCLL Backhaul Service are:

- the wholesale markets for transmission capacity on each Primary Link of the UCLL Backhaul Service; and
- the wholesale markets for transmission capacity on each Secondary Link of the UCLL Backhaul Service.

Submissions and Cross-submissions on the draft UCLL Backhaul STD

91. The submissions and cross-submissions received from interested parties contained relatively little comment on the markets defined by the Commission in the draft STD.

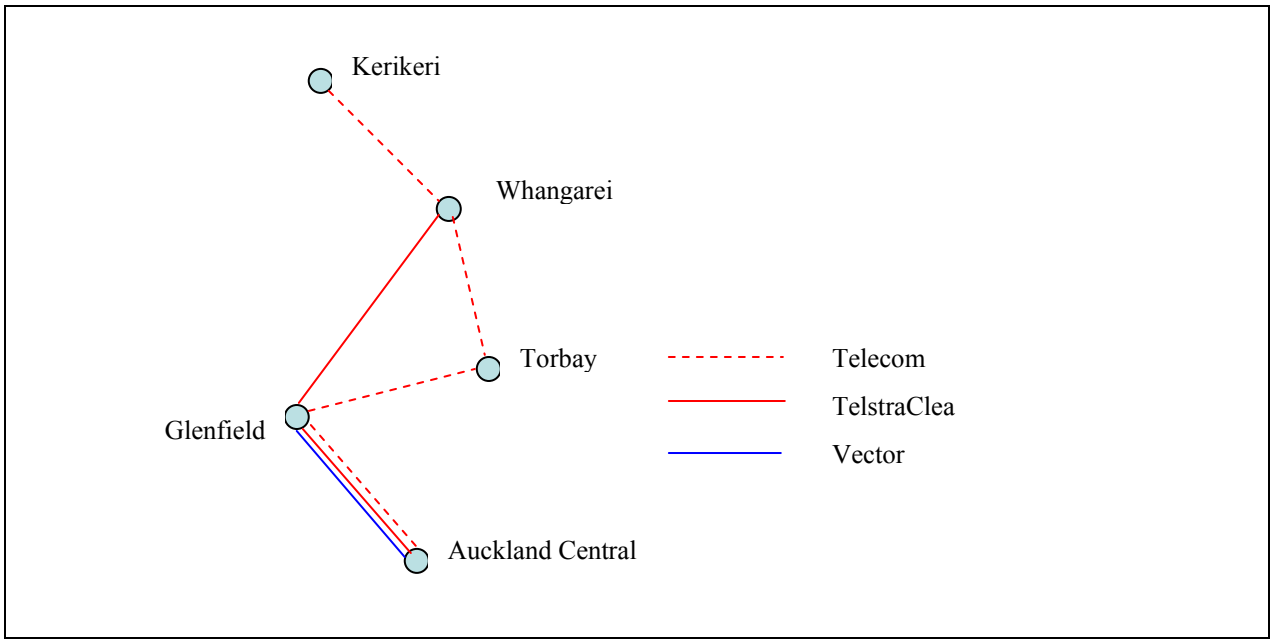
92. In its submission, Telecom considered that only the Primary Links are relevant, given its proposed approach to determining the scope of the regulated service.[24] According to Telecom, the ASNAPOI should be defined as those POIs[25] at which competitive options

[24] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 36.
[25] In the draft STD, these POIs were referred to as Serving Exchanges.

exist, and therefore links between these points (which according to Telecom would, by definition, be competitive) are not considered to be relevant.

93. At the conference Telecom submitted that the geographic dimension of the backhaul market needs to take into account substitutability between specific links.[26] For example, Telecom presented the following figure, which illustrates a number of Secondary Links between Auckland Central and Kerikeri.

Figure 1: Link substitutability



94. According to Telecom, TelstraClear can provide backhaul services between the Whangarei and Glenfield exchanges, whereas Telecom has an intermediate exchange at Torbay. An assessment of competition on the route between Whangarei and Glenfield should also take into account how that route could be served indirectly through Torbay.

95. In addition, in a related example, a Secondary Link could be comprised of a number of intermediate Secondary Links, some of which are competitive and others are not. In Figure 1 above, while only Telecom can supply backhaul over the Secondary Link between Kerikeri and Auckland Central, Telecom faces competition between Whangarei and Auckland Central. According to Telecom, regulated provision of backhaul should only be available on those links where there is an absence of effective competition, which Telecom submitted in the above example would be Kerikeri-Whangarei.

96. Vodafone accepted the distinction between Primary Links and Secondary Links, provided that only the Primary Links apply within a city. Vodafone submitted that backhaul on Secondary Links should only be required between cities.[27]

[26] Telecom, *Telecom presentation – UCLL Backhaul and UBA Backhaul Conference, Telecom Information Pack*, slide 'Link substitutability promotes competition: A secondary link example'.
[27] Vodafone, *Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 7 March 2008, p 11.

97. Orcon and Kordia agreed with the markets defined in the draft STD.[28] Covec also regarded the market definition in the draft STD as reasonable.[29]

98. In its cross-submission for Kordia, Vodafone, and CallPlus, Covec commented on whether competing fibre located near to a Telecom exchange can be expected to constrain the pricing of backhaul suppliers that are actually connected to that exchange.[30] Covec considered that relevant factors in this assessment will be:

- the potential value of the backhaul business to the 'near entrant'; and
- the cost to the near entrant of connecting to the exchange.

99. Covec concluded that for metropolitan routes, it is likely that competing fibre would need to actually enter the exchange in order to constrain Telecom's backhaul. However, Covec suggested that the length of the backhaul link will also be relevant, and that for longer routes, the revenue available from being able to offer backhaul services could be more substantial than for metropolitan routes.

100. Vector submitted that while the approach taken by the Commission in the draft STD is technically correct, the adoption of individual primary and secondary link markets is artificial and too narrow in practice.[31] Vector proposed that the Commission use a broader geographic dimension which aggregates individual routes on which the competitive dynamics are likely to be similar.

Commission's View on Relevant Markets

101. The main issue raised in submissions on market definition was Vector's proposal to define broader geographic markets that encompass individual routes with similar competitive dynamics. In addition, a number of parties submitted that some consideration should be given to competitive infrastructure that is located close to a Telecom exchange, without being directly connected (ie 'near entrants'). The Commission has examined this issue as part of its consideration of the relevant geographic markets.

102. In relation to Vector's proposal to define broader geographic markets, at this stage the Commission considers that the definition of individual point-to-point routes is appropriate, as this is likely to best assist in identifying where competition has or is likely to emerge. While some degree of aggregation of routes could be contemplated, it is likely that different competitors will be present on different routes, even within a broad region such as Auckland.[32] This suggests that the level of competitive intensity

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[28] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, para 24.
[29] Covec, *Regulated Backhaul Pricing*, March 2008, p 3.
[30] Covec, *UCLL and UBA Backhaul Cross Submission*, March 2008, p 5-6. Covec submitted on whether competing fibre not actually connected to the Telecom exchange can constrain Telecom. This refers to 'near entrants', which are usually discussed in the context of market definition, and so the Commission has addressed this issue in this section.
[31] Vector, *Submission on the Telecommunications Commission's draft Standard Terms Determinations for UCLL and UBA Backhaul*, 7 March 2008, p 6.
[32] Vector's submission suggests that the Auckland region could be defined as a single geographic market.

within such a region is likely to vary considerably, and that a more granular approach to geographic markets is appropriate.[33]

103. The Commission agrees with Telecom that there may be instances where a particular route could be served indirectly, as competitor's networks will typically have differing geographic configurations. In responding to the Commission's request for information on the location of their networks, a number of competitors who are either connected to or close to Telecom's local exchanges have noted that their networks do not always traverse the Telecom POI associated with those exchanges. These competitors have therefore identified those local exchanges at which they can provide a substitute for the Primary Link without necessarily connecting to the Parent POI of that local exchange.

104. The Commission also agrees with Telecom's submission at the conference (as illustrated in Figure 1), that where a Secondary Link is comprised of a number of competitive and uncompetitive intermediate links, regulated provision of backhaul should only be available on the latter.

105. In assessing the competitive constraint arising from a backhaul network that is close, but not directly connected to a Telecom exchange, Telecom appears to have regarded a network within 5 km of an exchange as being an effective competitor.[34] A number of other parties, including TelstraClear, FX Networks, and Covec, agreed that network infrastructure that is close to a Telecom exchange will provide some competitive constraint.

106. In considering the relevant geographic market, the Commission examines supply-side substitution, which looks at the ability of 'near entrants' who do not currently supply a service, but could do so relatively easily. In the current case, the Commission has considered the extent to which a nearby network operator, which is not currently connected to a Telecom exchange, could constrain Telecom's supply of the UCLL Backhaul Service from that exchange.

107. In considering how close an alternative fibre network would have to be to a Telecom exchange in order to represent a supply-side substitute for backhaul from that exchange, the Commission has examined the feasibility of such a network to undertake incremental expansion into the Telecom exchange. Specifically, the Commission has compared the likely additional revenues that such a network could earn from providing a backhaul service to UCLL operators at an exchange, with the incremental cost of expansion. This provides an indication of the distance over which a nearby network would be prepared to extend.

108. The Commission has received information from a number of parties on the cost of incrementally extending an existing network capable of delivering backhaul services. This information shows considerable variation, and will depend on whether the incremental network build occurs in higher cost metropolitan, or lower cost rural,

[33] As the Commission reviews competition over time, it may be appropriate to review this approach, for example if some uniformity of pricing across a region becomes evident.
[34] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Appendix A, para 6(c).

areas.[35] Such expansion may also require consents to be granted under the Resource Management Act. FX Networks noted that a key issue in their fibre deployment has been the extent to which local authorities have promoted alternative fibre networks. FX referred to a number of cities where the local authorities were supportive, which accelerated FX's deployment in those centres.[36]

109. As a result, the Commission acknowledges that such investments will in practice be undertaken on a case-by-case basis. For the purposes of this determination, the Commission has used an estimate of the cost of deploying fibre of $150,000 per km, and compared this to a measure of the incremental revenues that could be earned from providing a UCLL Backhaul Service. As a proxy for these incremental revenues, the Commission has used the benchmarking results discussed later in this STD.

110. Where a nearby network operator has a relatively extensive existing network, the cost of incrementally building its network to reach a Telecom exchange would be compared to potentially substantial additional revenues that could be earned from supplying a backhaul service to UCLL operators. For example, for FX Networks, whose network currently includes the Wellington to Auckland route, the cost of extending over a relatively long distance into Telecom's exchanges might be justified in light of the additional backhaul traffic and revenues that could be generated over its network. FX Networks noted that the cost of trenching in cities and residential areas is expensive and that it has not to date built over the "last mile" to Telecom's exchanges,[37] although FX stated that it would consider extending its network by between two and five kms.[38]

111. For a more localised network, the additional revenues are likely to be smaller, and so the incremental investment to reach the Telecom exchange may not be justified.

112. In light of the above considerations, the Commission considers that where a nearby fibre-based network with existing inter-city coverage is within 2 km of a Telecom exchange, that network is likely to exert a competitive constraint on Telecom and other backhaul providers that are directly connected to that exchange. In other words, for such a network, the additional revenues that it may be able to capture from providing backhaul services to UCLL-based competitors are likely to justify incremental network build of up to 2 km in order to reach the Telecom exchange.

113. For smaller networks with localised coverage, the Commission has used a distance of 1 km from a Telecom local exchange.

114. For the purposes of this determination, the Commission considers that the markets that were defined in the draft are the markets in which the UCLL Backhaul Service is

[35] These costs may be reduced where access to existing ducts is made available. For example, the Wellington City Council has announced plans to make unused pipes and ducts available free or at a nominal sum to telecommunications providers that want to build open access broadband networks. See Tom Pullar-Strecker, Wgtn Council beats a Retreat on Broadband, *The Dominion Post*, Wellington, 15 April 2008.
[36] Conference transcript, *Competition assessment*, 10 April 2008, p 111-112.
[37] Conference transcript, day one, page 116.
[38] Conference transcript day one, pages 111-112.

supplied:

- the wholesale markets for transmission capacity on each Primary Link of the UCLL Backhaul Service; and
- the wholesale markets for transmission capacity on each Secondary Link of the UCLL Backhaul Service.

COMPETITION ASSESSMENT

Introduction

115. Having defined the relevant markets, the Commission is then required to assess whether Telecom faces limited competition in those markets. This involves consideration of the extent to which Telecom faces competitive constraints, either from existing competitors, potential entrants, or in the form of countervailing power held by customers.

116. This section summarises the Commission's assessment of competition in the draft UCLL Backhaul STD, and submissions by the competition assessment. The Commission then sets out its analysis of the relevant markets for the UCLL Backhaul Service in order to determine whether the conditions for the service have been satisfied.

Summary of the draft UCLL Backhaul STD

Wholesale markets for transmission capacity on Primary Links of the UCLL Backhaul Service

117. In the draft STD, the Commission noted that there were potentially a large number of Primary Links on which transmission capacity could be supplied for the UCLL Backhaul Service.[39] However, the number of actual links over which transmission capacity would be required would depend on availability of and demand for the UCLL Service. The Commission referred to the UCLL Service Implementation Plan, according to which the UCLL Service could be available in 75 Local Exchanges by the end of December 2008.

118. The draft STD contained some information gathered by the Commission relating to the number of network operators capable of providing transmission on Primary Links of the UCLL Backhaul Service. This included information on the networks and deployment plans of both TelstraClear and Vector Communications, although the Commission was not satisfied at that stage that these competitors would be able to provide a competitive backhaul service that would constrain Telecom's UCLL Backhaul Service. For example, the Commission referred to key service characteristics such as protocol, capacity, interface, and latency.

119. The Commission also considered whether potential entry into the wholesale markets for transmission on Primary Links would be likely to constrain Telecom. The Commission noted that there are significant sunk costs associated with deploying transmission networks, that there is uncertainty associated with the demand for the UCLL Service (and the derived demand for the UCLL Backhaul Service), and that Telecom could change the number and location of Serving Exchanges at which Primary Links terminate. As a result, the Commission concluded that there was unlikely to be significant entry in respect of Primary Links in the near future.

[39] Specifically, the Commission noted that there were 529 Local Exchanges served by the 29 Serving Exchanges.

120. The Commission therefore expressed a preliminary view that Telecom faces limited competition in the wholesale markets for transmission capacity on Primary Links of the UCLL Backhaul Service.

Wholesale markets for transmission capacity on Secondary Links of the UCLL Backhaul Service

121. The Commission considered the extent to which TelstraClear and Vector could constrain Telecom in the provision of transmission capacity on Secondary Links. The Commission recognised that these competitors were able to interconnect with a number of Telecom's Serving Exchanges. However, the Commission was concerned that Access Seekers may face additional transactions costs, as well as potential limitations around interface and capacity, in using multiple wholesale suppliers. If such issues are significant, the presence of alternative networks may not represent an effective competitive alternative to Telecom in the provision of the UCLL Backhaul Service.

122. With respect to potential competition on Secondary Links, the Commission noted that such routes will typically involve longer distances than Primary Links, and the costs of deploying transmission networks over such routes will tend to be higher. Such sunk costs are likely to represent a significant barrier to entry. However, the Commission also noted that such costs could potentially be recovered over considerably larger volumes of traffic on Secondary Links.

123. The Commission concluded that there may not be strong incentives for entry on Secondary Links, due to the high sunk costs of deployment, the uncertainty surrounding demand for the service, and the ability of Telecom to alter the location and number of Serving Exchanges over time.

124. The Commission expressed a preliminary view that Telecom faces limited competition in the wholesale markets for transmission capacity on Secondary Links of the UCLL Backhaul Service.

125. Following the release of the draft STD, and prior to the Commission's conference, the Commission advised parties of its preliminary view that where there are three or more providers of backhaul services on a particular route (ie Telecom plus two or more other competitors), there would be a rebuttable presumption that Telecom does not face limited competition in the provision of the UCLL Backhaul Service.[40] The Commission sought comment from parties on this view at the conference.

Submissions and Cross-submissions on the draft UCLL Backhaul STD

126. The Commission received submissions from a number of parties relating to the assessment of competition in the draft STD:

- Telecom (including a submission by NERA);
- TelstraClear;

[40] Commerce Commission, *UCLL Backhaul and UBA Backhaul Conference – Key Issues*, 4 April 2008.

- Vodafone;
- Kordia/Orcon/Callplus (including a submission by Covec on behalf of Kordia/Orcon and Vodafone/Ihug);
- Vector Communications;
- Citylink; and
- FX Networks

127. Appendix D contains a detailed summary of the parties' submissions on the competition assessment contained in the draft STD.

Commission's View on Competition

128. The following section sets out the Commission's view on whether Telecom faces limited, or is likely to face lessened, competition in the markets identified above.

129. In assessing whether competition in a market is limited, the Commission has previously considered the following factors:

Existing competition

- the number and relative size of competitors in the market, including where possible an assessment of trends in shares over time;
- the extent to which there is product differentiation;
- the degree to which competitors engage in independent rivalry;
- the degree of vertical integration;
- the absence of barriers to customer switching;
- the movement in prices over time, and any evidence of their broad relationship to underlying costs;
- the existence of any countervailing power;
- the constraints imposed by the regulatory environment; and
- evidence that the access provider is acting inefficiently or achieving excess returns.

Potential competition

- the potential for entry and the significance of any barriers to entry that may exist, and evidence of recent entry;
- the movement in prices over time, and any evidence of their broad relationship to underlying costs;
- the constraints imposed by the regulatory environment; and
- evidence that the access provider is acting inefficiently or achieving excess returns.

130. Where possible, the Commission has used these factors, along with information provided in submissions on the draft STD, to assess whether Telecom faces limited competition in the markets for wholesale transmission capacity.

131. The Commission notes that the UCLL Backhaul Service is a nascent service, with demand being dependent on the associated UCLL Service that is only now being taken up by Access Seekers. As a result, there has been only limited information available to date in relation to a number of the factors identified above, such as pricing, movements in market shares over time, and evidence of rivalrous behaviour between existing competitors. Nonetheless, the Commission has applied the competition conditions taking into account all available information.

132. The supply of competing backhaul services is likely to exhibit economies of scope, as backhaul providers will supply services in competition with Telecom's UCLL Backhaul Service, but also a range of other transmission services. For example, at the conference Telecom referred to increasing demand from mobile networks for transmission services, which is creating opportunities for competing network operators.[41] As discussed below, the Commission has taken into account the emerging nature of competition in assessing where Telecom faces limited competition.

133. The Commission is also required to consider whether Telecom is likely to face lessened competition. The Commission considers that it should focus on the test of "limited competition", and need only look at the alternative test of "likely to be lessened" in circumstances where competition is not found to be limited. A determination as to the existence of "limited competition" should be undertaken first; a determination of whether competition "is likely to be lessened" should only be undertaken if "limited competition" is found not to exist for the particular service in the specified market.

134. Whether competition is likely to be lessened in a market implies the need to take a forward-looking approach in order to assess the strength of competition in the future. Although a de minimis lessening of competition in a market is unlikely to be sufficient to satisfy this test, anything above such a nominal lessening could be interpreted to do so.

135. There are a number of factors that suggest that competition in the markets defined for the purposes of this STD is likely to strengthen rather than diminish over time. A number of competing backhaul providers are currently extending their networks, such as Vector Communications and FX Networks. As noted above, the availability of economies of scope in the provision of transmission services may be stimulating the deployment of competitive networks, and this is likely to strengthen rather than lessen competition. In addition, the roll out of the UCLL Service as exchanges are unbundled is likely to increase demand for backhaul services, which may attract competitive supply.

136. Consequently, for those markets found to be markets in which Telecom does not face limited competition, the Commission has also concluded that Telecom is not likely to face lessened competition.

[41] ibid p 106-107.

Wholesale markets for transmission capacity on Primary Links of the UCLL Backhaul Service

Existing Competition

137. Demand for the UCLL Backhaul Service is derived from demand for the UCLL Service,[42] and therefore for practical purposes, the Primary Link routes that are of interest initially will relate to those Local Exchanges which are unbundled first. The draft STD also noted that interest in the UCLL Backhaul Service is likely to be restricted to a subset of Local Exchanges, with the UCLL Service being available at up to 75 exchanges by the end of December 2008.[43]

138. In Telecom's submission on the draft STD, Telecom provided a list of 55 local exchanges which it considered would be of most interest to UCLL-based competitors.[44] According to Telecom, this list was arrived at by taking the 75 exchanges it considered most likely to be unbundled, and removing those exchanges that are POI Sites, as no Primary Link would be required in those cases.

139. In assessing the level of competition on Primary Links for the purposes of this determination, the Commission has focused on these 55 exchanges, but has added two further exchanges (Massey and Glen Eden) which have been unbundled.[45] The Commission received considerable information from a number of parties' submissions on the draft STD, and has also gathered further detail on the location and capabilities of competitor networks following the conference. This information has informed the Commission of the level of competition on Primary Links of the UCLL Backhaul Service.

Number of competitors

140. An important issue that was raised in submissions on the draft STD was whether two or three backhaul providers on a particular route was likely to be sufficient to ensure there is effective competition on that route. Telecom and Vector generally regarded two providers (Telecom and one other competitor) to be sufficient, while other parties (including Vodafone, TelstraClear, Kordia/Orcon and Covec) considered that at least three providers should be present on a particular route.

141. The level of competition on a route is likely to depend on a number of factors, as listed in paragraph 129. On a route where Telecom faces one other fibre-based competitor, the concentrated nature of competition in such a market *per se* may suggest that competition is limited. However, market concentration is just one factor that is relevant in assessing the level of competition.

[42] The Act's description of the UCLL Backhaul Service notes that it is a service "for the purposes of providing access to, and interconnection with, Telecom's unbundled copper local loop network".
[43] As noted in the draft STD, there is a potentially large number of individual Primary Links over which to assess the level of competition faced by Telecom in supplying the UCLL Backhaul Service. In total, there are 529 Local Exchanges, each of which is served by one of 29 Serving Exchanges. This results in 529 individual Primary Link routes.
[44] Other parties did not comment on the contents of this list in cross-submissions.
[45] These 57 exchanges are listed in Appendix C.

142. Of the factors listed above, the Commission has given particular consideration to the likely degree of independent rivalry between competitors, the degree of vertical integration, and the ability of customers to exert countervailing power to constrain Telecom.

143. In its submission, Telecom lists a number of alternative network operators which it considers are capable of entering the market(s) for backhaul. These include TelstraClear, Vector, Kordia, FX Networks, Network Tasman, and CityLink, as well as a number of local authorities and smaller network operators.

144. A number of other parties, including Vodafone and Kordia/Orcon/CallPlus, submitted that competitors such as TelstraClear, Vector, and FX Networks did not have sufficient capacity or coverage, or did not enter the Telecom exchanges, in order to be regarded as a significant competitive constraint on Telecom. Vodafone also submitted that Vector was only in the early stages of deploying its fibre, and that in the meantime it was largely dependent on Telecom for backhaul services.

145. The Commission considers that capacity is unlikely to be an issue for fibre-based competitors. A number of fibre-based network operators have provided the Commission with information on the transmission capacities that can be provided over their networks. This indicates that such networks would unlikely be capacity-constrained in providing backhaul services in competition with Telecom's UCLL Backhaul Service. Further, the Commission understands that with Dense Wavelength Division Multiplexing (DWDM) technology over optical fibre networks,[46] access providers are able to increase carrier bandwidth at a fraction of the cost of the original network build.

146. Potential suppliers of backhaul services in support of the UCLL Service, using alternative technologies such as Digital Microwave Radio (DMR), are more likely to face some capacity constraint. The Commission has therefore regarded such alternatives as fringe competitors, who are by themselves unlikely to represent a sufficiently strong competitive constraint on Telecom.

147. In terms of being able to provide sufficient coverage, the Commission notes that the relevant geographic markets are narrow. Consequently, a localised competitor could enter on a particular route and constrain Telecom on that route, without necessarily having to provide extensive coverage elsewhere.

148. Vector Communications provides high-speed communications services over its fibre optic networks in Auckland and Wellington. Services are supplied on an open-access basis, by way of a number of service providers. It is currently expanding its existing 500 km fibre optic network through investment in a further 300 km of fibre throughout Auckland, and currently offers backhaul services from a small number of Telecom's Auckland exchanges. Vector has announced plans to connect to 41 exchanges throughout Auckland.

[46] DWDM technology allows a single fibre to transmit multiple signals simultaneously at different wavelengths, which increases bandwidth over the existing optical network.

149. At the conference Orcon explained that in the case of the five Auckland exchanges where it had UCLL-based equipment, it sought interest from providers capable of supplying backhaul from those exchanges. For three of the five exchanges, Orcon received responses from Vector and Telecom. At each of those three exchanges, Orcon is purchasing backhaul services from Vector, and indicated that as Vector builds into more exchanges, Orcon would be likely to switch away from Telecom.[47]

150. Vector indicated at the conference that its pricing was based on the cost of fibre being sunk.[48] This suggests that Vector's pricing will be closer to a long-run incremental cost-based price, which excludes the cost of the fibre.[49] Such a cost by definition will be lower than the TSLRIC of the service which includes or apportions the original cost of the fibre.

151. The above example of Vector building into Telecom's exchanges and providing competitive backhaul services indicates that Access Seekers will have, and be prepared to exercise, countervailing power where alternative backhaul options are available. As noted above, Orcon stated that it would be likely to switch to Vector as it completes its deployment of fibre into more exchanges. This suggests that switching costs are not significant.[50]

152. The Commission considers that as a wholesale-only fibre network operator, Vector faces strong incentives to aggressively compete for backhaul business. This is evidenced through Vector's agreement with Orcon to provide backhaul services in respect of the initial Auckland exchanges that have been unbundled, as well as Vector's agreement to supply backhaul services to Vodafone/Ihug.

153. At the conference TelstraClear provided an overview of its current wholesale activities, as well as its capability and plans to offer backhaul services that could be used in support of the UCLL and UBA Services. According to TelstraClear, it currently supplies a number of parties with wholesale backhaul connections, and there is considerable unused capacity remaining on its network. TelstraClear is currently investigating opportunities for utilising this capacity in respect of UCLL backhaul, and considers itself to be a very near and likely entrant in respect of that service.

154. While TelstraClear has yet to commence offering backhaul services for use in conjunction with the UCLL or UBA services, the Commission notes that these services are only currently being made available to competitors. TelstraClear already has a network in place with the capability and capacity of delivering backhaul for UCLL purposes. At the conference TelstraClear advised that it is actively investigating opportunities to provide backhaul services to UCLL and UBA operators.[51]

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[47] Conference transcript, *Competition assessment*, 10 April 2008, p 152-153.
[48] Conference transcript, *Price terms*, 11 April 2008, p 194.
[49] Telecom also suggested that such pricing could emerge in the backhaul market at the conference on the draft STD. (See Conference transcript, 10 April 2008, p 104-105). It noted that the backhaul market was likely to involve price competition, because once the initial costs of the fibre were sunk, there were low marginal costs associated with increasing capacity. The marginal costs included such variable costs of electricity and potentially increments to capacity through multiplexers.
[50] For example, Telecom's interim UCLL backhaul service includes a two-part pricing structure, with a non-recurring connection charge of up to $8,000 per link (declining to $4,000 per link with a three-year term).
[51] Conference transcript, *Competition* assessment, 11 April 2008, pages 199-200.

155. However, the Commission considers that TelstraClear's vertically integrated structure could reduce its incentives to vigorously compete with Telecom, as it would be supplying a wholesale backhaul service to a downstream competitor. By withholding supply from a downstream competitor, or by offering such supply at a wholesale price that exceeds the cost of supply, TelstraClear may be able to limit the extent to which that competitor is able to compete with TelstraClear in the downstream market.

156. This suggests that where Telecom and another vertically integrated provider are present, competition may be less intense than where Telecom faces a wholesale-only competitor. The Commission has not yet seen evidence that TelstraClear is competing aggressively in the supply of UCLL backhaul services, whereas as noted above, there is evidence of competition between Vector and Telecom in respect of the unbundled exchanges in Auckland.

157. In addition to TelstraClear and Vector, a number of other fibre-based network operators have indicated that they can offer backhaul services with the functionality and capacity required for UCLL services. A number of these are localised networks that can provide backhaul over (or close to) particular Primary Links. These localised networks are also likely to be able to interconnect with one another and/or with intercity networks in order to provide end-to-end transmission services. FX submitted that it often links up with other local fibre networks, such as CityLink at the Wellington Railway Station, and works with a number of operators in order to provide national transport services.[52]

158. The Commission is satisfied that these networks generally have sufficient capacity to be able to offer backhaul services in competition with the UCLL Backhaul Service.

Unilateral Market Power

159. In considering the extent to which Telecom may be able to act independently from other competitors and exercise any unilateral market power in respect of backhaul provision, the Commission considers that fibre-based competitors that are either connected or close to the Telecom exchange are likely to represent a significant constraint. Once such competitors have incurred the sunk costs of deploying fibre, the incremental cost of bringing large amounts of capacity into the market are relatively small. The incremental costs include the variable costs of electricity and increments to capacity through the deployment of multiplexer technology.[53]

160. This feature of the backhaul market suggests that were Telecom to attempt to raise prices on such a route, competitors would be able to respond by expanding capacity.

161. The high sunk cost, low marginal cost characteristics of backhaul provision also suggests that existing competitors are more likely to compete aggressively on price rather than quantity. Competition on price leads to an outcome that is closer to a competitive market solution. As noted earlier, Vector indicated at the conference that

[52] FX Networks' submission lists Velocity, CityLink, CCNL, Inspire, Vector, Vodafone, Kordia, Telecom and Telstra as being parties with whom FX Networks have worked to provide transmission services. See also Conference transcript, *Competition assessment*, 10 April 2008, pages 109-111.
[53] Conference transcript, *Competition assessment*, 10 April 2008, pages 104-105

the pricing construct it has used in Auckland was not solely distance-based, but reflected the sunk nature of the initial cost of deploying the fibre.

162. The Commission notes that this could result in commercial prices that are below the regulated TSLRIC-based price for the UCLL Backhaul Service, which would include some contribution towards the cost of deploying fibre. The Commission disagrees with NERA's submission that a real options approach to pricing is appropriate in this case,[54] and that TSLRIC-based prices would deter entry and result in inadequate compensation of existing suppliers of backhaul services.[55]

Co-ordinated Market Power

163. Even in instances where Telecom faces competition from one other backhaul provider on a route, market circumstances may arise in which the extent of that competition may be mitigated through incentives to engage in strategic co-ordination.

164. NERA identified a number of features of backhaul provision that suggest that competitive outcomes can be expected. While the Commission generally agrees that the factors listed by NERA gravitate against co-ordinated conduct, there are other relevant factors that suggest that there is a risk of co-ordination. The Commission has therefore taken a balanced consideration of the prospects of co-ordinated behaviour that could result in limited competition in the supply of backhaul services.

165. The Commission's Mergers and Acquisitions Guidelines (MAG) outline the three ingredients required for effective co-ordination: collusion, detection, and retaliation. The Commission considers the potential for co-ordinated market power to be an issue, where market conditions are conducive to collusive behaviour, where deviations from collusive behaviour can easily be detected, and where the deviating firm is faced with the credible threat of swiftly being punished.

166. Table 1 summarises the Commission's assessment of the relevant factors in respect of the provision of backhaul services for the purposes of this determination.

Table 1: Commission's Analysis of Co-ordinated Market Power for UCLL Backhaul

Collusion	Conducive	Not conducive
	high concentration	excess capacity
	undifferentiated product	fast speed of entry (eg existing ducts)
	slow speed of entry (eg new	asymmetric business structure

[54] For the reasons outlined in the UCLL STD (Decision 609), at paragraphs 229-234, the Commission does not consider that a real options approach is appropriate for the determination of a price for the UCLL Backhaul Service. In particular, Decision 609 referred to the practical difficulties in estimating the relevant parameters, and also noted that while real options approaches tend to focus on the lost option to delay investment, such approaches tend to ignore any options that are often created by investment. For example, the emergence of xDSL technology is likely to increase the value of the copper local loop, which could offset any lost option. As demand for the UCLL Backhaul Service is derived from the UCLL Service, a similar effect could be expected. In addition, the development of DWDM technology has increased the transmission capacity of existing fibre investments.

[55] In comparing the New Zealand and Australian regulatory regimes, NERA also appears to overlook the fact that TSLRIC is used to determine regulated prices in both jurisdictions.

	build)	
Detection	Easy	Hard
	high concentration	vertical integration
	multi-market contacts	lack of price transparency
		demand growth
Threat of Retaliation	High	Low
	excess capacity	
	profit incentive (low marginal cost)	

167. In terms of the conditions that could facilitate collusion, there are likely to be a small number of backhaul providers on a particular route, which reduces the transaction costs of establishing and monitoring collusive behaviour. Backhaul is generally regarded as being quite undifferentiated, which again makes it easier to reach agreement on the terms of supply. There is also some delay associated with the greenfield deployment of a backhaul network, for example where Resource Management consents are required, which will increase the opportunity for existing providers to generate higher profits through co-ordination.[56]

168. However, there are a number of characteristics of backhaul provision which are not conducive to collusion. The presence of significant excess capacity on fibre-based backhaul networks may allow firms to deviate from any agreed strategy and increase supply. In some cases, it is possible that new entry could be deployed in a more timely manner where an entrant can take advantage of existing infrastructure (such as a utility company with ducts available through which to draw fibre, thus avoiding the costs and delays associated with opening up new trenches; or a backhaul provider that is within close proximity to the Telecom exchange). In addition, where Telecom faces competition from wholesale-only network operators, such competitors are likely to have a greater incentive to aggressively compete for wholesale business, as their business model relies entirely on such custom.

169. High market concentration will also enhance the ability of market participants to detect any deviation. The Commission's MAG notes that multi-market contacts, where competitors deal with one another across a number of markets, may reduce the incentives to engage in competitive behaviour. However, the presence of vertically integrated suppliers of backhaul services, and the lack of backhaul pricing transparency, will make detection more difficult. In addition, the demand for backhaul services is only developing and may be relatively strong on some routes, as demand for UCLL-based services increases.

170. Finally, the threat of retaliation against any deviations that have been detected may be present, given the existence of excess capacity (with which non-deviating parties can

[56] At the conference, FX Networks noted that the attitude of local authorities towards granting the necessary consents can be a significant influence on the costs and time associated with deploying fibre. Conference transcript, day one, p 112-113.

punish the deviant). Non-deviating firms may also have a strong profit incentive to preserve any collusion, as the marginal cost of supplying backhaul is relatively low.

171. While it is difficult to draw a definitive conclusion as to whether co-ordinated market power is likely to result in limited competition[57], the Commission generally agrees with NERA's view that given the emerging state of competition in these backhaul markets, it is reasonable to expect that conditions are such that competition between two fibre-based backhaul providers on a particular route will be effective. The Commission considers that where Telecom faces competition from a wholesale-only fibre network, Telecom does not face limited competition in the supply of the UCLL Backhaul Service.

172. This is supported by the example of Vector's entry to date into the provision of backhaul services at a number of Auckland local exchanges. This early evidence suggests that at least where a wholesale-only network such as Vector is available, Telecom is unlikely to face limited competition in the market in which the UCLL Backhaul Service is supplied.

173. However, where Telecom faces competition from a vertically-integrated competitor only, the Commission considers that the incentives for the two providers to aggressively compete in the supply of backhaul services may be reduced. Based on the evidence available to date, in such cases the Commission considers that Telecom faces limited competition in the supply of the UCLL Backhaul Service. The Commission will review this position, should evidence be presented that shows that competitive outcomes (for example, in terms of pricing) are being achieved on routes where Telecom and a vertically-integrated competitor are the only suppliers of backhaul services.

174. The Commission notes that the ACCC has concluded that three providers of transmission capacity on a particular route is sufficient for effective competition. However, as noted by Telecom, the declaration regime in Australia is different from the STD process in New Zealand. The declaration of a service in Australia initially allows for commercial negotiation between the access seeker and access provider. In the event that a commercial agreement cannot be reached, the ACCC can be requested to arbitrate and set an access price.[58]

175. In contrast, under the STD process for the UCLL Backhaul Service, once a finding of limited competition is reached, the service is subject to cost-based price regulation. The Commission is mindful that the markets in which the UCLL Backhaul Service is supplied are emerging markets, and that the imposition of a regulated price in those markets may deter competitive investment. Consequently, the Commission considers that a different threshold in relation to finding limited competition than that applied in Australia is appropriate for the purposes of this STD.

[57] In its final decision to declare the transmission capacity service in Australia, the ACCC also acknowledged that there was no clear framework within which to analyse cooperative oligopoly conditions in the inter-capital transmission market. ACCC, *Competition in data markets*, November 1998, p 52.
[58] The Commission notes that the ACCC has yet to determine access terms for the domestic transmission capacity service, which was declared in 1998.

Potential Competition

176. In terms of potential competition, the Commission is aware that a number of parties are currently deploying fibre-based networks by utilising existing infrastructure. For example, some of Vector's current deployment is based on the utilisation of existing ducts, which has reduced the sunk costs of network deployment.[59] Other utilities such as Network Tasman have also been able to overcome some of the relatively high fixed and sunk costs of deploying fibre in a similar manner.

177. Where access to existing ducts is not available, a new entrant will have to incur the cost of installing ducts or burying fibre. Such costs can be substantial, in particular for a greenfield entrant who would face competition from existing backhaul providers with considerable excess capacity on their network(s).

178. Entry conditions are likely to vary considerably throughout New Zealand. On relatively small, rural routes, the threat of entry may not be a significant constraint on existing backhaul providers, as traffic volumes are unlikely to be sufficient to justify such entry. However, on larger routes, entry may be likely, and this has been observed as a number of competitors deploy or extend their existing networks into new routes.

179. The Commission intends, as discussed in paragraphs 203 to 208, to review its assessment of competition periodically in order to ensure that the regulated UCLL Backhaul Service is available only in areas where the Commission is satisfied that Telecom faces limited competition. This will enable the Commission to take into account any new entry or network expansion that emerges over time.

Summary of competition in the wholesale markets for transmission capacity on Primary Links of the UCLL Backhaul Service

180. In general, the Commission is not satisfied that Telecom faces limited competition on Primary Links where there is one other wholesale-only backhaul provider.

181. For Primary Links where there is only Telecom or Telecom and one vertically-integrated competitor, the Commission is satisfied that Telecom faces limited competition. The Commission will review this conclusion, should evidence emerge that market outcomes on such routes are comparable to routes that are found not to be subject to limited competition.

182. Table 2 lists those Primary Links on which the Commission has identified at least one existing competitor, in addition to Telecom, and where at least one of those competitors is a wholesale-only supplier. These competitors are fibre-based network operators, capable of delivering Gigabit capacity services, and are either currently connected to the Telecom local exchange or within close proximity to the exchange as discussed earlier. Also included are the Primary Links to which competitors are currently building, or have announced intentions to build, as this is likely to constrain Telecom in the supply of the UCLL Backhaul Service at those exchanges.

[59] According to Telecom, trenching costs represent approximately 60% to 70% of the total costs of building a fibre-based network. Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Appendix A, Part C.

Table 2: Primary Links with at least one fibre-based wholesale-only competitor (in addition to Telecom)

Courtenay Place-Wellington
Johnsonville-Wellington
Petone-Naenae
Ponsonby-Airedale Street
Mt Eden-Airedale Street
Birkdale-Glenfield
Birkenhead-Glenfield
Takapuna-Glenfield
Devonport-Glenfield
Blockhouse Bay-Mt Albert
Avondale-Mt Albert
Mt Roskill-Mt Albert
New Lynn-Mt Albert
Three Kings-Mt Albert
Albany-Torbay
Browns Bay-Torbay
Forrest Hill-Torbay
Pakuranga-Howick
East Tamaki-Papatoetoe
Mangere-Papatoetoe
Manukau City-Papatoetoe
Onehunga-Papatoetoe
Otara-Papatoetoe
Ellerslie-Remuera
Glendowie-Remuera
St Heliers-Remuera
Te Atatu-Henderson
Titirangi-Henderson
Glen Eden-Henderson
Massey-Henderson
Manurewa-Papakura
Claudelands-Hamilton
Frankton-Hamilton
Hamilton East-Hamilton
Melville-Hamilton
Richmond-Nelson
Stoke-Nelson

183. For the purposes of this STD, the Commission has assessed the state of competition in the wholesale markets for transmission capacity on 57 Primary Links of the UCLL

Backhaul Service. These 57 Primary Links are associated with the local exchanges that are most likely to be unbundled initially.[60]

184. The Commission has concluded that Telecom currently faces limited competition in the provision of transmission capacity on Primary Links of the UCLL Backhaul Service, except on the Primary Links listed in Table 2.

185. In relation to the Primary Links listed in Table 2, the Commission has concluded, for the reasons discussed in paragraph 135 earlier, that Telecom is unlikely to face lessened competition in the provision of transmission capacity on these Primary Links.

Wholesale markets for transmission capacity on Secondary Links of the UCLL Backhaul Service

Existing Competition

186. The Commission has undertaken a similar assessment of competition in respect of Secondary Links, as it did in respect of Primary Links.

187. The Commission has gathered information from a number of network operators on the location and capability of their networks to offer backhaul services in competition with Telecom's UCLL Backhaul Service on Secondary Links. This information is summarised in Figure 2 in respect of Secondary Links in the North Island, and in Figure 3 in respect of Secondary Links in the South Island.

188. In assessing the level of competition on Secondary Links, the Commission has taken into account indirect competition. For example, where a competitor has infrastructure between Porirua and Wellington, and Naenae and Wellington, that competitor will be able to provide backhaul on the route between Porirua and Naenae. This form of indirect competition is a particular feature of the ring-based design of many fibre networks.

[60] The Commission intends to review competition as discussed later in this STD. This will include any new exchanges that are unbundled (and the Primary Links associated with those exchanges).

Figure 2: Competition on North Island Secondary Links

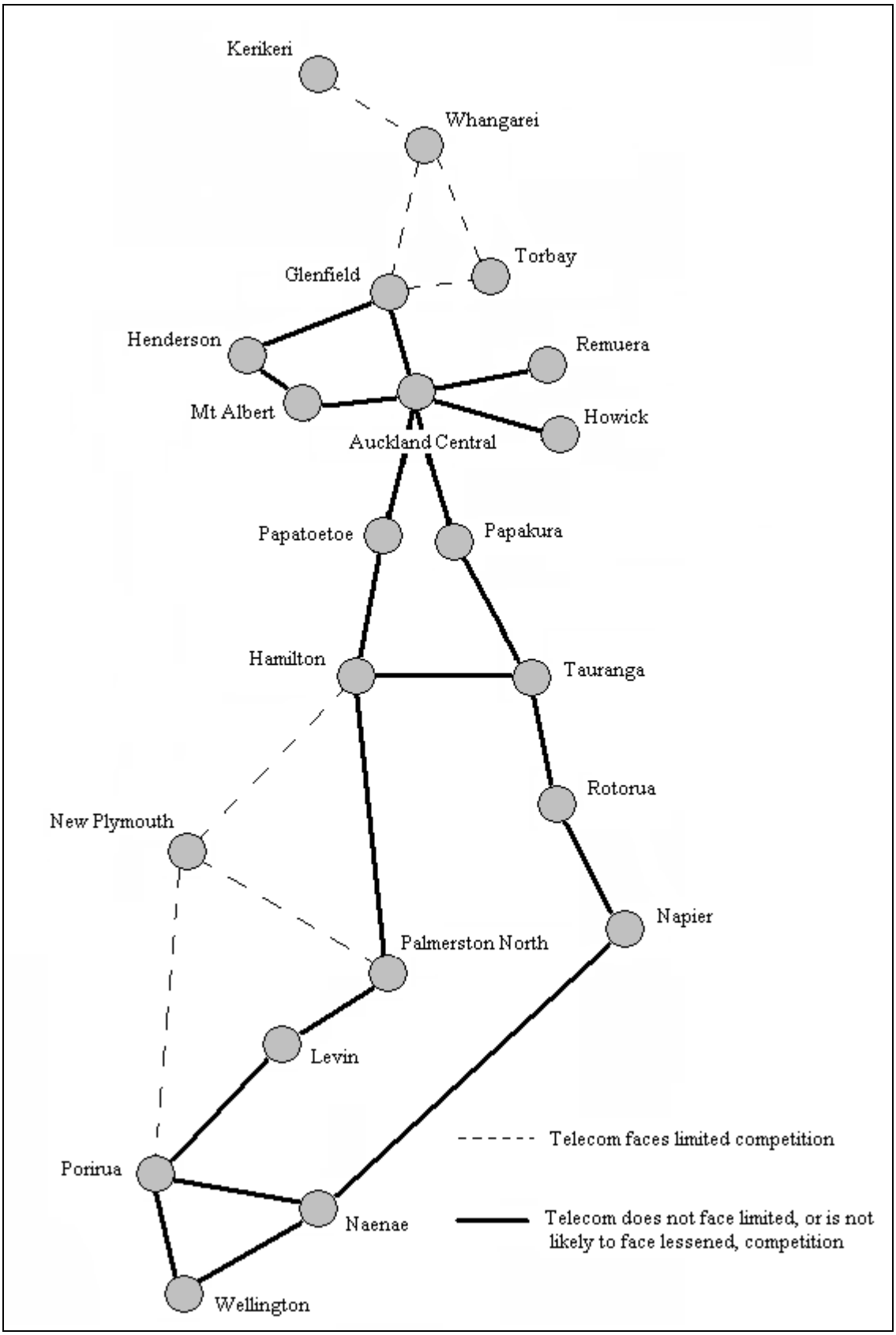
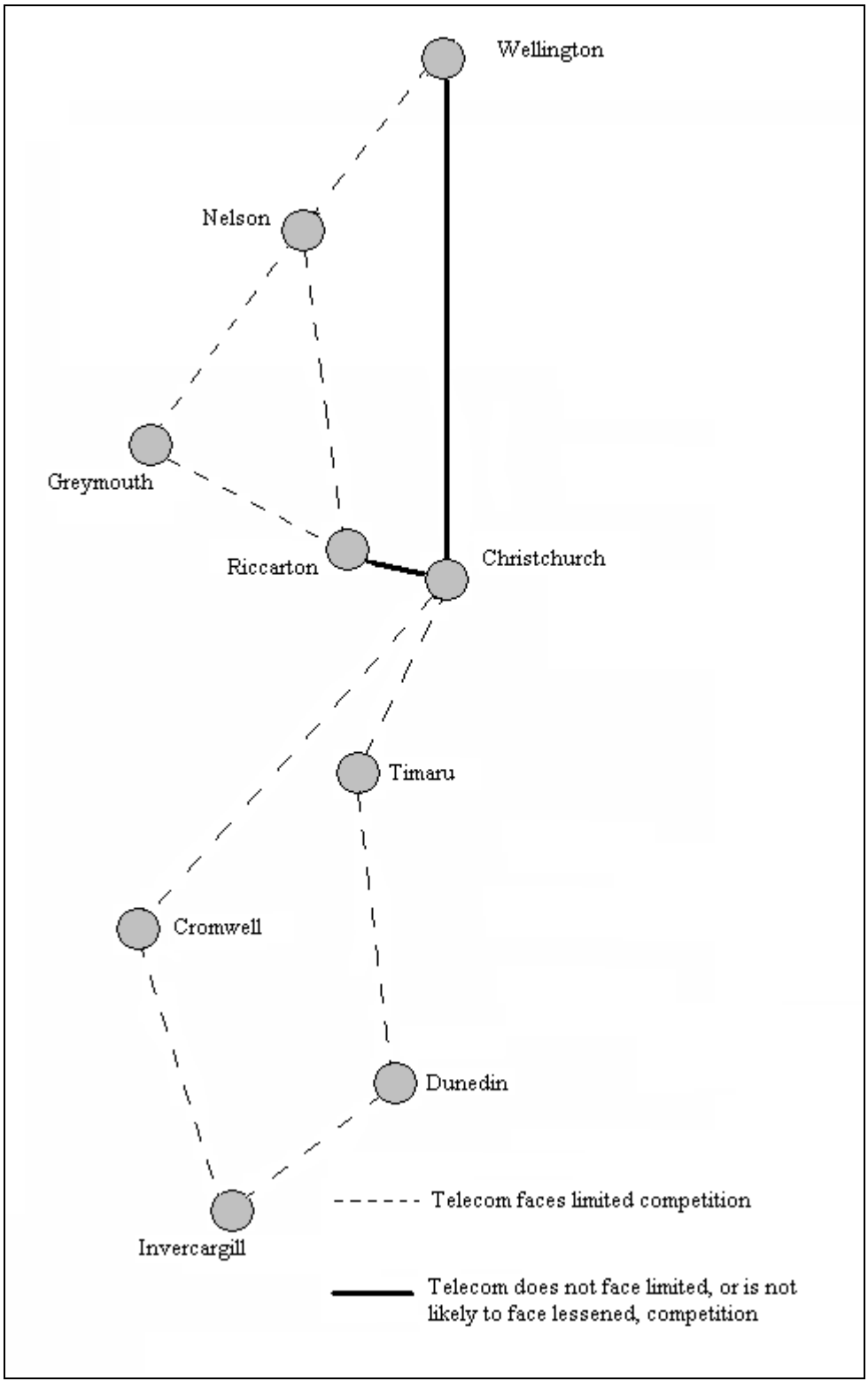


Figure 3: Competition on South Island Secondary Links



189. For example, TelstraClear has an extensive fibre network deployed throughout the North and South Islands, offering high levels of redundancy. FX Networks is currently completing a fibre ring along the east coast of the North Island, to complement its existing fibre between Auckland and Wellington. While FX Networks does not

currently connect directly to Telecom's local exchanges, it has indicated that it could build out to most exchanges within the main centres in which it has existing fibre, or alternatively work with local fibre networks to establish links to the relevant facilities.[61]

190. Vector's fibre network in Auckland currently covers a number of Secondary Links, and it has plans to extend its network further throughout the Auckland region.

191. There are also a number of smaller fibre networks that could offer localised transmission capacity on Secondary Links within the main centres, such as Smartlinx3 in Wellington/Hutt Valley.

192. These competitors are fibre-based network operators, capable of delivering Gigabit capacity services, and are either currently connected to the Telecom Serving Exchange or as discussed earlier are within close proximity to the exchange. Also included are the Secondary Links to which competitors are currently building with the expectation of being able to offer backhaul services.

193. The Commission has found that on most Secondary Links, Telecom faces competition from at least one other fibre-based competitor. On a number of routes, particularly in the South Island, Telecom and TelstraClear are the only two existing networks capable of supplying backhaul services. As discussed earlier, where Telecom and one other vertically integrated network operator only are present on a route, the Commission has concluded that Telecom faces limited competition.

194. On most of the routes in the North Island, Telecom faces competition from TelstraClear as well as a combination of other wholesale fibre-based operators such as FX Networks and Vector.

195. Figure 2 and Figure 3 are based on fibre-based competitors only. As discussed earlier in respect of primary links, the Commission considers that unilateral and co-ordinated market power is unlikely to be present where Telecom faces at least one wholesale-only fibre-based competitor.

196. Kordia provided the Commission with information on the extent of its DMR network,[62] which indicates that it can provide backhaul services over a number of Secondary Links shown above. Kordia noted that it considers DMR as a practical alternative to fibre, and that it anticipates being able to provide adequate capacity on Secondary routes.

197. At this stage the Commission has, however, excluded Kordia's DMR network on the basis that it is unlikely to have the capacity advantage of fibre-based transmission, and it also relies on line-of-sight between transmission towers. While Kordia is likely to provide some competitive pressure on Secondary Links, the Commission considers that on routes where only Telecom and Kordia are present, Telecom faces limited competition in the provision of the UCLL Backhaul Service.

198. As indicated in the above figures, the Secondary Links where either Telecom is the only provider, or Telecom and one other vertically integrated operator are the only providers,

[61] Conference transcript, *Competition assessment*, 10 April 2008, pages 109-111.
[62] Kordia noted that while its network is based primarily on DMR, it also has some fibre.

include those associated with Kerikeri, Whangarei, Torbay, New Plymouth, Nelson, Christchurch[63], Riccarton, Greymouth, Timaru, Dunedin, Invercargill, and Cromwell.

Potential Competition

199. In terms of potential competition on Secondary Links, the Commission notes that FX Networks has been active in deploying fibre throughout the North Island. TelstraClear has also recently completed a fibre ring throughout the lower part of the South Island.

200. The Commission has found that Telecom faces competition from at least one other fibre competitor on most Secondary Links. As discussed in paragraphs 203 to 208, the Commission intends to review its assessment of competition periodically in order to ensure that the regulated UCLL Backhaul Service is only available in areas where Telecom faces limited competition.

Summary of competition in the wholesale markets for transmission capacity on Secondary Links of the UCLL Backhaul Service

201. The Commission has concluded that Telecom faces limited competition on these Secondary Links, as summarised in Table 3.

Table 3: Secondary Links on which Telecom faces Limited Competition

Kerikeri-Whangarei
Whangarei-Glenfield
Whangarei-Torbay
Torbay-Glenfield
New Plymouth-Hamilton
New Plymouth-Palmerston North
New Plymouth-Porirua
All South Island Secondary Links (except Riccarton-Christchurch and Christchurch-Wellington)

202. In respect of all other Secondary Links the Commission has concluded, for the reasons outlined earlier, that Telecom is unlikely to face lessened competition in the provision of transmission capacity on these Secondary Links.

Reviews of the competition assessment

203. The following paragraphs outline how the Commission intends to review the above competition assessment for Primary and Secondary Links, to ensure that the regulated UCLL Backhaul Service is available only in areas where Telecom faces limited, or is likely to face lessened, competition.

204. For the first year following the release of this STD, the Commission intends to review, under s30R of the Act[64], the competition assessment on a three monthly basis,

[63] The exception being the Secondary Links between Christchurch, Riccarton, and Wellington.
[64] The process for a s30R review is discussed at paragraphs 53 and 54. Further guidance on the process is available in Commerce Commission, *Review of Standard Terms Determination under Section 30R Telecommunications Act*

acknowledging that these are emerging markets and that there are likely to be rapid changes to the state of competition in these markets. After the first year, the Commission intends to review the competition assessment on a six monthly basis, or more often at the Commission's discretion or in response to a request from any party.

205. In reviewing the competition assessment, the Commission will take into account any changes since the previous competition assessment was undertaken, focussing on:

- the state of competition in respect of the Primary and Secondary Links that have been considered in the previous competition assessment; and
- the state of competition in respect of additional local exchanges that are expected to be unbundled over the following year.

206. Information that competition reviews will consider includes:

- which additional local exchanges have been unbundled;
- which additional local exchanges are planned to be unbundled within the next twelve months;
- where new competition has emerged on a link;
- whether changes in the nature of competition on a link have occurred eg evidence that vertically-integrated competitors are constraining Telecom in terms of pricing;
- any announcements of planned competition on a link; and
- whether any previously announced competition has eventuated.

207. Accordingly, the Commission will require information be provided by Telecom on their plans for unbundling further local exchanges within the next 12 months, to inform reviews of the competition assessment. This is reflected as a requirement in Appendix A: Schedule 1 – UCLL Backhaul Service Description, clause 8.

208. The Commission will also seek information from other providers of backhaul services, on their intended plans to compete on additional links, and from Access Seekers, on their views on the nature of competition.

2001,2007 - http://www.comcom.govt.nz//IndustryRegulation/Telecommunications/StandardTermsDeterminations/ContentFiles/Documents/REVIEW%20OF%20STANDARD%20TERMS%20DETERMINATION.pdf

PRICE TERMS – CORE CHARGES – THE DRAFT STD

Introduction

209. The Commission is required to determine the price terms for the UCLL Backhaul Service. The initial pricing principle (IPP) in the Act is defined as:

> *Benchmarking against prices for similar services in comparable countries that use a forward-looking cost-based pricing method.*

210. The following sections summarise the approach taken by the Commission in applying the IPP in the draft UCLL Backhaul STD,[65] and the submissions[66] from parties on the draft STD.

211. Having considered submissions by the parties, the Commission then sets out the approach it has taken to benchmarking the price terms of the UCLL Backhaul service in this determination.

Summary of the draft UCLL Backhaul STD

Recurring monthly rental rates

212. In the draft STD, the Commission determined recurring monthly rental charges for two components of the UCLL Backhaul Service: the Primary Link between the local exchange and a Parent POI Site, and a Secondary Link from the Parent POI Site to the ASNAPOI.

Primary Link

213. In the draft STD, the Commission identified two countries as appropriate benchmarks for the Primary Link component of the UCLL Backhaul Service. In Austria, Telekom Austria (TA) provides Ethernet-based backhaul services from its MDF sites to its wholesale customers' sites, for bandwidths of up to 100 Mbps. In the UK, Openreach has an Ethernet Backhaul Network Service (BNS) which is designed to fulfil the backhaul requirements of unbundled local loop operators. The BNS has a minimum capacity of 1Gbps.

214. The Commission used the TA backhaul service to directly determine a monthly rental price for the Primary Link of the 100 Mbps backhaul service. For the 1Gbps UCLL Backhaul Service, the Commission noted that the TA backhaul service is only available for a range of capacities up to 100 Mbps. Given the absence of a TA 1Gbps service, the Commission extrapolated the TA rates using a logarithmic line-of-best-fit.[67] The

[65] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008.
[66] These include submissions on the draft STD, cross-submissions, and presentations at the Conference.
[67] A logarithmic relationship was used on the basis that bandwidth costs per Mbps are expected to decline as bandwidth increases. This relationship is evident in the TA rates.

Commission also used a price component of the BNS service[68] as a cross-check on the 1Gbps price.

215. The pricing structure used in the draft STD followed that of TA's backhaul service, which is comprised of 3 geographic bands. This resulted in a separate price for backhaul services in each of these bands. The Commission noted that the bands used in the draft STD were based on population and hence likely traffic volumes. Primary Links that lie within more densely populated regions could be expected to carry greater volumes of traffic, which will tend to reduce average backhaul costs.

216. The prices set by the Commission for the Primary Link of the UCLL Backhaul Service in the draft STD are summarised in Table 4.

Table 4: Benchmarks for 100 Mbps and 1 Gbps UCLL Backhaul Primary Link

(NZD per month, two ends)

	Band A	Band B	Band C
100Mbps	$1,811	$4,555	$8,039
1Gbps	$2,297	$5,780	$10,196

Secondary Link

217. In those cases where backhaul is required from the Parent POI Site to the ASNAPOI, the draft STD set an additional Secondary Link charge to reflect the cost of providing that additional backhaul. The Commission noted that the TA backhaul service did not appear to include a similar service that was subject to cost-based regulation.

218. The Commission therefore used the Openreach BNS main link, which connects a traffic aggregation point with the access seeker's Point of Presence (**POP**). This component has a capacity of 10Gbps, and has a fixed annual rental (£1,500 p.a., or $330 per month) as well as a distance-based rental (£1.24 per metre p.a., or $272 per kilometre per month). In the draft STD, the Commission noted that it may be possible to scale back the prices for the 10Gbps service in order to derive a price for the 100 Mbps and 1Gbps services in New Zealand, although concluded that the distance-related costs of the main link are unlikely to be influenced significantly by bandwidth. The Commission therefore determined a distance-based charge for the Secondary Links of $272 per kilometre per month, and a fixed charge of $330 per month.

Non-recurring rates

219. In the draft STD, the Commission set a non-recurring charge for the UCLL Backhaul Service of $4,100 per end, or $8,200 per connection. This was based on the connection

[68] As is discussed later, the BNS is comprised of several components, including a spoke, an aggregation hub, and a main link. In the draft STD, the Commission used the spoke component as a cross-check on the TA rates, as the spoke component terminates at the local exchange.

charges set by TA for its Ethernet-based backhaul service. The TA connection charges do not vary with bandwidth.[69]

[69] The Commission noted that the one-off connection charge for the BNS spoke component is $37,466, which is considerably higher than the TA connection charge. The Commission noted that there does not appear to be any obvious reason why the connection charge for a 1Gbps service should be significantly higher than for a 100 Mbps service, and therefore used the TA connection rate for the 100 Mbps and 1Gbps backhaul services.

PRICE TERMS – UCLL BACKHAUL MONTHLY RENTAL RATES

Introduction

220. The IPP for the UCLL Backhaul Service refers to benchmarking against prices for similar services in comparable countries that use a forward looking cost-based pricing method.

221. The Commission has found that there is considerable variation in the definition of backhaul services in other countries, and in the way in which backhaul services are priced. This has resulted in a relatively small number of countries identified as having similar services and that are priced according to a 'forward-looking cost-based' pricing method. As noted earlier, the Commission's draft STD determined a pricing structure for UCLL Backhaul based on benchmarks from two countries, Austria and the United Kingdom. In their submission on the draft STD, LECG identified five countries that they considered to be appropriate benchmarks.

222. In light of the limited number of potential benchmark jurisdictions identified throughout the STD process, the Commission has not explicitly used comparability criteria for a number of reasons.

223. First, while the strict application of comparability criteria is a useful way of restricting benchmarks to those jurisdictions that exhibit similar cost drivers to those in New Zealand, this only makes sense when a 'peer group' approach to benchmarking is being employed. In the current STD, the Commission has used a regression-based approach, which examines how the variation in cost drivers explains the variation in the price of the service. If only those jurisdictions with comparable operating conditions to New Zealand were used in the regression sample set, the reliability of the benchmarking results is likely to be undermined. In effect, by estimating the relationship between the cost drivers and cost-based prices in overseas jurisdictions, a New Zealand price for the backhaul service can be determined by placing the New Zealand values of the cost drivers into the estimated relationship.

224. Second, the limited number of jurisdictions with backhaul services that are similar to the UCLL Backhaul Service proposed for New Zealand, and that have cost-based prices, means that any attempt to further restrict this sample set is likely to reduce the reliability of the results. For example, in the UCLL STD, the Commission identified an initial set of 66 countries or US states in which UCLL services were available at forward-looking cost-based rates. Of those 66 jurisdictions, the Commission restricted its benchmarking analysis to 10 jurisdictions, based on a requirement that these jurisdictions exhibit similar cost drivers to New Zealand, such as population density and urbanisation. In terms of the UCLL Backhaul Service, none of the jurisdictions either used by the Commission in the draft UCLL Backhaul STD, or by LECG in its submissions, correspond to the 10 jurisdictions that were found to be comparable for the purposes of the UCLL STD. While the cost drivers for the UCLL Backhaul Service may differ from those for the UCLL Service, the limited nature of the initial sample set of backhaul benchmarks suggests that some caution must be exercised in terms of any further restrictions.

225. In light of the above considerations, the Commission has focused on identifying countries with similar backhaul services and with cost-based prices. This is discussed further below.

Submissions on the draft STD

226. The following parties provided submissions on the price benchmarks used in the draft STD:

- Telecom (including analysis conducted by LECG);
- Vodafone;
- Orcon, Kordia and CallPlus (including a submission from Covec on behalf of Orcon/Kordia, and Vodafone/Ihug); and
- Vector Communications.

227. Cross-submissions relating to price benchmarking were received from:

- Telecom;
- TelstraClear;
- Vodafone; and
- Orcon, Kordia and CallPlus (including a submission from Covec on behalf of Orcon/Kordia, Vodafone/Ihug, and CallPlus).

228. Appendix E contains a detailed summary of the parties' submissions on the price terms contained in the draft STD.

Commission's Benchmarking Approach

229. In submitting on the draft UCLL Backhaul STD, most parties expressed some concern over the limited number of pricing benchmarks that were identified. For Telecom, LECG identified additional benchmark jurisdictions in which backhaul prices had been determined by regulators on a basis that reflects the underlying cost of provision. LECG then undertook an econometric analysis of those benchmarked prices, and derived a set of backhaul prices for New Zealand. On behalf of Access Seekers, Covec proposed that consideration be given to supplementing the benchmarking sample set by including commercial prices from competitive backhaul markets. At the conference Covec accepted that the use of commercial prices was not required, in light of the additional benchmarks identified by LECG.

230. The Commission notes that while Covec subsequently commented on a number of assumptions made by LECG, and suggested a number of areas in which LECG's analysis could be improved, Covec did not challenge the underlying methodology proposed by LECG. Having considered the submissions and cross-submissions and the presentations at the conference, the Commission has based the benchmarking for this determination on the methodology proposed by LECG.[70]

[70] This includes the approach taken to exchange rates, which follows the Commission's approach set out in the UCLL STD.

231. However, the Commission has a number of concerns around some of LECG's data selection and assumptions. As discussed below, the Commission has therefore made a number of amendments to LECG's benchmarking approach.

232. An important preliminary point relates to the treatment of both UCLL Backhaul and UBA Backhaul as similar services. As noted in Appendix E, both LECG and Covec submitted that the two backhaul services are similar, and are likely to have similar underlying cost structures. LECG acknowledged that the UCLL Backhaul Service commences at a Telecom local exchange, whereas the UBA Backhaul Service commences at the first data switch. However, this difference can be accounted for in setting prices that vary with distance.[71]

233. Both Covec and LECG were of the view that it was appropriate for the Commission's benchmarking exercise to regard the two backhaul services as equivalent, and the Commission agrees that this is an appropriate approach to take. For the purposes of benchmarking a price for these two backhaul services, the Commission has therefore treated UCLL Backhaul and UBA Backhaul as being equivalent services.

Distance as a backhaul cost driver

234. LECG submitted that distance and bandwidth are important cost drivers of a backhaul service. In submitting on behalf of a number of Access Seekers, Covec also noted that backhaul prices will generally vary with distance and bandwidth.[72]

235. The Commission agrees with LECG and Covec that for the purposes of benchmarking a price for backhaul services in this determination, it is reasonable to use distance and bandwidth as the relevant cost drivers of the provision of backhaul services.[73]

236. As noted by LECG, given the differences in the way distance is handled across the sample of jurisdictions identified by LECG, some "normalisation" of benchmarked rates for distance is required. To do this, LECG made a number of assumptions regarding the average distance over which backhaul services are provided in the various countries. In those countries where backhaul prices are set according to metropolitan, provincial, and/or regional bands, LECG generally assume that the average backhaul distances are:[74]

- 17.5 km for metropolitan areas (LECG's "rationale" for this is an assumption of an "average distance for a metropolitan service being the mid-point of 0-35

[71] For example, where the UBA Backhaul Service covers a shorter distance than the UCLL Backhaul Service, this would be reflected in a lower UBA Backhaul price.
[72] Covec, *Regulated Backhaul Pricing*, March 2008.
[73] However, the Commission notes (as does LECG) that the benchmarked jurisdictions tend to treat distance in a variety of ways. For example, in Canada, Holland, and Italy, there is a fixed monthly rental for backhaul, and this rental varies by region (eg Canada has three prices, for metropolitan, provincial, and regional steps; Italy has a metro and a regional price step). In France, the FT DSL Collect IP backhaul service has a single price which does not vary at all with distance. In other cases, such as in the UK and another FT service ("DSL Collect Ethernet"), the price structure includes a fixed charge plus an explicit per kilometre charge. In addition, the Commission notes Vector's comment at the Conference that its commercial preference is to offer a single backhaul price within a region, regardless of distance.
[74] LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 7 March 2008, p 17-18, table 11.

km");
- 80 km for provincial areas ("average distance for a provincial service being the mid-point of 0-160 km"); and
- 150-250 km for regional areas ("average distance for a regional service in Canada (France) being the mid-point of 0-500 km (0-300 km)").

237. However, LECG provide little justification for these assumptions, and indeed they acknowledge that considerable judgement was involved.[75]

238. As Covec noted in their cross-submission, the results produced by LECG's benchmarking analysis are quite sensitive to the assumed distances to which backhaul rates apply in the benchmarked jurisdictions. According to LECG, they were not able to identify any information on the average distance of the backhaul links in the overseas jurisdictions, and therefore had to make an assumption regarding these distances.

239. However, the Commission has identified additional information regarding the backhaul service in Canada, and in particular regarding the areas throughout which these services are provided. The Canadian backhaul services used by LECG are provided by Bell Canada, whose Ethernet Transport Service is available at various speeds, and within three distance bands: Metropolitan, Provincial, and Regional.[76] Bell Canada defines these dimensions as follows:

- a "Metro Network Path" is defined with reference to the urban areas of Toronto, Ottawa, and Montreal, and their respective Extended Area Service (EAS);
- a "Provincial Network Path" refers to transport within Quebec or Ontario; and
- a "Regional Network Path" refers to transport between Quebec and Ontario.

240. In respect of the metro backhaul service, Bell Canada elsewhere defines an EAS as the addition of an exchange to a local-service area, where the distance between the exchanges is no greater than 40 miles (64 km).[77] LECG generally assume a distance band for metro backhaul of up to 35 km, and take a midpoint of 17.5 km. The Bell Canada definition of metro backhaul indicates that a distance band of up to 64 km applies to the Canadian metro backhaul service. The midpoint of this band is 32 km.

241. The Commission has therefore used an average distance of 32 km for metropolitan backhaul in Canada. The Commission has also used this assumption in respect of metropolitan backhaul in the other jurisdictions[78], although in the case of the UK

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[75] ibid p 18.

[76] Bell Canada, *Access Services Tariff for Interconnection with Carriers and Other Service Providers, Access Arrangement*, p 47.7, Item 123.2(c) to (e), URL: http://ww.bce.ca/en/aboutbce/regulatoryinformation/tarrifs/index.php/ItemView.asp?Tariff=7516%20&Part=%20%20%202%20%20%20%20%20%20&Item=%20%20123%20%20%20%20%20

[77] Bell Canada, *BCE General Tariff, Exchange Service – General*, p 45A, Item 60.1(d), URL: http://www.bce.ca/en/aboutbce/regulatoryinformation/tarrifs/index.php/ItemView.asp?Tariff=GT%20%20%20&Part=%20%20%202%20%20%20%20%20%20&Item=%20%20%2060%20%20%20%20%20. It is not clear whether this refers to radial or route distance.

[78] This is based on an examination of whether the main metropolitan centres in the other benchmarked jurisdictions are sufficiently similar to the metropolitan centres in which Bell Canada offer backhaul services. For example, in the case of France, the Paris urban area covers approximately 2,700 km^2, which suggests a radial distance of around 30 km is appropriate (as the radius of a circular area of 2,700 km^2 is 29 km). For Italy, the urban area of

backhaul services, the Commission has followed LECG's approach of using the maximum distances associated with the Openreach backhaul services.

242. For provincial and regional backhaul provided by Bell Canada, it is possible that backhaul could be provided over several thousand kilometres. However, it is relevant to note that the major population centres in both of the provinces served by Bell Canada backhaul services are Toronto and Ottawa (both in Ontario), and Montreal and Quebec City (Quebec). Table 5 summarises the distances between these cities.

Table 5: Route distances for Bell Canada Ethernet Transport Service (km)

	Toronto	Ottawa	Montreal	Quebec City
Toronto	n/a			
Ottawa	400	n/a		
Montreal	540	190	n/a	
Quebec City	810	460	270	n/a

Source: http://atlas.nrcan.gc.ca/site/english/learningresources/facts/tabledistances.html

243. The distances in the light-shaded cells represent routes that are defined by Bell Canada as being provincial routes, whereas the heavily-shaded distances are for routes defined by Bell Canada as regional. Assuming that most of the backhaul traffic is between these population centres, the average distance of the Bell Canada provincial Ethernet Transport Service would be between 270 km and 400 km, while the average regional distance would be between 190 km and 810 km. For the purposes of benchmarking against Canada, the Commission has assumed the average distance for the Bell Canada provincial backhaul service to be 350 km, and the average distance for the Bell Canada regional backhaul service to be 400 km.

244. The Commission has also taken the approach agreed by LECG and Covec, whereby the lower bound of each band is equated to the upper bound of the preceding band. The Commission has also taken the midpoint of the band, where no further information has been identified on the likely distance,[79] because the Commission considers that the midpoint is appropriate in the case of a point-to-point service such as backhaul.

Bandwidth as a backhaul cost driver

245. Both LECG and Covec submitted that backhaul costs are likely to vary with bandwidth. LECG initially used overseas backhaul services with bandwidths corresponding to the 50 Mbps, 100 Mbps, 200 Mbps, and 1 Gbps bandwidths of the UBA Backhaul Service[80], and examined how prices vary across those bandwidths. Covec submitted that additional bandwidths could be added for some countries, in order to provide a more balanced dataset. LECG responded by agreeing that additional bandwidths should be included, but disagreed with Covec's limitation of a more balanced dataset. LECG instead argued that all intermediate bandwidths between 50 Mbps and 1 Gbps should be added to the dataset.

Rome is 5,350 km^2, indicating a radial distance of around 40 km. This suggests that the use of the average metropolitan distance of 32 km in Canada is a reasonable approximation in other jurisdictions.

[79] As noted above, such information has been found for the Bell Canada provincial and regional backhaul services.

[80] The UCLL Backhaul Service is only available at bandwidths of 100 Mbps and 1 Gbps.

246. The Commission agrees in principle that consideration should be given to all the bandwidths at which backhaul services are available in the benchmark jurisdictions. This is because under the regression-based benchmarking approach proposed by LECG, the intention is to estimate the relationship between cost-based backhaul prices and the relevant cost drivers, which are considered to be bandwidth and distance.[81]

247. The Commission has therefore included the intermediate backhaul services, as proposed by LECG in their presentation at the conference.[82] This increases the number of price observations in the dataset from 36 prices to 68 prices, varying by bandwidth and distance. The Commission further discusses the composition of the dataset below.

Backhaul services in France and the United Kingdom

248. LECG identified a number of backhaul services in France and the UK which they considered to be appropriate benchmarks. The other parties generally did not comment on the suitability of these services.

249. In the case of France, LECG used two France Telecom (FT) backhaul services, DSL Collect Ethernet, and DSL Collect IP:

- DSL Collect Ethernet is a transport service from a DSLAM located at a FT site, to the access seeker's POP within the same region.
- DSL Collect IP is a transport service from a DSLAM to either an FT regional node or to the access seeker's POP.

250. However, LECG has only included one variant of the DSL Collect IP service, specifically where the service terminates at the access seeker's POP. The service can also be terminated at a regional FT site, at a considerably lower price. For example, the monthly price for a 100 Mbps service terminating at the access seeker's POP is €4,000, whereas the monthly charge for the same service terminating at the regional FT parent site is €1,000.

251. While the end-point of the DSL Collect IP service used by LECG may be consistent with the end-point of the backhaul service definition in New Zealand (ie the Access Seeker's site), LECG has noted that the purpose of their approach is to estimate the relationship between distance and price, and so a precise match of the start- and end-points of the services is not required. The Commission does not consider that the DSL Collect IP service that terminates at the FT site should be ignored, and has therefore considered how to incorporate that service within the benchmarking exercise.

252. The Commission considers that some weight should be given to each of the DSL Collect IP services. However, it would not be appropriate to use the same distances for both services, given the different termination points. Instead, the Commission has used the

[81] Under a 'peer group' benchmarking approach, only those backhaul services that corresponded to the services proposed for New Zealand (for example, 50 Mbps, 100 Mbps, 200 Mbps, and 1 Gbps) would be considered, and a benchmarked price would be based on some average (such as the median) of each subset. As discussed later, such an approach is used as a cross-check, although there are only a small number of observations in each subset.
[82] LECG, *Responses to benchmarking issues raised by Covec*, 10 April 2008, slide 11.

difference between the two services[83], and applied the metro, provincial, and regional distances to that difference.

253. LECG used two Openreach backhaul services in its benchmarking, the Backhaul Extension Service (BES) and the Openreach Network Backhaul Service (ONBS):

- BES provides metropolitan point-to-point transport between BT exchange sites and an access seeker's POP (up to a maximum radial distance of 35 km); and
- ONBS provides metropolitan point-to-point transport between access seeker equipment located at BT NGN or Metro sites (up to a maximum radial distance of 15 km).

254. Openreach also provide a Backhaul Network Service (BNS), which, according to Openreach, has been designed to fulfil the backhaul requirements of unbundled local loop operators.[84] BNS provides a link between an access seeker's equipment located in a BT local exchange, and the access seeker's POP via an aggregation point. The service is comprised of a number of components, including a spoke (1 Gbps) from the local exchange to an aggregation hub; the hub site; and a main link (10 Gbps) from the aggregation hub to the access seeker's POP. All of these components must be purchased as a bundle.

255. LECG submitted that the BNS comprises three components which must be purchased together (the main link, hub, and spoke components). LECG considered that the main link component of BNS is the closest match to the backhaul service in New Zealand, although they excluded the service on the basis that the 10 Gbps capacity of the main link component "falls outside the relevant transmission capacity range for our study."[85]

256. The Commission considers that BNS is a suitable benchmark for the UCLL Backhaul and UBA Backhaul services. LECG's exclusion of the service is on the basis that the capacity of one component of BNS falls outside the range of bandwidths being contemplated for New Zealand. However, the spoke component of BNS provides 1Gbps, and so the Commission has derived a per-spoke price for BNS, which aggregates the component prices of BNS and averages this total price over the maximum of eight spokes that can be accommodated on a single 10Gbps main link.[86]

[83] The Commission used this difference in the draft UBA Backhaul STD.
[84] Openreach, *Product Description Backhaul Network Service*, 21 June 2007, p 9.
[85] LECG, *Response to questions from the Commerce Commission related to the UCLL & UBA backhaul conference of 10 – 11 April 2008*, 23 April 2008.
[86] According to Openreach, *Product Description Backhaul Network Service*, 21 June 2007, p 3. Following LECG's approach to distance for the UK services, the Commission has included a BNS price for the maximum distance allowed (35 km for a spoke and 35 km for a main link, or 70 km in aggregate), as well as a BNS price for the assumed metropolitan distance (32 km, which is divided equally between the spoke and main link components).

Italian backhaul rates

257. The above amendments result in the dataset of backhaul prices summarised in Appendix F. This initial dataset includes prices from the five jurisdictions identified by LECG as having cost-oriented regulated backhaul services, with prices varying according to bandwidth and distance. The initial dataset comprises 70 price observations.

258. In most of the jurisdictions considered, the underlying backhaul prices exhibit a non-linear relationship with the bandwidth of the service, which is typically what would be expected.[87] The exception to this is Italy, where backhaul prices are structured on a per Mbps basis. As a result, the average Italian backhaul price per Mbps is constant as bandwidth increases, whereas for the other services, the average price per Mbps declines. This is shown in Table 6 which summarises the average cost per Mbps derived from a number of benchmarked backhaul services,

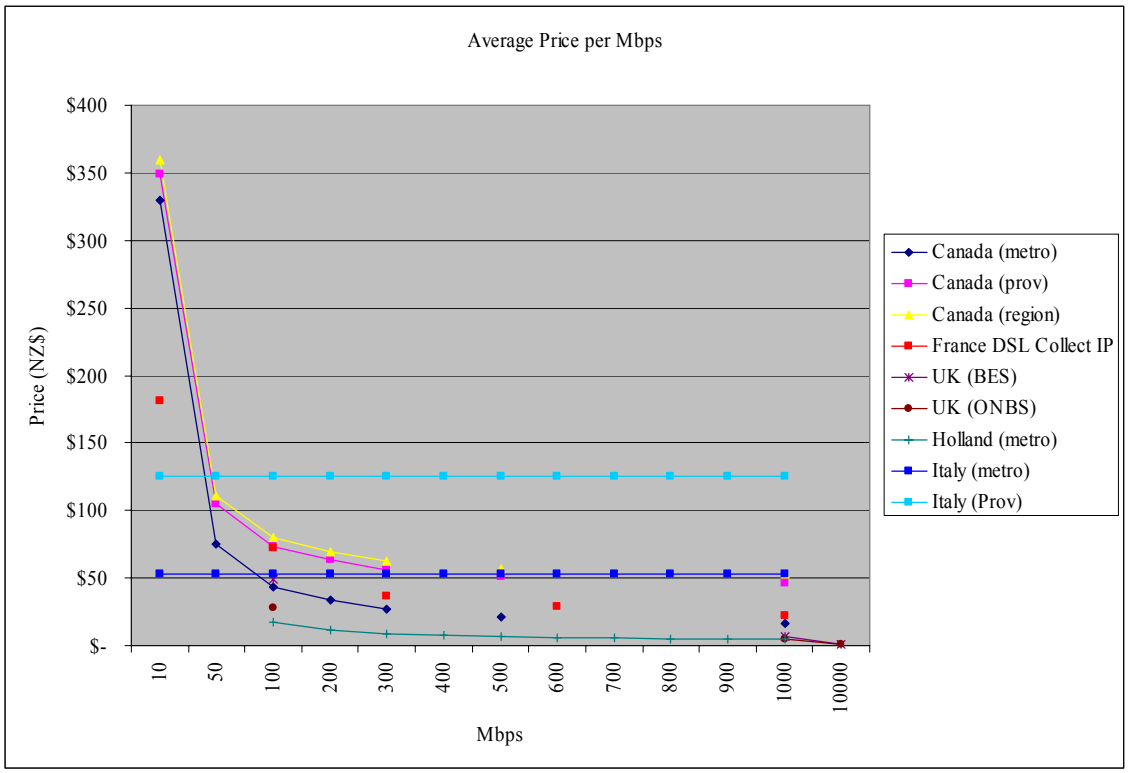
Table 6: Average backhaul prices (NZ$ per Mbps per month)

	10	50	100	200	300	400	500	600	700	800	900	1000	10000
Canada (metro)	$329.89	$74.89	$43.64	$33.66	$26.58		$20.90					$16.65	
Canada (prov)	$349.18	$104.65	$73.40	$63.42	$56.33		$50.66					$46.41	
Canada (region)	$359.66	$110.85	$79.60	$69.62	$62.53		$56.86					$52.61	
FT DSL Collect IP	$181.07		$72.43		$36.21			$28.67				$21.73	
UK (BES)			$48.81									$6.97	$0.94
UK (ONBS)			$27.48									$4.82	$0.73
Holland (metro)			$17.76	$11.44	$8.94	$7.53	$6.61	$5.95	$5.44	$5.05	$4.72	$4.45	
Italy (metro)	$53.42	$53.42	$53.42	$53.42	$53.42	$53.42	$53.42	$53.42	$53.42	$53.42	$53.42	$53.42	
Italy (Prov)	$125.24	$125.24	$125.24	$125.24	$125.24	$125.24	$125.24	$125.24	$125.24	$125.24	$125.24	$125.24	

259. The effect of increasing bandwidth on the average backhaul price per Mbps is illustrated in Figure 4. This shows the expected reduction in the average price as bandwidth increases, for all countries except Italy, where the average prices for the metropolitan and provincial backhaul services are uniform across all bandwidths.

[87] For example, in Commerce Commission, *Decision No. 611: Standard Terms Determination for the designated service Telecom's unbundled bitstream access*, 12 December 2007, p 46 -50, the Commission used a non-linear relationship between price and capacity to set the price for the Enhanced UBA services. This relationship was evident in Telecom's retail One Office services.

Figure 4: Average backhaul prices and bandwidth (NZ$ per Mbps per month)



260. In their initial submission, LECG also referred to the expected non-linear relationship between backhaul prices and bandwidth, and for this reason adopted a log-log regression model.[88]

261. One consequence of Italy's linear backhaul pricing is that the Italian prices are relatively high for the higher bandwidth services. This can be seen by comparing prices between countries for a given combination of bandwidth and distance. For example, of the set of backhaul prices shown in Appendix G, there are five prices for a 100 Mbps metropolitan (32 km) service. These are summarised in Table 7.

Table 7: 100 Mbps metropolitan backhaul

Jurisdiction	Price (NZ$ per month)
Holland	$1,776
Canada	$4,364
UK (BES)	$4,881
Italy	$5,342
France (DSL Collect IP)	$5,432
Median	$4,881

[88] LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 14 March 2008.

262. For the 100 Mbps metropolitan backhaul services, the Italian service has a price of $5,342 per month, which is within the range of the other prices for that service. The Italian price is 9% above the median price of $4,881 per month, but below the price for the FT service.

263. However, for a 1Gbps metropolitan service, the price observed for the Italian service is considerably higher than for other jurisdictions, as shown in Table 8. The Italian observation is more than triple the median observation.

Table 8: 1Gbps metropolitan backhaul

Jurisdiction	Price (NZ$ per month)
UK (BNS)	$3,665
Holland	$4,451
UK (BES)	$6,966
Canada	$16,652
France (DSL Collect IP)	$17,202
France (DSL Collect Ethernet)	$34,222
Italy	**$53,415**
Median	$16,652

264. Similar results have also been identified for the provincial backhaul services, although there are typically fewer observations for any given combination of bandwidth and distance. For example, a 1 Gbps provincial backhaul service in Italy has a price of $125,239 per month, which is 72% above the median observation for that service.

265. Given that backhaul prices in Italy do not exhibit the expected relationship with bandwidth (ie increasing with bandwidth at a diminishing rate), the Commission has excluded the Italian backhaul prices for higher bandwidth services, where the effect of Italy's linear pricing is more pronounced. Specifically, the Commission has excluded the Italian backhaul prices for bandwidths of 300 Mbps and above.

Composition of final dataset

266. Having excluded the Italy prices for higher bandwidth backhaul services, the number of price observations is reduced from 70 prices, to 54 prices. Of these, seven prices are from the UK, eight prices are from each of France and Italy, 10 prices are from Holland, and 21 prices are from Canada.

267. Given the relatively high proportion of observations from Canada, the Commission has removed some of the Canadian backhaul price points in order to base its benchmarking on a more balanced dataset. Specifically, the Commission has omitted prices for the 150 Mbps, 300 Mbps, and 500 Mbps Canadian backhaul services, thereby reducing the number of Canadian observations from 21 prices to 12 prices. This is close to the remaining number of prices observed from the other benchmark jurisdictions. The

effect of removing these Canadian prices is to slightly increase some of the longer haul prices, and to reduce some of the backhaul rates for shorter distances.

268. The Commission considers that the resulting dataset, which is set out in Appendix G, is a reasonable sample against which to apply a regression-based benchmarking methodology. The Commission would generally consider that a larger sample of suitable data that meets the relevant criteria would be preferable to a more restricted sample set. However, in this instance, the Commission has observed considerable variation in backhaul prices across countries, even when likely cost drivers have been normalized (ie for a given combination of bandwidth and distance). This suggests that other country-specific factors may also be determining prices, in addition to the cost drivers identified by both LECG and Covec. In order to mitigate this effect, the Commission has adopted a set of data that comprises approximately similar numbers of prices from each jurisdiction.

Benchmarking UCLL Backhaul monthly rental rates

269. The Commission has used LECG's regression-based methodology in order to determine a set of monthly rental rates for the UCLL Backhaul Service. This has involved estimating the following relationship between backhaul prices, bandwidth, and distance:

$$\ln(Price) = \beta_0 + \beta_1 \ln(Distance) + \beta_2 \ln(Bandwidth)$$ [89]

270. As noted by LECG and Covec[90], such a specification is consistent with the understanding that backhaul costs are likely to increase with bandwidth, although at a diminishing rate.

271. The resulting estimated relationship and properties of the model are summarised in Table 9.

Table 9: Regression model results

	Coefficient	**standard error**
Constant	4.6300 ***	0.7243
ln(Distance)	0.5071 ***	0.0989
ln(Bandwidth)	0.3858 ***	0.0910
Adjusted R^2	0.44	

*** significant at 1%

[89] Where ln is the natural log. While LECG define their regression model in terms of the log function, their results are actually generated using natural logs (ln).
[90] LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 14 March 2008, p 20. Covec, *Regulated Backhaul Pricing*, March 2008, p 8.

Distance bands

272. In its STP, Telecom proposed that prices for the UCLL Backhaul Service be based on 20 distance bands.[91] A number of Access Seekers submitted that 20 bands are excessive. For example, Vodafone[92] submitted that Telecom used a smaller number of bands in Telecom's interim UCLL backhaul service, while Covec[93] submitted that five bands would be more appropriate and consistent with international practice.

273. The Commission notes that the use of broader distance bands will involve a higher degree of averaging. For example, if a band of 0-100 km is used, all backhaul over distances within that range will be priced at a single point. This indicates that relatively narrow bands will more accurately reflect the estimated cost of providing the backhaul service. While Access Seekers expressed some concern over a large number of narrow bands, the Commission considers that most UCLL Backhaul Services will be over a relatively short distance, and that even according to Covec's proposed structure, any backhaul distance in excess of 300 km would be priced on a bespoke basis.

274. For the purposes of this determination, the Commission has therefore determined recurring monthly rentals for the UCLL Backhaul Service, based on five radial distance bands:

- radial distance greater than 0 km and less than or equal to 5 km (0 km < distance ≤ 5 km);
- radial distance greater than 5 km and less than or equal to 10 km (5 km < distance ≤ 10 km);
- radial distance greater than 10 km and less than or equal to 15 km (10 km < distance ≤ 15 km);
- radial distance greater than 15 km and less than or equal to 20 km (15 km < distance ≤ 20 km); and
- radial distance greater than 20 km and less than or equal to 25 km (20 km < distance ≤ 25 km).

For UCLL Backhaul Services over greater radial distances, the price is set according to the above estimated relationship.

Summary of benchmark results

275. The Commission has used the above relationship to determine the monthly rental rates for the UCLL Backhaul Service as summarised in Table 10.[94]

[91] Telecom, *Standard Terms Proposal for Telecom's unbundled copper local loop network backhaul service*, 28 September 2007, p 51, para 160.
[92] Vodafone, *Cross Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 26 March 2008, para 15.
[93] Covec, *UCLL and UBA Backhaul Cross Submission*, March 2008, p 15.
[94] Appendix H contains several examples of how the benchmarked monthly rental rates for the UCLL Backhaul Service apply.

Table 10: UCLL Backhaul monthly rental rates ($/month)

Distance Step	Bandwidth	
	100 Mbps	**1 Gbps**
0 km < radial distance ≤ 5 km	$964	$2,344
5 km < radial distance ≤ 10 km	$1,683	$4,091
10 km < radial distance ≤ 15 km	$2,181	$5,301
15 km < radial distance ≤ 20 km	$2,586	$6,287
20 km < radial distance ≤ 25 km	$2,938	$7,142
radial distance > 25 km	price set according to: *price* = exp{4.6300 + (0.5071 x ln(radial *distance*)) + (0.3858 x ln(*bandwidth*))}*	

* Where ln is the natural log.[95]

276. For example, for a 100Mbps UCLL Backhaul Service over a distance of 40 kms, the monthly rental rate would be calculated as follows:

price = exp{4.6300 + (0.5071 x ln(40)) + (0.3858 x ln(100))}

= exp{4.6300 + (0.5071 x 3.6889) + (0.3858 x 4.6052)}

= exp{8.2772}

= $3,933 per month

[95] The above pricing formula can be calculated in Excel, using the exp() function with the ln(x) values of distance and bandwidth.

PRICE TERMS – UCLL BACKHAUL CONNECTION RATES

Benchmarking approach

277. In its initial submission[96], LECG used a regression-based methodology to estimate a set of non-recurring connection charges for the UCLL Backhaul and UBA Backhaul services. LECG used a model that estimated backhaul connection charges as a function of bandwidth, and obtained the results summarised in Table 11.

Table 11: LECG initial result for connection charges (non-recurring)

	Connection Charge
50 Mbps	$8,160
100 Mbps	$9,923
200 Mbps	$12,067
1 Gbps	$19,033

278. LECG's initial results were derived from a dataset that represented a subset of the backhaul services that LECG used for estimating the recurring monthly rental rate. For example, LECG noted that it had insufficient information on connection charges in Holland, and therefore omitted Holland from its initial benchmarking of connection charges.

279. On behalf of Orcon/Kordia and Vodafone/Ihug, Covec noted the omission of Holland, but otherwise did not comment on LECG's benchmarking of connection charges.[97]

280. In response to some questions raised during the conference LECG subsequently provided some additional analysis of connection charges[98], including some further information relating to the connection charges associated with the backhaul service in Holland. LECG noted that the connection charge in Holland (NZ$846) does not vary with the three density categories of the backhaul service, and also referred to a one-off construction cost (NZ$846) per service link. LECG submitted that the connection charge for the backhaul service in Holland should be 2 x $846, across all bandwidths.

281. LECG also submitted that for consistency purposes, connection charges associated with ATM-based services should be excluded, as such services were excluded from the dataset of recurring charges. LECG also included connection charges associated with those bandwidths that LECG added in response to Covec's cross-submission.

282. LECG then examined the use of a regression-based approach for the purposes of estimating a bandwidth-based connection charge. However, LECG submitted that such an approach was now inappropriate, as the ability of the models they considered to

[96] LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 7 March 2008.
[97] Covec, *Regulated Backhaul Pricing*, March 2008.
[98] LECG, Response to questions from the Commerce Commission related to the UCLL & UBA backhaul conference of 10 – 11 April 2008, 23 April 2008. Parties were notified of this additional analysis, which was placed on the Commission's website. No responses from other parties were made on this analysis.

explain variations in connection charges were low (with R^2 values of around 0.02), and there was no longer a statistically significant relationship between bandwidth and connection charges.

283. LECG concluded that a more appropriate approach is to use techniques that do not attempt to relate connection charges to bandwidth. LECG noted that the median value of their set of benchmarked connection charges is $14,486, and the mean value is $10,742. LECG recommended using the median value, as the connection charge dataset encompasses a relatively wide range of values.

284. The Commission has considered using a regression-based approach, applied to the Commission's dataset used to determine recurring monthly rentals for the UCLL Backhaul Service. The set of connection charges is summarised in Appendix H.[99] However, the Commission also found that variations in bandwidth account for a very low proportion of variation in connection charges, and the regression model produces statistically insignificant results, as shown in Table 12:

Table 12: Regression model results: connection charges

	Coefficient	Standard error
Constant	8.7395 ***	0.7784
ln(Bandwidth)	0.0451	0.1358
Adjusted R^2	0.0	

*** significant at 1%

285. The Commission has therefore determined a connection charge for the UCLL Backhaul Service by taking the median value of the connection charges of those services used to determine the recurring charges.[100] The Commission considers that the use of the median value of this dataset is appropriate for a number of reasons:

- it provides for some consistency in determining non-recurring and recurring backhaul charges (and thus minimises distortion to any relationship between non-recurring and recurring charges). For example, if instead a non-recurring charge that was higher (lower) than the median was used, it may be appropriate to reduce (increase) the corresponding recurring charge.
- the median value is likely to best promote competition and efficiency for the long-term benefits of end-users. A higher non-recurring charge could reduce competition and efficiency, as UCLL-based entry into downstream markets could be deterred by the higher cost of purchasing backhaul services, and also as potential suppliers of backhaul services could be deterred from entering as the high connection charges for the UCLL Backhaul Service could reduce the willingness of Access Seekers to switch away from Telecom. A lower connection charge could under-compensate Telecom in respect of connection

[99] The FT DSL Collect IP service connection charge has been adjusted in a manner consistent with the recurring charge.

[100] Using the median value is consistent with the Commission's approach in the UCLL STD. The Commission is not aware of any factors that would justify taking a different approach.

costs for the UCLL Backhaul Service, and could result in inefficiently high levels of customer churn.

- the connection charges summarised in Appendix H range from $1,691 to $68,738. As LECG noted, given the wide range of connection charges, with clusters of charges at the extreme ends of this range, the median value (rather than the mean) is appropriate, as this does not give undue weight to extreme observations.

286. The median value of the benchmarked connection charges is $8,059. The connection charges included in LECG's benchmarking appear to relate to a point-to-point backhaul service with two ends.[101] Therefore, the Commission determines that the New Connection charge for the UCLL Backhaul Service is $4,030 for a new connection at one end and $8,059 for a new connection at two ends.[102]

[101] For example, the median connection charge in the Commission's benchmarking sample is for the Canadian backhaul service (NZ$8,059). In applying the Canadian backhaul rates, LECG (with the assistance of Bell Canada) indicated that it used two Ethernet ports. LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 14 March 2008, p 31.

[102] Appendix H contains several examples of how the benchmarked connection charge for the UCLL Backhaul Service applies.

PRICE TERMS – OTHER CORE CHARGES

Transfer of UCLL backhaul connection from Telecom's interim UCLL backhaul service to the UCLL Backhaul Service

287. In the draft STD, the Commission considered that the transfer of a UCLL backhaul connection from Telecom's interim UCLL backhaul service to the UCLL Backhaul Service should be at no charge.

288. Telecom submitted that they did not oppose the Commission's approach provided the Commission adopted the TCF agreed service description that Telecom submitted in its STP. However, if there was any material divergence from the UCLL Backhaul Service as outlined in their STP Telecom submitted that this could cause Telecom to encounter significant costs in transferring Access Seekers which would then need to be recovered.[103]

289. Orcon, Kordia and CallPlus cross-submitted that the interim service was designed to be transferred to a regulated service following the STD. Therefore, Telecom should not be able to charge Access Seekers for transferring from the interim service.[104]

290. Vodafone cross-submitted that Telecom does not say which possible changes might cause Telecom to 'encounter significant costs in transferring Access Seekers'. Given that the services are likely to be very similar, and there is no evidence given to support Telecom's claim, Vodafone considers that the Commission's proposed approach of no charge for transfer from the interim service should remain.[105]

291. The Commission has determined that because the interim service is not a regulated service the Commission is not responsible for determining what Telecom charges for transfer from the interim service to the UCLL Backhaul Service. Therefore, the Commission has removed this charge from the UCLL Backhaul Price List. However, the Commission has also determined that when an Access Seeker transfers from the interim UCLL backhaul service to the UCLL Backhaul Service, no connection charges for the UCLL Backhaul Service will be payable because the Access Seeker will have already paid for any connection costs when purchasing the interim service.

Service relinquishment charge

292. In the draft STD the Commission proposed that the relinquishment of a UCLL Backhaul Service connection be at no charge on the basis that this is consistent with the approach taken in the UCLL STD.[106]

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[103] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 45, paras 245-246.
[104] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 8, para 41.
[105] Vodafone, *Cross Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 26 March 2008, para 18.
[106] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, paras 195-196.

293. Telecom submitted that there are fundamental differences between relinquishment of the UCLL Service and UCLL Backhaul Service. When an end user relinquishes a service relying on the UCLL Service there is a fair chance they will connect onto another service relying on the same MPF. However, this is not likely to be the case with the UCLL Backhaul Service as capacity is likely to be stranded if relinquished by a particular Access Seeker. A basic tenet of the provision of cost-based services is the recovery of sunk costs – in the relinquishment context this means sunk costs not already recovered by way of connection costs/recurring charges. Associated costs such as service design will also need to be recovered.[107]

294. Telecom submitted a number of options for how to recover costs in these situations:

- high connection charges reflecting the true costs of installation and relatively low recurring charges;
- low connection charges with higher recurring charges and a longer contract term; or
- an ability for Telecom to "claw-back" via a relinquishment charge the costs of install where these costs are not recovered via the combination of the connection charge and the recurring charges.[108]

295. Telecom went on to say that Telecom was left completely exposed to under-recovery of costs as the Commission has:

- excluded high benchmarked connection charges (Openreach in favour of Telekom Austria) even though they form part of potentially different pricing structures in the benchmarked jurisdictions; and
- not provided a relinquishment charge.[109]

296. At the conference Orcon submitted that the connection charges for the UCLL Backhaul Service and for backhaul services provided by other providers are enough of a barrier to stop Access Seekers switching services often. In addition, the connection charge for the UCLL Backhaul Service is significant so a relinquishment charge is not so relevant.[110]

297. Telecom further submitted at the conference that they were asking for recovery of actual labour costs and not any sort of equipment costs which are recovered by the connection charge. Telecom anticipated that the actual relinquishment charge would be approximately $800 for four hours of labour.[111]

298. The Commission considers that Telecom is no longer left exposed to under-recovery of costs as the Commission has taken the median of a range of connection charges, including high benchmarked connection charges from Openreach. Any labour costs faced by Telecom when an Access Seeker relinquishes are likely to be covered by the

[107] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 46, para 248.
[108] ibid para 249.
[109] ibid para 250.
[110] Conference Transcript, *Service Relinquishment Charge*, 11 April 2008, p 219-221.
[111] ibid p 221.

connection charge. Any additional relinquishment charge is likely to deter Access Seekers from switching between backhaul providers. Therefore, the Commission considers that there is no need for a minimum contract term or relinquishment charge.

PRICE TERMS – SUNDRY CHARGES

299. This section provides reasons for the sundry prices determined. Any changes themselves are provided in the UCLL Backhaul Price List in Appendix A.

License fees for OO&T and OFM – Price List items 3.4 and 3.5

300. In the draft UCLL Backhaul STD the Commission's preliminary view was that the per-user costs to Telecom of providing OO&T and OFM software are reduced in cases where multiple services are provided to an Access Seeker on the same platform and that the reduced cost should be reflected in reduced license fees.[112]

301. Telecom submitted that the 2008/09 capex for OO&T and OFM is budgeted to be $7 million and that the opex and support costs for maintaining the software amount to $1.1 million for 2008/09. The proposed $24 per Access Seeker per month charge per service will only recover a miniscule proportion of the annual costs to maintain the software. It is therefore inappropriate for any discounting of the proposed charges to occur as this will further reduce the recovered amount. Moreover, Telecom submitted that there is no cost saving to Telecom for providing multiple services to a single Access Seeker.[113]

302. Orcon, Kordia and CallPlus submitted that they supported the Commission's view expressed in the draft UCLL Backhaul STD that where there are multiple services provided on the same platform there are reduced per-user costs to Telecom of providing the service and that the reduced costs should be reflected in reduced licence fees. Orcon, Kordia and CallPlus also submitted that a level of accountability by Telecom should be involved in the passing on of the costs of providing that support service. They believe that the cost should be shared between Telecom and all of the Access Seekers and not just be directly passed through to the Access Seekers.[114]

303. At the conference Telecom argued further that the licence fees for OO&T and OFM were not cost-based. They argued that automation is good for both Telecom and the industry as a whole and that they had deliberately set the price to be low to encourage uptake. They reiterated that $24 per Access Seeker per month per service will only ever recover a miniscule amount of the cost of providing the service.[115]

304. The Commission considers that Telecom has shown evidence of the costs of developing the OO&T and OFM systems and that the charges proposed by Telecom are small and unlikely to fully cover the cost of providing the OO&T and OFM systems. The Commission has determined that where an Access Seeker is receiving the UCLL

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[112] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 48, para 205.
[113] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 47, para 253.
[114] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 8, paras 30.1-30.2.
[115] Conference Transcript, *OO&T and OFM licence fees*, 11 April 2008, p 224-225.

Backhaul Service, they are required to pay OO&T and OFM license fees, irrespective of whether they are also paying OO&T and OFM license fees for other regulated services.

Distinction between "administrative cost" and "direct front office costs"

305. In the draft UCLL Backhaul STD, the Commission requested that Telecom explain the distinction between its administrative costs and its direct front office costs, and why it considers these charges are necessary in this instance.[116]

306. Telecom submitted that the administrative costs encapsulate the costs associated with receiving, managing and implementing a service order. Direct front office costs encapsulate service solution, design, operational capability, provisioning and acquisition costs.[117]

307. Orcon, Kordia and CallPlus submitted that administration costs and direct front office costs should be readily accountable for and that there should be a degree of transparency for how the costs are attributed to Telecom or any Access Seeker. Orcon, Kordia and CallPlus challenged whether any administration and direct front office charges should be borne by Access Seekers without further disclosures made.[118]

308. The Commission considers that there is a distinction between Telecom's administrative costs and direct front office costs and believes that both an administrative charge and direct front office charge should apply.

309. Telecom also submitted that the administrative cost and direct front office cost included in the draft UCLL Backhaul STD were based on administrative costs and direct front office costs submitted as part of the draft UBA STD and that this was not appropriate. Telecom argued that the UBA Service is characterised as a high volume standardised service, whereas the UCLL Backhaul Service is likely to be low volume and moderate standardisation given that Access Seeker requirements will vary.[119]

310. Telecom stated that they had investigated further the estimated administrative and direct front office costs for the relevant sundry charges. Telecom submitted that the administrative cost should be changed from a flat charge of [ ] **TNZCOI** to a charge of [ ] **TNZCOI** per hour, where 20 minutes would be required for each of the relevant sundry charges. Telecom submitted that the direct front office costs should be [ ] **TNZCOI** per hour, with a range of between 20 minutes and four hours required for each of the relevant sundry charges, rather than a flat charge of [ ] **TNZCOI**. No parties cross-submitted on Telecom's proposed charges.

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[116] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 49, para 212.
[117] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 47, para 257.
[118] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 9-10, para 31.
[119] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 47, para 257-258.

311. The Commission does not consider Telecom has provided sufficient information to support their submission that the UCLL Backhaul Service is likely to be low volume with moderate standardisation and therefore will have higher administrative costs and direct front office costs than the UBA Service. Further, the Commission is concerned by the significant differences in the quantum between the flat charges for administrative costs and direct office costs in the draft UCLL Backhaul STD and the revised administrative cost and direct front office costs submitted in Telecom's submission on the draft STD. Therefore, the Commission determines that administrative costs should remain a flat charge of [ ] **TNZCOI** and direct front office costs should remain a flat charge of [ ] **TNZCOI**, as provided in the draft STD.

NON-PRICE TERMS

Introduction

312. In determining the non-price terms, the Commission has generally adopted:

- those non-price terms that were unanimously recommended by the TCF, only making changes to those recommendations where there was a compelling reason to do so; and
- those non-price terms that relate to well established Telecom operational systems in place (eg fault prioritisation) which would be expensive to adjust prior to the applicable milestone dates set out in the Separation Undertakings.

313. In addition, the Commission has considered:

- the purpose in s 18 of the Act;
- whether the terms represent a balance of Access Seekers' and the Access Provider's interests;
- whether the terms are certain, clear and practically workable; and
- whether the terms are consistent with general commercial practice or whether it is necessary for terms to be consistent with general commercial practice.

314. The Commission took into account submissions from Telecom and the Access Seekers when considering the UCLL Backhaul Terms. In some instances the Commission may agree with the general submission but does not consider the proposed alternative wording to be appropriate, in which case the Commission has made amendments using its own wording.

315. Many of the provisions in the UCLL Backhaul Terms are common to both the UCLL Backhaul and the UBA Backhaul services. In addition, many of the parties' submissions on the draft UCLL Backhaul STD mirrored submissions made in respect of the draft UCLL, Co-location and UBA STDs.

316. The Commission has considered these submissions in the context of the UCLL Backhaul Service and has determined that where appropriate, the terms should mirror those of the UCLL, Co-location and UBA STDs. In the interests of brevity, parties are referred to the reasons provided in the final UCLL, Co-location and UBA STDs in respect of these common terms.

317. The following sections provide reasons for substantial changes made to the Commission's draft UCLL Backhaul Terms.

General Terms

Reference to the Local Loop Network (Section 8)

318. In its submission on the draft STD[120], Telecom submitted that the Local Loop Network is not the relevant reference in Section 8 of the General Terms as the UCLL Backhaul Service is provided over Telecom's Network rather than the Local Loop Network.

319. The Commission agrees with Telecom's submission and considers that the UCLL Backhaul Service is provided over Telecom's Network and not just the Local Loop Network.

Section 6.2 - Security Requirements

320. In their joint submission[121], Orcon, Kordia and CallPlus queried the need to provide additional security as a prerequisite for Telecom making available the UCLL Backhaul Service. They argued that if an Access Seeker uses both UBA and UCLL services, the aggregation of all the security prerequisites for the various service components becomes a hurdle to competitive entry. Hence, Orcon, Kordia and CallPlus submitted that as there are already significant security requirements in respect of the UCLL and Co-location services (which have to be taken by the Access Seeker to use the UCLL Backhaul Service), the security requirement for the UCLL Backhaul Service should be deleted.

321. Telecom explained at the conference that it looked at each service in isolation when setting the security requirements. However, Telecom highlighted that should two or more services be purchased, the Access Seeker may be allowed some degree of flexibility wherein a single stipulated amount may be regarded as sufficient coverage across all of the services purchased.

322. The Commission has decided that security requirements will remain separate for each service on the basis that it relates to the risk of default in payment for each service taken by the Access Seeker. Therefore, the Commission has retained the security requirements in the UCLL Backhaul STD. However, the Commission encourages Telecom to consider providing flexibility to Access Seekers by requiring a single security requirement that provides sufficient coverage across all the services purchased by that Access Seeker. The Commission believes that such flexibility accorded by Telecom will work towards serving the interest of both parties.

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[120] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Schedule 1 – General Terms Amendments section.

[121] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 16, para 61.

Access Seeker and Telecom's Liability – Sections 16 and 17

323. In the draft STD[122], the Commission's preliminary view was that a difference in liability caps between the UCLL Backhaul and UBA Backhaul Service could not be justified based on the risk profiles of the services. The Commission considered that a $2,000,000 liability cap was appropriate for each service.

324. In its submission[123], Telecom disagreed with the Commission's view that the risk profile for the UCLL Backhaul Service is similar to the UBA Backhaul Service. Telecom submitted that there is a significant difference between the risk profiles of the services because with the UCLL Backhaul Service the Access Seeker may install a handover link in Telecom's Local Exchange, but in the UBA Backhaul Service handover occurs at Telecom's first data switch. Entry into Telecom's exchanges poses significant risk to Telecom and by maintaining the liability cap at $2 million for UCLL Backhaul Telecom may not be able to fully recover direct losses caused by an Access Seeker. Telecom submitted that the $50 million liability cap be re-instated consistent with the UCLL Co-location liability cap. This view was reiterated by Telecom at the conference.

325. Orcon, Kordia and CallPlus submitted[124] that the risk profile of the UCLL Backhaul Service is similar to the UBA and UBA Backhaul services and expressed concern over separate liability caps for multiple services.

326. The Commission has retained the liability cap at $2 million. The Commission considers that because Access Seekers are likely to take the UCLL Backhaul Service with the UCLL Co-location Service (which has a liability cap of $50 million), the incremental risk to Telecom will be negligible.

Section 6.3 – Insurance Requirements

327. Telecom submitted[125] that the Commission should reinstate the insurance requirement for provisioning of the UCLL Backhaul Service. Telecom observed that the deletion was a consequence of the reduction of the Access Seeker's liability[126] from $50 million to $2 million in the draft STD.

328. At the conference Telecom submitted that it is reasonable to expect that Access Seekers are sufficiently insured to compensate Telecom for any damage to Telecom's equipment

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[122] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 52, para 228.
[123] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Schedule 1 – General Terms Amendments section.
[124] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 10, para 32.
[125] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Schedule 1 – General Terms Amendments section.
[126] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Schedule 1 – General Terms Amendments, section 16.

or premises, if the fault is attributable to the Access Seeker, given the scale of Telecom's risk exposure in providing the UCLL Backhaul Service.

329. The Commission maintains its position in the draft STD that there should be no insurance requirement. Since the liability cap for Access Seekers is set at $2 million, the insurance requirement is not warranted.

Confidential Customer Information – Clauses 31.1.5 and 31.1.6

330. Clause 31 of the UBA Backhaul General Terms requires Access Seekers to safeguard Confidential Information used or disclosed in connection with the UBA Backhaul Terms. Clause 31.1.5 defines Confidential Information and excludes a range of information from qualifying as Confidential Information.

331. Telecom's STP included an exclusion in clause 31.1.5(h), the effect of which was that Confidential Customer Information does not qualify as Confidential Information and therefore the protections relating to Confidential Information do not apply to Customer Confidential Information. Clause 31.1.5(h) provided that Confidential Customer Information is governed by separate provisions relating to Confidential Customer Information as set out in clause 31.1.7.

332. In the draft STD, the Commission removed the exclusion for Confidential Customer Information (as set out in clause 31.1.7) from the definition of Confidential Information in clause 31.1.5.

333. Telecom submitted[127] that removing the exclusion for Confidential Customer Information meant that two standards would need to be applied to Customer Confidential Information – the "Confidential Information" provisions in clause 31.1.5 and the "Customer Confidential Information" provisions in clause 31.1.6. Telecom submitted that it was unworkable for both of these standards to apply at the same time to the same information.

334. The Commission remains of the view that Customer Confidential Information must be subject to the obligations in the UCLL General Terms relating to "Confidential Information" and must not be excluded from qualifying as "Confidential Information". Customer Confidential Information requires the protection afforded by the classification of Confidential Information because it relates to information about end-users and other parties with contractual relationships with Telecom or the Access Seeker.

335. Furthermore, the Commission considers that this outcome is consistent with the UCLL, UCLL Co-location and UBA STDs. Consequently, it gives certainty to Telecom and Access Seekers about the application of the confidentiality terms across the STDs.

[127] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Schedule 1 – General Terms Amendments section.

Service Description (Schedule 1)

ASNAPOIs

336. The Commission's view on the definition of ASNAPOI is discussed in the Determination Framework section. Accordingly, for the purposes of the service description, the Commission's view is that the following applies:

a. A POI Site is the ASNAPOI in respect of a Local Exchange for an Access Seeker if:

i. the POI Site is an available point of interconnection; and
ii. the POI Site is the nearest, as measured by Telecom's network path[128], of the available points of interconnection to the Local Exchange.

b. A POI Site is an available point of interconnection for an Access Seeker if one of the following holds:

i. the Access Seeker is physically interconnected using the Access Seeker's own equipment with Telecom's Network at that POI Site; or
ii. the Access Seeker has an agreement with a backhaul provider (either Telecom or a third party provider) allowing interconnection at that POI Site back to the Access Seeker's Network.

c. The Access Seeker must establish an ASNAPOI at a minimum of one POI Site, but may establish an ASNAPOI at more than one POI Site.

Impact of the competition assessment

337. As discussed in the competition assessment section of this STD, the Commission has determined that on some Primary Links and Secondary Links Telecom does not face limited, or is unlikely to face lessened, competition in the market for transmission capacity. On these Primary Links and Secondary Links the UCLL Backhaul Service is not available.

338. The Commission has determined that, if the UCLL Backhaul Service is not available on:

- a Primary Link, the Access Seeker may still use the UCLL Backhaul Service on the Secondary Link (provided Telecom faces limited, or is likely to face lessened competition in the market for transmission capacity on that Secondary Link);
- a Secondary Link, the Access Seeker may still use the UCLL Backhaul Service on the Primary Link (provided Telecom faces limited, or is likely to face lessened competition in the market for transmission capacity on that Primary Link); or

[128] A list of the actual distances in Telecom's network path between POI Sites is available to Access Seekers via a secure Telecom web portal and must be regularly updated by Telecom where required.

- part of a Secondary Link, the Access Seeker may still use the UCLL Backhaul Service on any parts of that Secondary Link where Telecom faces limited, or is likely to face lessened, competition in the market for transmission capacity.

339. In practice, this may mean that Access Seekers will need to interconnect at more than one ASNAPOI to gain access to the UCLL Backhaul Service. The Commission has carefully considered the impact of this and considers that the additional costs associated with connecting to additional ASNAPOIs is required to give effect to the competition conditions for the UCLL Backhaul Service, which require the Commission to determine on which links Telecom faces limited, or is likely to face lessened, competition in a market for transmission capacity.

Transmission medium

340. In the draft STD the Commission questioned whether limiting the transmission medium to fibre only was adequate and appropriate.[129]

341. Telecom submitted that the transmission medium should be at Telecom's discretion, as long as the required performance standards are met and the specified interfaces are provided. Telecom further submitted that fibre is currently the only practical solution for the transmission capacities and distances required.[130]

342. Vodafone submitted that copper would not allow backhaul-type bandwidths to be carried over several kilometres. However, where a fibre transmission link was not available Vodafone would expect to have access to the same transmission link as Telecom would use for its own customers.[131]

343. Orcon, Kordia and CallPlus submitted that while fibre is the transmission medium that was agreed by the TCF, perhaps where there is no capacity for a fibre service, Telecom should be obligated to provide capacity over other infrastructure that is available.[132]

344. The Commission considers that there is no reason to limit the transmission medium to fibre. Provided that Telecom meets the required performance standards and the specified interfaces it does not matter what the transmission medium is. Therefore, the Commission has determined that the UCLL Backhaul transmission medium will be at Telecom's discretion.

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[129] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 58, para 260.
[130] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p31, paras 168-169.
[131] Vodafone, *Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 7 March 2008, p 18.
[132] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 11, para 39.

Optical and electrical interfaces

345. The draft STD included an Optical Gigabit Ethernet interface and a 100 Mbps 100 baseT interface. At that time Telecom had no capability to provide 100 Mbps using an optical interface, but was attempting to source equipment to provide this.

346. In the draft STD the Commission invited submissions on the type of interfaces that are required for all of the transmission capacity options available for the UCLL Backhaul Service.[133]

347. Telecom submitted that the reference to electrical interfaces could be removed from the UCLL Backhaul Service Description because Telecom had sourced equipment that could provide a 100 Mbps optical interface.[134] Telecom further submitted that if the UCLL Backhaul Service meets the service specifications, the way in which it is delivered should be at Telecom's discretion.[135]

348. Vodafone submitted that their preferred option was that all transmission capacities are delivered over an Optical Gigabit Ethernet interface which is rate limited without using a media converter.[136]

349. At the conference Telecom submitted that the interface defines the handover points and therefore it's important for Telecom and probably the Access Seekers to know what the interface is. Therefore, Telecom submitted that the interface needed to be specified.[137]

350. The Commission agrees with Telecom that the interface needs to be specified. In addition, the Commission notes that no party has expressed concern with having an Optical Gigabit Ethernet interface. Therefore, the Commission has determined that the interface for the UCLL Backhaul Service is Optical Gigabit Ethernet.

Transmission capacity

351. In the draft STD the Commission invited submissions on the differences between the transmission capacity options for UCLL Backhaul and UBA Backhaul, and in particular whether the two proposed transmission capacity options for the UCLL Backhaul Service were adequate and appropriate.[138]

352. Telecom submitted that the transmission capacity options proposed in Telecom's STP were unanimously agreed at the TCF after consultation. Telecom also submitted that

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[133] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 56, para 251.
[134] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 31, para 166.
[135] Telecom, *Cross-submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 26 March 2008, p 27.
[136] Vodafone, *Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 7 March 2008, p 17.
[137] Conference transcript, *Technical specifications*, 11 April 2008, p 85.
[138] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 56, para 245.

100 Mbps and 1 Gbps are transmission capacities that are typical on physical interfaces found on equipment of the nature used to provide point-to-point links such as contemplated by UCLL Backhaul. Telecom noted that if further transmission capacities were specified for the UCLL Backhaul Service, more complex equipment would be needed, which would have cost implications.[139]

353. Orcon, Kordia and CallPlus submitted that the initial transmission capacity option suggested at the TCF working party was 1 Gbps. Access Seekers requested a further option where there were exchanges unbundled that did not require the 1 Gbps bandwidth size. The intention of requiring a lower bandwidth capacity option is that there would be substantially reduced costs. Orcon, Kordia and CallPlus submitted that the prices in the draft STD suggested that the 100 Mbps backhaul service would not be at a substantially reduced price and hence, while the additional transmission capacity options may be useful, it must be balanced with the commercial practicality of those options.[140]

354. Vodafone submitted that it is difficult to comment on whether the two proposed transmission capacity options for the UCLL Backhaul Service are adequate and appropriate in the absence of pricing information. Vodafone submitted that if the prices for 200 Mbps and 500 Mbps were significantly lower than a 1 Gbps backhaul, then they would make sense.[141]

355. The Commission has accepted the 100Mbps and 1Gbps transmission capacities for the UCLL Backhaul Service.

Aggregation

356. In the draft STD, the Commission asked parties to submit on whether the UCLL Backhaul Service should include both an aggregated and a point-to-point option.[142]

357. Telecom submitted that aggregation should not be an option for the UCLL Backhaul Service, as agreed by the TCF. Telecom submitted that the purpose of the UCLL Backhaul Service is to allow Access Seekers to build their own services over Telecom infrastructure without Telecom's management of those services. Telecom argued that the UCLL Backhaul Service should conceptually just be a transmission pipe which requires Access Seekers to manage their own service and that if Access Seekers require a managed service they should purchase an appropriate managed product such as UBA. In addition, Telecom submitted that aggregation would add cost to the UCLL Backhaul Service because additional network equipment would be required.[143]

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[139] ibid p 30, paras 159-160.
[140] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 10, para 33.
[141] Vodafone, *Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 7 March 2008, p 17.
[142] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 57, para 253.
[143] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 29-30, paras 151-156.

358. Vodafone supported the option of aggregation in line with that available for UBA Backhaul.[144] Vodafone also argued that discussion at the TCF focussed around Primary Links rather than Secondary Links and while there is no need to aggregate Primary Links, Secondary Link aggregation is essential for cost control. Vodafone understood that Telecom Wholesale will be aggregating secondary backhaul and that if Access Seekers were not able to do the same they would not be being treated on an equivalent basis.[145]

359. Orcon, Kordia and CallPlus submitted that it was their understanding that an Access Seeker could purchase Primary Links for all its Local Exchanges back to the Parent POI Site, and aggregate them all on the Secondary Link to the ASNAPOI.[146] Orcon, Kordia and CallPlus argued that at the TCF they regularly raised concerns over the need for aggregation and that these concerns were largely rejected. They also noted that it was agreed at TCF that aggregation at Parent POI Sites would be possible, however at the time the competition test had not been applied and it was assumed that aggregation would occur as a commercial service rather than as part of the regulated service.[147]

360. The Commission accepts Telecom's submission that aggregation by Telecom of the UCLL Backhaul Service should not be an option, and that this service should be point-to-point only. The UCLL Backhaul Service is intended to be a service over which Access Seekers can build their own services without management from Telecom.

Capacity/geographic availability

361. In the draft STD, the Commission considered that Telecom should not be able to withhold the supply of the UCLL Backhaul Service on the basis that it has not made adequate provision for transmission capacity in its network.[148]

362. Telecom submitted that the draft STD forced Telecom to provide capacity wherever Access Seekers request it, which could include areas where capacity could only be provided at great expense. Telecom argued that any expectation by the Commission that Telecom should invest in rolling out network to provide a regulated service extends the power of the regulator far beyond what is envisaged in the Act.[149]

363. Orcon, Kordia and CallPlus submitted that Telecom should not be forced to invest in infrastructure where it does not currently provide capacity. However, they argued that

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[144] Vodafone, *Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 7 March 2008, p 18.
[145] Vodafone, *Cross Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 26 March 2008, para 16.
[146] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 10, para 36.
[147] Orcon, Kordia and CallPlus, *Submission in response to Submissions on the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 26 March 2008, p 7-8, para 31-36.
[148] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 56, para 247.
[149] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 24-25, paras 121-128.

where Telecom provides some capacity to an Access Seeker or Telecom Wholesale, Telecom should be obliged to provide capacity for all Access Seekers.[150]

364. Vector submitted that the objective of regulation is to ensure Access Seekers have non-discriminatory access to existing bottleneck assets, not to assets that do not yet exist. Vector supported Telecom's arguments that any requirement for Telecom to invest in network expansion at the request of an Access Seeker is neither reasonable nor practical and goes further than the intent of the regulation.[151]

365. Vodafone submitted that it accepted Telecom's position that Telecom should not be forced to invest. However, Vodafone also submitted that where capacity is constrained, Access Seekers' requests for further capacity should be treated on an equivalent basis and that Telecom must not be allowed to keep all existing backhaul capacity to itself and refuse to provide to Access Seekers.[152]

366. At the conference Telecom submitted that Chorus would be required to deal with all its customers, including Telecom Wholesale, on an equivalent basis under the Operational Separation Undertakings. This meant that Chorus could not favour Access Seekers over Telecom Wholesale and vice versa. Telecom also noted that there are quite stringent rules in place that provide the protection Access Seekers need.[153]

367. Orcon submitted at the conference that even if there is protection for Access Seekers in the Separation Undertakings, it should also be included in the STD.[154]

368. The Commission has added a requirement to the UCLL Backhaul Service Description which states that Telecom must not discriminate between requests for transmission capacity from an Access Seeker and any request for transmission capacity from a division of Telecom. The Commission considers that this term is likely to best give effect to s18 and reaches an appropriate balance between the competing positions of the parties.

369. In the long term, the Commission considers that the equivalence requirements in the Separation Undertakings are sufficient to ensure that Telecom does not discriminate between Telecom Wholesale and Access Seekers.

Aggregation of UCLL and UBA traffic on the same backhaul

370. At the conference Vodafone asked whether Telecom would allow aggregation of UCLL and UBA traffic onto the same backhaul. Vodafone submitted that allowing one backhaul purchase to cover both UCLL and UBA traffic would enable Access Seekers to more effectively use the infrastructure.[155]

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[150] Orcon, Kordia and CallPlus, *Submission in response to Submissions on the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 26 March 2008, p 3, para 8, and p 6, paras 27 and 29.
[151] Vector, *Cross submission on UCLL and UBA Backhaul*, 26 March, p 2.
[152] Vodafone, *Cross Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 26 March 2008, para 14.
[153] Conference transcript, *Capacity/refusal to supply*, 11 April 2008, p 82.
[154] ibid p 82-83.
[155] ibid p 50.

371. Telecom responded that there were technical reasons why it was not possible to aggregate UCLL and UBA traffic onto one backhaul service. Telecom submitted that the UCLL Service allowed Access Seekers to control their own network, including tagging their own traffic and controlling their own traffic end-to-end, while the EUBA Service is a Telecom service where Telecom tags the traffic, and thus combining the two services would be problematic. In addition, Telecom submitted that if the legislation thought there needed to be a regulated service to provide an aggregated backhaul service, there would be a definition of that service in the Act; in the absence of such a definition Telecom considered that aggregated backhaul should be provided on a commercial basis and noted that this was already occurring.[156]

372. The Commission considers that EUBA and UCLL traffic aggregation is technically possible. Economic efficiency and logic suggest that aggregation should occur, however the Commission accepts that it is unable to provide for an aggregated service due to the manner in which the service descriptions in Schedule 1 of the Act have been applied in the service descriptions set out in the schedules to the UCLL Backhaul STD and UBA Backhaul STD. The Commission does however expect that where an Access Seeker is purchasing UCLL, UCLL backhaul and UBA services, then Telecom will make an aggregated backhaul service available on a commercial basis.

Use of an ASNAPOI for both UCLL Backhaul and UBA Backhaul

373. Orcon, Kordia and CallPlus submitted that it was not clear in the draft STD that if an Access Seeker built an ASNAPOI for the purposes of UCLL Backhaul that this would be the same ASNAPOI for the purposes of interconnecting with the UBA Backhaul Service. Orcon, Kordia and CallPlus submitted that an Access Seeker should not be obliged to use an existing ASNAPOI in use for one of the backhaul services for the other backhaul service.[157]

374. The UCLL Backhaul Service Description outlines the conditions under which a POI Site becomes an ASNAPOI for an Access Seeker for the UCLL Backhaul Service. If these conditions hold then the POI Site will be an ASNAPOI for the UCLL Backhaul Service. Whether that POI Site is also an ASNAPOI for the Access Seeker for the UBA Backhaul Service will be determined separately under the conditions outlined in the UBA Backhaul Service Description.

Parent POI Selection

375. Orcon, Kordia and CallPlus submitted that an Access Seeker should be able to select the Parent POI Site for the unbundled Local Exchange in cities where there is more than one POI Site. In addition, Orcon, Kordia and CallPlus submitted that in cities where there is

[156] ibid p 50-52.
[157] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 52, para 19.

more than one POI Site, and an Access Seeker has an ASNAPOI, the Access Seeker should not be charged for both a Primary Link and Secondary Link.[158]

376. Vodafone also submitted that where an unbundled Local Exchange is in the same city as an ASNAPOI an Access Seeker should not have to purchase both a Primary Link and a Secondary Link.[159]

377. The 29 Parent POI Sites have been chosen by Telecom to optimise network efficiency in Telecom's Network and were agreed by the TCF. Therefore, the Commission has determined that the Access Seeker should not be able to select the Parent POI Site.

378. The Commission's interpretation of ASNAPOI, discussed at paragraphs 13 to 32 above, and in particular the element "nearest", means that it is not possible to select Parent POI Sites for unbundled local exchanges. Rather the Parent POI Site is defined for each local exchange.

Measurement of backhaul distances

379. In the draft STD the Commission considered that the measurement of Primary and Secondary Links of the UCLL Backhaul Service should be based on radial distances rather than on the basis of Telecom's network path.[160]

380. Telecom submitted that their current costs are not based on radial distances but on the length of the route along which the fibre is laid. However, in the context of a benchmarked IPP, it is important that there is consistency between the distance metric for the benchmarked services and the distance metric for the service being priced.[161]

381. At the conference Access Seekers did not raise any concerns with using radial distances to measure backhaul distances.[162]

382. The Commission has determined that when calculating which available POI Site is nearest to a Local Exchange, for the purposes of determining the ASNAPOI, the distance should be measured using Telecom's network path. However, the measurement of backhaul distances for the monthly charges will be calculated using radial distances.

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[158] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 17, paras 62, and p 11, para 38.
[159] Vodafone, *Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 7 March 2008, p 3, para 9.
[160] Commerce Commission, *Decision No. 626: Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point)*, 8 February 2008, p 57, paras 254 and 256.
[161] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 49, para 266.
[162] Conference Transcript, *Radial distances*, 11 April 2008, p 223-224.

Terminology

383. Telecom submitted that references to Handover Link, Handover Cable and Handover Connection should be changed to 'Handover Fibre', as they will be referred to Handover Fibre in the Ethernet version of the product.[163]

384. In addition, Telecom submitted that the equipment referred to as 'Backhaul Tie Cables' in the Commission's draft STD should be renamed 'Backhaul Connection' to more accurately reflect the equipment used.[164]

385. The Commission agrees and has adopted the terminology proposed by Telecom.

Service Level Terms (Schedule 3)

Access Seeker Forecasts – Section 5

386. In the draft STD, the Commission was seeking to be explicit as to which Service Levels comprise provisioning services, and therefore, will be adversely affected by inaccurate Access Seeker BAU Forecasts.

387. Telecom submitted that the Service Level reporting regime requires Telecom to indicate where they have relied on exclusions, and therefore, any concerns that Telecom would be able to apply blanket exclusions are unfounded.[165]

388. The Commission notes that the clauses 7.1.5 and 7.4 of the Operations Manual set out the consequences for Access Seekers failing to provide BAU Forecasts, or failing to provide accurate BAU Forecasts.

389. The Commission agrees with Telecom's submission and considers that the consequences as set out in the Operations Manual place sufficient limitations on the extent to which Service Level exclusions can be applied.

Speed Change Orders

390. Telecom proposed a Service Level relating to speed changes in its UBA Backhaul STP, but did not propose such a Service Level in its UCLL Backhaul STP. Rather, Telecom regarded changes to speed for UCLL Backhaul as a Network Change, which essentially implies a Relinquishment and New Connection in a co-ordinated fashion.[166]

391. The Commission considers that the concept of a Relinquishment and a New Connection for a speed change is inappropriate because this suggests that Telecom will not utilise existing equipment that is in place. In addition, the Commission considers that the work

[163] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 72, para 7.
[164] ibid para 5.
[165] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 50, para 272.
[166] Telecom, *Standard Terms Proposal for the UCLL Backhaul Service*, 28 September 2007, p 74.

involved in performing a speed change will be similar for UBA Backhaul and UCLL Backhaul.

392. The Commission has determined that Speed Change Orders are appropriate for UCLL Backhaul, and has included provisions in the Service Level Terms and Operations Manual that mirror those for UBA Backhaul.

Standard Lead-Times for Handover Fibre and Backhaul Connection Orders – Appendix 4

393. In its STP, Telecom did not include Standard Lead-Times for Handover Link Orders and Backhaul Tie Cable Orders. As noted in paragraph 385 these Order types are now referred to as Handover Fibre Orders and Backhaul Connection Orders.

394. To promote timely supply and installation of Handover Fibres and Backhaul Connections, the Commission has included Standard Lead-Times for these Order types in Appendix 4 of the Service Level Terms. These lead-times vary depending on whether equipment is available, and are based on the lead-times for Handover Links in UBA Backhaul.

Performance Penalties for Fault Restoration - Appendix 3, Item 14

395. In the draft STD, the Performance Penalty for Telecom failing to meet a notified expected fault restoration time was to be calculated in respect of each fault falling below the tolerance level in accordance with the following formula:

Performance Penalty = A x B

Where:
A = the applicable Penalty Rate x the UCLL Backhaul Monthly Charge; and

B = the number of UCLL Backhaul services detrimentally affected by the fault.

396. However, the recurring monthly charges for the UCLL Backhaul Service vary by link, depending on radial distance and bandwidth. As a result, it is not clear what 'UCLL Backhaul Service Monthly Charge' is to be used when applying this formula.

397. Accordingly, the Commission has amended the formula in Item 14 of Appendix 3 to read as follows:

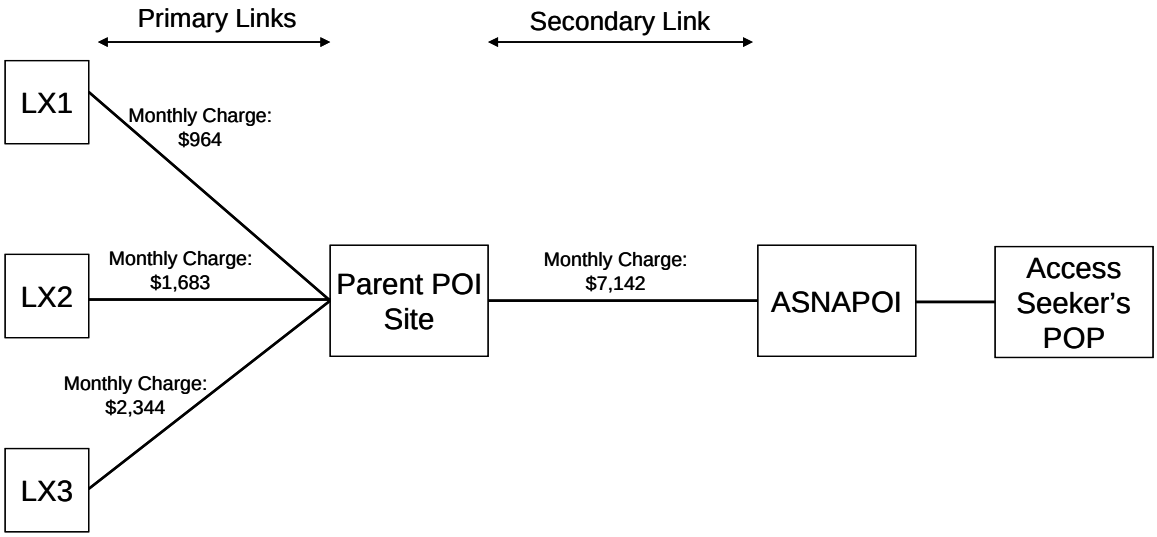
Performance Penalty = A x B

Where:
A = the applicable Penalty Rate; and

B = the sum of the Charges for all Primary Links and Secondary Links (as defined in the UCLL Backhaul Service Description) detrimentally affected by the fault

398. The Commission considers that a fault that detrimentally affects a Secondary Link will also detrimentally affect associated Primary Links. Examples illustrating how Performance Penalties relating to fault restoration are to be applied are included below:

Figure 5: Performance Penalty Example



Example 1

399. There is a fault that detrimentally affects the Primary Link between Local Exchange 1 ('LX1') and the Parent POI Site (and therefore, end-users served by LX1 will be affected). If Telecom fails to restore this fault within the notified expected restoration time (and falls below the specified Tolerance Level), then the Performance Penalty will be calculated as follows:

Performance Penalty = the applicable Penalty Rate[167] x the UCLL Backhaul Service monthly Charge for the Primary Link detrimentally affected by the fault
= 7% x $964
= $67.48

Example 2

400. There is a fault that detrimentally affects the link between the Parent POI Site and the ASNAPOI (the Secondary Link). This fault also detrimentally affects all three Primary Links because traffic from the Local Exchanges is routed through the Parent POI Site and then along the Secondary Link.

401. If Telecom fails to restore this fault within the notified expected restoration time (and falls below the specified Tolerance Level), then the Performance Penalty for this fault

[167] Calculation of the Penalty Rate is explained in Appendix 3 of the Service Level Terms. For the purposes of this example the applicable Penalty Rate is assumed to be 7%.

will be calculated as follows:

Performance Penalty = the applicable Penalty Rate[168] x the sum of the UCLL Backhaul Service monthly Charges for all Primary Links and Secondary Links detrimentally affected by the fault
= 7% x ($7,142 + $964 + $1,683 + $2,344)
= 7% x $12,133
= $849.31

402. In accordance with Example 1 of Appendix I, where an Access Seeker requires the same capacity on a Primary Link and an associated Secondary Link, the UCLL Backhaul Service is priced as a single link. For the purposes of calculating Performance Penalties for fault restoration, this would also be treated as a single link.

Operations Manual (Schedule 4)

BAU Forecasting – Section 7

403. Telecom plans to undertake BAU provisioning on the basis of 'firm' Forecasts, with the exception of transmission capacity, which will be allocated once Access Seeker Orders are accepted.

404. The Commission understands the equipment required to provision the UCLL Backhaul Service will be subject to Telecom supplier lead times, and therefore believes Telecom's proposal to rely on Access Seeker's 'firm' Forecasts[169] will improve the timeliness of service delivery.

405. In its STP, Telecom proposed that, in the event that an Access Seeker Overforecasts (ie their 'firm' Forecast exceeds actual Order), the Access Seeker will reimburse Telecom for Capital Carrying Costs and related administrative costs.[170]

406. The Commission maintains its view from the draft STD that in this situation a capital holding cost is appropriate, and that a weighted average cost of capital (**WACC**) of 9.5% is suitable. However, as Telecom noted at the conference, the Capital Carrying Cost formula proposed by the Commission in the draft STD would provide Telecom with a return on capital, but would not provide a return of capital (ie depreciation).[171]

407. The Commission considers that under cost-based regulation, where Telecom holds capital equipment in inventory as a consequence of an overestimate by the Access Seeker, it would be appropriate for the Access Seeker to provide Telecom with some form of compensation. This compensation should provide Telecom with recovery of any costs incurred from providing access, and provide the right incentives for Access

[168] Calculation of the Penalty Rate is explained in Appendix 3 of the Service Level Terms. For the purposes of this example the applicable Penalty Rate is assumed to be 7%.
[169] Firm forecasts are provided three months, two months, and one month before the month in which an actual Order is placed.
[170] Telecom, *Standard Terms Proposal for the UCLL Backhaul Service*, 28 September 2007, Operations Manual clause 6.4.3.
[171] Conference Transcript, *Operations Manual – Capital Carrying Costs*, 11 April 2008, p 230.

Seekers to accurately estimate their future capital requirements allowing Telecom to efficiently manage its network.

408. The Commission believes it is appropriate for Telecom in these circumstances to recover any lost rental value associated with the period of the time when the equipment was not being deployed, and any decrease in the cost of the equipment that occurs over the time period when the asset is held in inventory. This outcome is consistent with allowing for a return of and on the capital that is held in inventory as a result of the over-forecast by Access Seekers.

409. The Commission considers that the following formula will appropriately compensate Telecom:

$$r \times K_0 + (K_0 - K_1)$$

Where:

r is the WACC over the time period when the equipment is held in inventory. For example, where there is an annual WACC denoted by R, and the equipment is held in inventory for t months, r will be estimated using $r = (1 + R)^{(t/12)} - 1$

K_0 is the actual purchase cost of the capital equipment

K_1 is the cost of purchasing new equipment at the completion of the period where the asset is in inventory

410. The Commission considers that this equation ensures Telecom recovers an appropriate return of and return on capital. The Commission notes that Telecom will be able to redeploy this capital in due course and has financial incentives to do so.

411. The Commission notes that this equation also allows for the possibility of an increase in the price of equipment over the period for which the asset is held in inventory. In this case, K_1 will be greater than K_0, and the return on capital term ($r \times K_0$) is offset by the return of capital term ($K_0 - K_1$). The Commission notes that it is possible that the appreciation in the asset value could be so great that it leads to a negative Capital Carrying Cost. To ensure a symmetrical treatment in such circumstances, the use of this formula means that Telecom will be required to compensate the Access Seeker for any of the benefit Telecom accrues from having purchased lower cost equipment.

412. However, TelstraClear submitted that if a long lead-time would apply if Telecom waited for an actual Order, rather than relying on firm Forecasts, then Telecom could provide a quote to the Access Seeker of the cost involved in any pre-work.[172] The Access Seeker would then have the option of accepting or rejecting this cost.

[172] TelstraClear, *Cross-Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 26 March 2008, p 6, para 16.

413. The Commission notes that Telecom supported this idea in principle at the conference[173], and suggested that in most cases it would be practical to incorporate a feedback loop.[174]

414. The Commission agrees that, where possible, the Access Seeker should have visibility regarding Telecom's intentions to purchase equipment or perform preliminary work on the basis of Forecasts. The Commission considers that, given the relatively low expected volume of Orders for backhaul services, it will be practical to incorporate a feedback loop into the process.

415. Consequently, under clause 7.4.7 of the Operations Manual, the Access Seeker will have the opportunity to reject preliminary work being performed on the basis of Forecasts in favour of increased lead-times for delivery of the service. If an Access Seeker confirms that it wishes Telecom to complete preliminary work based on its Forecasted volume of Orders, and this volume turns out to be an Overforecast, then Telecom will be able to seek compensation in accordance with clause 7.4.4 of the Operations Manual.

Waiters – Clause 9.8.1

416. Telecom introduced the 'waiter' concept in the UBA STD to accommodate orders that are subject to infrastructure capacity constraints. For consistency, the Commission included the waiter provisions in the draft UCLL Backhaul STD.

417. Telecom submitted that, although they are happy to accept this change, the concept of waiters was not included in the STP as the regulated backhaul services are not expected to be high volume, unlike the UBA Service.[175]

418. The Commission agrees that the waiter provisions are unnecessary for the UCLL Backhaul Service. Clause 9.8.1 has been updated to reflect this.

Network Mapping – Clause 14.1.5

419. In the draft STD the Commission increased the notice period for Network Changes from six months to 12 months.

420. Telecom submitted that this 12 month notice period could result in a perverse outcome, because an Access Seeker would theoretically have to wait 12 months in order to start taking the service.[176] Telecom further clarified this submission at the conference by suggesting that 12 months is reasonable for deletions, moves and changes to network mapping, but 12 months may be too long for increased geographic availability or coverage.[177]

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[173] Conference Transcript, *Operations Manual – Capital Carrying Costs*, 11 April 2008, p 232.
[174] ibid p 233.
[175] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 50, para 268.
[176] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 33, para 181.
[177] Conference Transcript, *Operations Manual – Network Changes*, 11 April 2008, p 238-239.

421. The Commission retains its view that 12 months notice is appropriate for the addition of a new POI Site. However, the Commission has amended clause 14.1.5, allowing Telecom and affected Access Seekers the ability to agree a shorter notice period if desired.

IMPLEMENTATION PLAN

Introduction

422. The Implementation Plan sets out the timeline for the implementation of the UCLL Backhaul Service and includes key milestones, reporting requirements, Key Performance Indicators, service levels for the Implementation Period, and Soft Launch requirements.

Implementation period

423. Telecom submitted[178] that when considering the appropriateness of the timeframes in the Implementation Plan, it is important to take into account the need for Telecom to build to the specific requirements of the STD, which are completely different products from the commercial UCLL backhaul service. At the conference Telecom noted that a commercial UCLL backhaul service will be implemented by June 2008.

424. Vodafone submitted[179] that the implementation period of 160 Working Days is still too long given that Access Seekers are already using substantially similar interim backhaul services.

425. In its submission[180], TelstraClear disagreed with the implementation date being brought forward to 160 Working Days, if that would adversely affect Telecom's ability to deliver UCLL and Enhanced UBA services in accordance with the regulated timeframes.

426. The Commission has reduced the implementation timeframe to 100 Working Days. Given that a commercial UCLL backhaul service will be ready for rollout by June 2008, the Commission considers a shortened implementation timeline is reasonable. In addition, the Commission does not consider that the regulated UCLL Backhaul Service is materially different from the commercial UCLL backhaul service. However, the Commission recognises that Telecom will need some time to put in place the necessary processes in order to comply with the STD.

Bow Wave Period

427. Telecom submitted[181] that the Bow Wave Period was proposed because of the risk of having a large influx of orders. During the Bow Wave Period there would be an exemption from standard lead times and no Performance Penalties.

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[178] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, p 56, para 290.
[179] Vodafone, *Cross Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 26 March 2008, p 4, para 16.
[180] TelstraClear Limited, *Submission on Draft Standard Terms Determination for Telecom's Unbundled Copper Local Loop Backhaul and Unbundled Bitstream Access Backhaul (Decisions 626 and 627)*, 7 March 2008, p 10, para 32.
[181] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Schedule 5 - Implementation Plan Amendments.

428. Orcon, Kordia and CallPlus submitted[182] that Telecom will be aware of when exchanges are being prepared for unbundling and co-location and so it will be able to use its BAU process as exchanges are unbundled. They also submitted that the difference in demand from the period of the Soft Launch to the final delivery date is not expected to be significant. Accordingly, Telecom should be exposed to performance penalties after the Soft Launch.

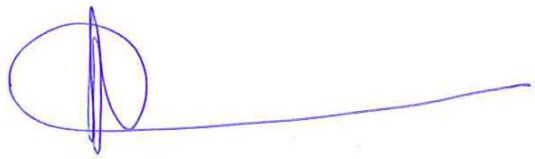
429. Vodafone submitted[183] that there is no need for a Bow Wave Period as it is not expected that there will be backed up demand to be processed all at once.

430. The Commission has removed the provision for a Bow Wave Period. The Commission considers that the Soft Launch already provides an exemption to Telecom with regards to compliance with service level terms and sees no necessity for a further exemption. This approach is consistent with UCLL and UBA STDs which have no provision for a Bow Wave Period. In addition, the Commission does not expect there to be an influx of orders. The Commission may reconsider the inclusion of a Bow Wave period at a later stage if an Access Seeker or Telecom informs the Commission of an influx of orders.

431. As a consequence of removing the Bow Wave Period, the Commission has also removed the 180 Working Day[184] period for Telecom to make available the UCLL backhaul service in the Exchanges as set out in Schedule 5 of the UCLL Backhaul General Terms. This milestone originally marked the end[185] of the Bow Wave Period which has now been removed.

432. The section on prioritisation has also been removed as prioritisation only applies during the Bow Wave Period.

Dated this 27th day of June 2008



Dr Ross Patterson
Telecommunications Commissioner

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[182] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008, p 13, para 47.
[183] Vodafone, *Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 7 March 2008, p 11, Issues Table.
[184] Section 3.11 – UCLL Backhaul Implementation Plan.
[185] Telecom, *Standard Terms Proposal for Telecom's unbundled copper local loop network backhaul service*, 28 September 2007, p 86, para 308(d).

APPENDIX A: UCLL BACKHAUL TERMS

Appendix A comprises the following documents:

UCLL Backhaul General Terms

Schedule 1: UCLL Backhaul Service Description

Schedule 2: UCLL Backhaul Price List

Schedule 3: UCLL Backhaul Service Level Terms

Schedule 4: UCLL Backhaul Operations Manual

Schedule 5: UCLL Backhaul POI Site Related Information

UCLL Backhaul Implementation Plan

APPENDIX B: GLOSSARY OF TERMS

Access Seeker	means an access seeker under the Act that has made a request in writing pursuant to section 30S(1) of the Act.
Access Seeker's POP	means an Access Seeker's Point of Presence
Act	means the Telecommunications Act 2001
ASNAPOI	means the Access Seeker's nearest available point of interconnection that is located at a POI Site and is the point at which the Access Seeker is interconnected with Telecom's Network
ASNAPOI Handover Point	means the Access Seeker side of the OFDF in the ASNAPOI
Co-location STD	means the standard terms determination in relation to the UCLL co-location service
Commission	means the Commerce Commission in the course of performing its functions under the Act
Conference	means the conference held by the Commission on 10-11 April 2008 in respect of the UCLL Backhaul STD and UBA Backhaul STD under s 30L of the Act
Determination Date	means the date on which the Commission's determination relating to the UCLL Backhaul Service comes into force
End-User	means an end-user as defined in the UCLL Backhaul General Terms or the Act as the context requires
Handover Fibre	means the Handover Fibre supplied by either the Access Seeker or Telecom that provides physical interconnection with the Access Seeker's Network
Implementation Plan	means the document 'Implementation Plan' that is part of Appendix A
KPIs	means the key performance indicators set out in the Implementation Plan
Local Exchange	means the local exchange at which the Access Seeker is being supplied with, or may potentially be supplied with, the UCLL Service
Local Exchange Handover Point	means the Access Seeker side of the OFDF in the Local Exchange, in which Local Exchange in which the Access Seeker Equipment is either co located or is remotely located
OFDF	means Telecom's Optical Fibre Distribution Frame
OSS	means Telecom's Operational Support Systems
Parent POI Site	means, in relation to a Local Exchange, the POI Site to which that Local Exchange is connected for the purposes of routing the UCLL Backhaul Service. For the avoidance of doubt, the Parent POI Site may

	sometimes be the same as the ASNAPOI.
POI Site	means a point in Telecom's Network at which the Access Seeker may interconnect for the purposes of the UCLL Backhaul Service.
Primary Link	means that part of the UCLL Backhaul Service between the Local Exchange Handover Point and the Parent POI Site
RFS Date	means ready for service date
Secondary Link	means that part of the UCLL Backhaul Service between the Parent POI Site and the ASNAPOI Handover Point
Service Specifications	means the service specifications set out in the UCLL Backhaul Service Description
Soft Launch	means the supply of the UCLL Backhaul Service on a small scale for the purposes of testing and bedding down prior to delivery of the relevant service
STD	means a standard terms determination made by the Commission under s 30M of the Act
STP	means Telecom's standard terms proposal for the UCLL Backhaul Service
TCF	means the Telecommunications Carriers' Forum or its successor body
Telecom	means Telecom Corporation of New Zealand Limited or Telecom New Zealand Limited including any of its subsidiaries as the context requires
UBA Backhaul Service	means Telecom's unbundled bitstream access backhaul service
UBA Service	means Telecom's unbundled bitstream access service as described in the Act
UBA STD	means the standard terms determination in relation to the UBA Service
UCLL	means unbundled copper local loop
UCLL Backhaul General Terms	means the document 'General Terms' that is part of the UCLL Backhaul Standard Terms Determination
UCLL Backhaul Operations Manual	means the manual set out in schedule 4 to the UCLL Backhaul General Terms
UCLL Backhaul Price List	means the list set out in schedule 2 to the UCLL Backhaul General Terms
UCLL Backhaul Service	means Telecom's unbundled copper local loop network backhaul (telephone exchange to interconnect point) service
UCLL Backhaul Service Description	means the description set out in schedule 1 to the UCLL Backhaul General Terms

UCLL Backhaul Service Level Terms	means the terms set out in schedule 3 to the UCLL Backhaul General Terms
UCLL Backhaul Standard Terms Determination or STD	means the standard terms determination in relation to the UCLL Backhaul Service
UCLL Backhaul Standard Terms Proposal or STP	means Telecom's standard terms proposal for the UCLL Backhaul Service
UCLL Backhaul Terms	means, together, the UCLL Backhaul General Terms and the schedules to the UCLL Backhaul General Terms
UCLL Service	means Telecom’s unbundled copper local loop network service
UCLL STD	means the standard terms determination in relation to the UCLL Service

APPENDIX C: LIST OF PRIMARY LINKS CONSIDERED

Local Exchange	Parent POI	Commission view on Competition
Albany	Torbay	not limited
Avondale	Mount Albert	not limited
Birkdale	Glenfield	not limited
Birkenhead	Glenfield	not limited
Blockhouse Bay	Mount Albert	not limited
Browns Bay	Torbay	not limited
Cambridge	Hamilton	limited
Claudelands	Hamilton	not limited
Courtenay Place	Wellington	not limited
Devonport	Glenfield	not limited
East Tamaki	Papatoetoe	not limited
Ellerslie	Remuera	not limited
Forrest Hill	Torbay	not limited
Frankton	Hamilton	not limited
Glendowie	Remuera	not limited
Glen Eden	Henderson	not limited
Hamilton East	Hamilton	not limited
Hastings	Napier	limited
Havelock North	Napier	limited
Hibiscus Coast	Torbay	limited
Johnsonville	Wellington	not limited
Kaiapoi	Christchurch	limited
Kamo	Whangarei	limited
Kensington	Whangarei	limited
Mangere	Papatoetoe	not limited
Manukau City	Papatoetoe	not limited
Manurewa	Papakura	not limited
Massey	Henderson	not limited
Maungatapu	Tauranga	limited
Melville	Hamilton	not limited
Memorial Ave	Riccarton	limited
Mosgiel	Dunedin	limited
Mount Eden	Auckland Central	not limited
Mount Maunganui	Tauranga	limited
Mount Pleasant	Christchurch	limited
Mount Roskill	Mount Albert	not limited
New Lynn	Mount Albert	not limited
Onehunga	Papatoetoe	not limited
Otara	Papatoetoe	not limited
Otumoetai	Tauranga	limited
Pakuranga	Howick	not limited
Papanui	Christchurch	limited
Petone	Naenae	not limited

Local Exchange	Parent POI	Commission view on Competition
Ponsonby	Auckland Central	not limited
Red Beach	Torbay	limited
Richmond	Nelson	not limited
South Dunedin	Dunedin	limited
St Albans	Christchurch	limited
St Heliers	Remuera	not limited
Stoke	Nelson	not limited
Takapuna	Glenfield	not limited
Taradale	Napier	limited
Te Atatu	Henderson	not limited
Te Awamutu	Hamilton	limited
Te Rapa	Hamilton	limited
Three Kings	Mount Albert	not limited
Titirangi	Henderson	not limited

APPENDIX D: SUMMARY OF SUBMISSIONS ON ASSESSMENT OF COMPETITION IN THE DRAFT UCLL BACKHAUL STD

1. This Appendix summarises the submissions[186] made by parties on the assessment of competition in the draft STD.

Telecom

2. Telecom submitted that a number of Primary Link and Secondary Link backhaul routes are workably competitive. In its analysis of competition,[187] it noted that of the current 18 national secondary links back to Auckland Central, it competes with one other backhaul provider on nine routes (typically TelstraClear), and more than one other (TelstraClear and FX Networks) on a further six routes.[188] Telecom noted that it has not included Kordia, Vector, or Transpower in its analysis.

3. Telecom also submitted that it faces competition from at least one other competitor on a number of metropolitan secondary backhaul routes, such as TelstraClear, Vector, FX Networks, Smartlinx, and Christchurch City Networks Ltd (CCNL). For secondary backhaul overall, Telecom concluded that there is currently competition at 26 of 29 POIs. Of these 26 POIs, Telecom faces two or more competitors at 16 POIs, one competitor at nine POIs, and one near entrant (with infrastructure within 5 km) at one POI.

4. With regard to primary backhaul, Telecom identified a list of 55 local exchanges which it considered are most likely to be unbundled. Of these exchanges, Telecom submitted that at least one competitor was present at both the local exchange and the Parent POI of the primary link in 32 cases. In nine of these instances, two or more competitors were present. Competitors on these routes include TelstraClear, Vector, FX Networks, Tasman, and Citylink.

5. Telecom also noted that competitors connect to a further five local exchanges but not directly to the Parent POI. Telecom concluded that there is currently competition on 37 primary links.

6. Telecom's submission listed 14 regional or national operators who Telecom regard as either providing a similar service to the UCLL and UBA Backhaul services, or are vertically integrated businesses that use core components similar to the backhaul service to deliver retail services.[189] Telecom submitted that these operators compete vigorously in the provision of Ethernet-based retail services, and provided examples where its retail

[186] Including cross-submissions and conference presentations.
[187] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Appendix A, Part A "Current Information Set".
[188] In its cross-submission, Telecom updated this analysis, and found that it faced competition from one other competitor on eight of these routes, and from two or more competitors on seven routes. Telecom, *Cross-submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 26 March 2008.
[189] Telecom, *Submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 7 March 2008, Appendix A, Part B "Market Overview".

market share has been eroded as a consequence. According to Telecom, there is no reason why these competitors will not compete just as vigorously at the wholesale level in providing backhaul services.

7. Telecom noted that the extent of competition is likely to change over time, and proposed a dynamic approach to assessing competition by engaging Terralink to map backhaul infrastructure.

8. Telecom also referred to the concerns raised in the draft about the ability of alternative networks to compete with Telecom in backhaul markets. Telecom submitted that transaction costs are not onerous and noted that many competitors purchase services from different providers**.** It considered that interface issues were not a problem where standard optical Ethernet links are used (links can be 'unplugged' and 'plugged'), and that capacity was also unlikely to be an issue.

9. As part of its cross-submission, Telecom appended a memo from NERA, which commented on competition in the provision of backhaul services. NERA noted that at least in respect of secondary links, Access Seekers will generally have two or three competitive options, including Telecom and possibly TelstraClear and FX Networks.

10. NERA then considered whether two or three providers is sufficient to deliver workable competition in the UCLL backhaul market. NERA noted that there is no 'bright line test', but rather that a market-specific analysis should be employed, taking into account appropriate economic models and evidence.[190]

11. NERA submitted that the presence of significant spare capacity on any fibre-based backhaul network, and the ease with which capacity can be added on fibre, indicated that where two providers are connected to an exchange, neither provider is likely to be able to unilaterally raise its prices.

12. According to NERA, once backhaul providers have sunk their investment in their networks, they are likely to compete aggressively with one another, even where there are only two providers. This is due to the following characteristics of backhaul services, as identified by NERA:

    - a significant proportion of network deployment costs are sunk;
    - the marginal cost of providing transmission is low;
    - there is significant spare capacity in backhaul provision;
    - backhaul is a homogeneous or undifferentiated service; and
    - there are likely to be economies of scope, both in terms of transmission services (ie services other than UCLL Backhaul can be delivered) and deployment.

13. NERA noted that a number of these factors are also relevant to assessing whether a small number of backhaul providers might engage in tacit collusion in order to maintain prices above a competitive level. NERA regarded tacit collusion as being unlikely for several reasons:

[190] NERA noted that the Commission undertakes this type of analysis when considering a merger.

- the presence of spare capacity provides each firm with an incentive to deviate from any co-ordinated behaviour;[191]
- the backhaul providers exhibit different levels of vertical integration (which can increase co-ordination and detection costs); and
- backhaul pricing is typically not transparent, making any deviation more difficult to detect.

14. NERA concluded that in light of the above market features, the Commission should generally presume that the backhaul markets are conducive to competition.

15. At the conference Telecom noted that in considering the declaration of transmission capacity in Australia, the ACCC had concluded that three fibre-based transmission providers on a particular route was sufficient for a finding of effective competition on that route.[192] However, Telecom submitted that the declaration framework in Australia may justify a different approach to the STD process in New Zealand.

16. In Australia, where a service is declared, Telstra is required to negotiate with other operators on a commercial basis. Only in the event that such negotiations are unsuccessful can the parties seek an arbitration from the ACCC.[193] In contrast, in the STD process in New Zealand, once a finding of limited competition has been reached, a forward-looking cost-based regulated price is set. According to Telecom, this suggests that the Commission should adopt a relatively high threshold in relation to finding limited competition, as this would mitigate the risk that a competitive market is regulated.

17. NERA's submission also noted that the final pricing principle for backhaul in New Zealand was based on the Total Service Long-Run Incremental Cost (TSLRIC) standard. It considered that this created a material risk that regulation of backhaul could deter entry and strand the assets of existing backhaul competitors. NERA suggested that a real options approach may provide a more appropriate cost-based price for backhaul services.

TelstraClear

18. In its submission on the draft STD, TelstraClear considered that any competition assessment for secondary backhaul should be done on a route-by-route basis. TelstraClear disagreed with the Commission's preliminary view that Telecom faced limited competition in all primary and secondary backhaul markets. TelstraClear provided its own assessment of existing competition on the UCLL secondary backhaul routes, and emphasised the importance to take into account emerging competition.[194]

[191] NERA also noted that spare capacity may be conducive to co-ordinated behaviour, as it may allow any deviation to be punished.
[192] Conference transcript, *Competition assessment*, 11 April 2008, p 203-204.
[193] Telecom understood that the ACCC had not set a regulated price for the transmission capacity service in Australia, despite the service having been declared for around ten years.
[194] TelstraClear gave the examples of the recent completion of its $29 million fibre loop around the South Island, as well as Vector's recently announced expansion of its fibre network in Auckland.

19. TelstraClear noted that UBS traffic is carried over ATM technology, and claimed that the higher costs associated with ATM transmission had resulted in TelstraClear not providing UBS backhaul. TelstraClear submitted that both UCLL and UBA Backhaul are new services, and that UCLL and UBA Backhaul will be provided using Ethernet handover. According to TelstraClear, this will improve the business case for UCLL and UBA Backhaul services and will enhance competitive supply of such services.

20. In assessing competition on a particular point-to-point route, TelstraClear submitted that the Commission should take into account existing networks on that route, as well as networks that are nearby and could be easily extended into the local exchange. TelstraClear noted that the Commission has taken a similar approach in a number of wholesale determinations, and that the ACCC is currently considering similar issues of network extension on intercapital transmission routes in Australia.

21. TelstraClear proposed that where there are three or more competitors (including Telecom) on a route, the Commission should conclude that Telecom does not face limited competition. TelstraClear was not aware of specific routes in the primary backhaul market where there are at least three competitors. However, in respect of secondary backhaul, TelstraClear identified a number of routes between POI Sites where there are at least three competitors.

22. According to TelstraClear's submission, all combinations of point-to-point routes between the following POI Sites have three or more competitors:

    - Auckland Central;
    - Glenfield;
    - Henderson;
    - Mt Albert;
    - Papakura;
    - Hamilton;
    - Palmerston North;
    - Wellington;
    - Christchurch; and
    - Dunedin.

23. TelstraClear estimated that these ten POI Sites collectively serve exchanges connected to 47% of total copper loops in Telecom's network.

Vodafone

24. In its cross-submission, Vodafone argued that there is not workable competition on national secondary, metro secondary, and primary links. According to Vodafone, neither TelstraClear nor Kordia offer sufficient capacity to be genuine competitors.

25. In commenting on its agreement with Vector, Vodafone noted that it would still rely on Telecom backhaul while Vector deploys its new fibre. Vodafone also submitted that while FX Networks offers competition on the Auckland-Wellington route, there is little competition in other areas capable of offering Gigabit scale capacity.

Kordia/Orcon/Callplus

26. Kordia/Orcon submitted that under the draft STD, the Commission would be imposing regulation on markets where there is competition. They proposed that where there are three or more providers for a backhaul service, the market should be regarded as being competitive and there should be no regulation. An access seeker would still have only one NAPOI, but would be able to use competitive commercial services to connect back to its network.

27. Callplus submitted a contrary view to Orcon and Kordia. It argued that where there are alternative backhaul providers, the commercial prices should be lower than the regulated price. According to CallPlus, in such cases any concerns about regulating competitive markets would be irrelevant.

28. In their cross-submission, Kordia/Orcon and CallPlus submitted that while TelstraClear, Vector, and FX Networks provide competing infrastructure, they do not have the capacity or coverage of the Telecom backhaul services. In addition, they understood that FX Networks had not entered any of Telecom's exchanges.

29. They also submitted that Telecom's proposal to engage Terralink to map competing networks would be unnecessary and expensive. Network providers would have an incentive to notify the Commission of their network reach in order to remove regulation in those areas.

Covec (on behalf of Kordia/Orcon & Vodafone/Ihug)

30. Covec agreed that large scale entry into the backhaul markets is unlikely in the near term. However, Covec also noted that in point-to-point markets, large-scale entry is not necessarily required in order to increase competition in a particular market.

31. Covec characterised data transport markets as evolving quite rapidly, with a range of initiatives underway throughout New Zealand to stimulate investment in fibre. As a result, Covec noted that a number of point-to-point backhaul markets could become workably competitive within a few years. They submitted that the Commission should review these markets every three years, and proposed that backhaul providers be able to request competitive reviews of particular routes in the event that conditions change between review dates.

32. In its cross-submission Covec submitted that three competing suppliers of backhaul on a particular route is a reasonable and pragmatic indicator of workable competition.

Vector

33. In commenting on the draft STD, Vector submitted that the Commission underestimated the level of competition in backhaul services. Vector referred to its plans to enter 41 Telecom exchanges throughout Auckland, including all nine POIs, for the primary purpose of providing backhaul services. According to Vector, it will be able to offer a competitive alternative on 33 primary links and any secondary links between the nine POIs in Auckland. It regarded Telecom, TelstraClear, CityLink, FX Networks, and Kordia as competitors who would be able to supply similar services.

34. In response to the Commission's concerns over the functionality of TelstraClear and Vector to provide competitive UCLL and UBA Backhaul, Vector stated that it had the required functionality, as evidenced by its agreement to supply Vodafone with backhaul services.[195] In addition, Vector submitted that transaction costs incurred by Access Seekers in dealing with multiple wholesale suppliers are a feature of workably competitive markets.

35. In its cross-submission, Vector supported submissions made by Telecom, TelstraClear, and CityLink that there is competition in some primary and secondary backhaul markets.

36. At the conference Vector contended that two suppliers,[196] or one supplier subject to the threat of potential entry in the backhaul market, could constitute a workably competitive market.[197] Further, it noted that a developing characteristic of the backhaul market was the emergence of new backhaul providers that were wholesale-only networks. Compared to the vertically integrated providers that traditionally deployed networks around New Zealand, the sole objective of a separated network supplier was to provide wholesale backhaul services.[198]

37. Vector also outlined at the conference that its pricing in Auckland was not distance-based, but offered a single price across a region. It indicated that this pricing construct was done on the basis of the cost of the fibre being sunk.[199]

CityLink

38. In its submission, CityLink disagreed with the Commission's preliminary view that Telecom faces limited competition in all backhaul markets. CityLink referred to Vector's recent announcement of a 300 km fibre network expansion that will connect many of Telecom exchanges in Auckland. CityLink also referred to MED initiatives to promote fibre network investment, as well as CCNL plans to invest $13 million in fibre throughout Christchurch.

39. CityLink suggested that all of Telecom's 34 Wellington exchanges would have a third party fibre backhaul option available within the next 12 to 18 months.

FX Networks

40. FX Networks supported the submissions of Telecom and Citylink in respect of competition on backhaul routes. According to FX, when competing for larger customers, there are typically more than three competing offerings.

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[195] Vector, *Submission on the Telecommunications Commission's draft Standard Terms Determinations for UCLL and UBA Backhaul*, 7 March 2008, para 33.
[196] Conference transcript, Competition assessment, 10 April 2008, p 149.
[197] ibid p 130-131.
[198] ibid p 154.
[199] Conference transcript, Price terms, 11 April 2008, p 194.

41. FX Networks is in the process of expanding its existing fibre network, by deploying a further 640 km of network to complete a redundant fibre ring in the North Island. By the end of 2008, FX Networks plans to have deployed approximately 1,600 km of fibre optic network throughout New Zealand.

42. At the conference FX Networks noted that its fibre typically runs through the centre of a particular town or city, and it is generally within quite close proximity (2 km to 5 km) to Telecom's exchanges. It noted that it often links up with other local fibre networks, such as CityLink at the Wellington Railway Station, and works with a number of operators[200] in order to provide national transport services.

43. According to FX, there is effective competition for national backhaul and increasingly strong competition in CBD or metropolitan areas, due to its ability to integrate its network with local fibre network suppliers.[201]

[200] FX Networks' submission lists Velocity, CityLink, CCNL, Inspire, Vector, Vodafone, Kordia, Telecom and Telstra as being parties with whom FX Networks have worked to provide transmission services
[201] Conference transcript, *Competition assessment*, 10 April 2008, p 109.

APPENDIX E: SUMMARY OF SUBMISSIONS ON PRICE TERMS IN THE DRAFT UCLL BACKHAUL STD

1. This Appendix summarises the submissions[202] made by parties on the price terms in the draft STD.

Telecom submission

2. Telecom's submission on the draft UCLL Backhaul STD included a report by LECG[203], in which LECG commented on the Commission's benchmarking approach. LECG then proposed an alternative benchmarking approach, and derived benchmarked prices based on an econometric analysis of backhaul rates in five countries.

Summary of LECG comments on draft UCLL Backhaul STD

3. In relation to the draft STD, LECG noted that the Commission based its benchmark price for the Primary Link on a Telekom Austria (TA) Ethernet backhaul service that provides Ethernet transport from the local exchange that houses the access seeker's co-located equipment, to the access seeker's POP site. The TA charges vary by bandwidth (in steps from 10 Mbps to 100 Mbps), and by geographic region.

4. LECG submitted that TA's backhaul prices are not subject to cost-based regulation, and therefore do not satisfy the initial pricing principle of using a forward-looking cost-based pricing methodology. LECG also noted that the Commission's benchmark was based on a sample of one observation, and omitted other potentially useful pricing data. LECG noted that while the Commission used the 'spoke' component of the Openreach Ethernet-based BNS as a cross-check on the TA benchmarks, other components of the BNS were ignored by the Commission (such as the 'hub' charge).

5. LECG also noted that the Commission's benchmarking for Secondary Links was again based on a single observation, namely one price component (for a 10 Gbps main link) of the Openreach BNS in the UK. According to LECG, the Openreach BNS main link benchmark used by the Commission is not an appropriate benchmark for the following reasons:

   - it is a 10 Gbps service (which in LECG's view is not similar to either a 100 Mbps or 1 Gbps Ethernet service);
   - the BNS main link component is restricted to a maximum distance of 35 km (whereas Telecom's secondary backhaul service could extend to up to 1,200 km); and
   - the main link charge is part of a bundle of charges that must be purchased together.

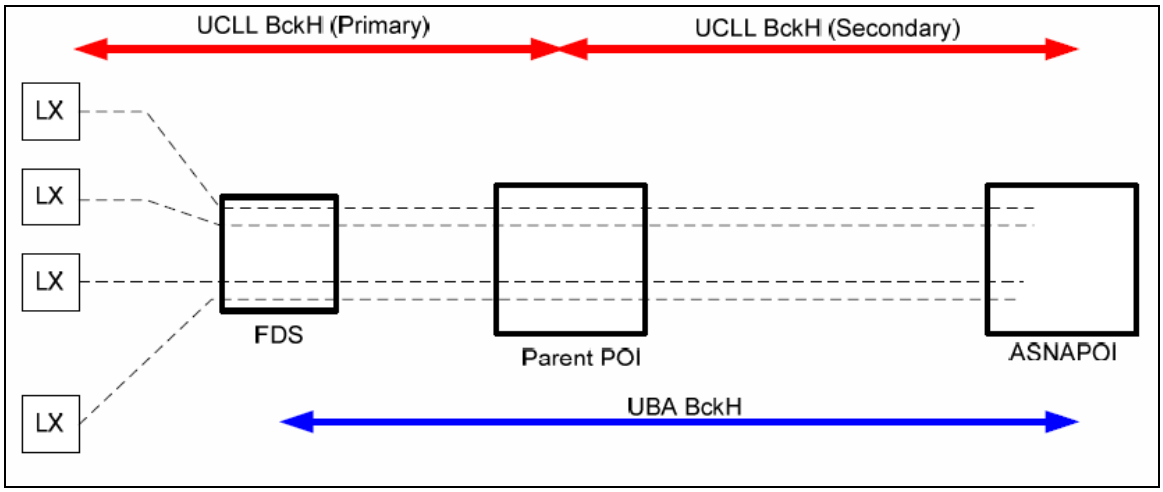
[202] Including cross-submissions and conference presentations.
[203] LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 14 March 2008. The LECG report incorporates a correction to its 7 March 2008 report that was included as part of Telecom's submission on the draft STD. The correction (relating to an incorrect cell reference in the original report) produces a set of recurring charges that are generally lower (by between approximately -5% to -20%) than in the original report.

Summary of LECG's benchmarking approach

6. Having commented on the Commission's benchmarking approach in the draft STD, LECG proposed an alternative approach to setting benchmarked prices for backhaul services.

7. LECG characterised both the UCLL Backhaul Service and the UBA Backhaul Service as layer 2, point-to-point Ethernet transport services. LECG used the following diagram to illustrate and compare the two backhaul services.

Figure 6: LECG's illustration of UCLL Backhaul and UBA Backhaul Services



8. LECG noted that the two backhaul services are similar, although the UCLL Backhaul Service commences at a Local Exchange (LX) whereas the UBA Backhaul Service commences at the First Data Switch (FDS). According to LECG,[204]

> this difference leads to possible differences in the distance over which each backhaul service is offered, which can be addressed with a distance-based pricing structure, and we derive a distance-based pricing below.

9. In the remainder of their submission, LECG treated the UCLL Backhaul and UBA Backhaul services as equivalent services, and derived a single set of backhaul prices that did not distinguish between UCLL Backhaul and UBA Backhaul.

10. LECG derived a set of distance- and bandwidth-based backhaul prices, using an econometric approach to estimate the relationship between price, distance, and bandwidth for backhaul services in 5 countries: Canada, France, Italy, the United Kingdom, and Holland. According to LECG, these five countries have backhaul services which are similar to the backhaul service description in New Zealand, and which are regulated at cost-oriented prices.[205]

[204] LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 14 March 2008, p 14.
[205] LECG state that they initially restricted their review of backhaul services to those jurisdictions with "similar services", and found 54 jurisdictions including 48 US states, Canada, UK, Italy, France, Austria, and Holland. LECG excluded the US states and Austria on the basis that backhaul prices in those jurisdictions are not subject to regulation.

11. Having identified what they considered to be appropriate benchmarks, LECG noted that the recurring charges vary in the way in which they accommodate distance, which requires some 'normalisation' in order to generate a distance-based backhaul price. In order to do this, LECG made the following assumptions regarding the average distance covered by metropolitan, provincial, and regional backhaul services in the 5 benchmarked jurisdictions:

    - metropolitan backhaul: average distance is assumed to be 17.5 km (based on the average distance for a metropolitan service being the mid-point of a range of 0-35 km)
    - provincial backhaul: average distance is assumed to be 80 km (based on the average distance for a provincial service being the mid-point of a range of 0-160 km)[206]
    - regional backhaul: average distance is assumed to be 250 km for Canada, 150 km for France (based on the average distance for a regional service being the mid-point of a range of 0-500 km in Canada, and 0-300 km in France).

12. For the UK, LECG used a range of metropolitan distances[207], to reflect the service definitions of the various Openreach backhaul services.

13. LECG stated that:[208]

> We recognise the above estimates of distance reflect considerable judgement. We have provided maps (with distance keys) of Canada, France and Italy in the Appendices to provide some information on the reasonableness of the provincial and regional distances used for those countries. In the absence of information on the weighted average distances of the links for each service (which we do not have), we consider the above is a reasonable approximation.

14. LECG used the exchange rates derived by the Commission in the UCLL STD ie a 50/50 blend of the 10-year average nominal exchange rate and PPP rate.

15. LECG then compiled a set of benchmarks from the five countries they have identified, by price, bandwidth, and distance. This initial dataset is comprised of 36 price points, each reflecting a particular combination of bandwidth (50/100/200/1000 Mbps) and distance (such as 17.5/80/150/250 km).[209] The resulting price dataset is used to estimate a relationship between price, distance, and bandwidth with the form:

$$\log(\text{Price}) = \beta_0 + \beta_1 \log(\text{Distance}) + \beta_2 \log(\text{Bandwidth})$$

16. According to LECG, this specification has the best statistical properties of any of the models they considered, and the coefficients are highly significant with the expected signs. The log specification was also considered by LECG to be attractive, as it is

[206] There appears to be a minor error in LECG's spreadsheet relating to backhaul in France. Under the "France" worksheet, the distances recorded for the DSL Collect Ethernet service are 17.5 km (metro) and 75 km (provincial), whereas LECG state in their report that they have used distances of 17.5 km and 80 km respectively. Using a provincial distance of 80 km for the DSL Collect Ethernet service changes the results slightly from those reported in the LECG submission.
[207] Specifically, 15, 17.5 and 35 km.
[208] LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 14 March 2008, p 18.
[209] As discussed below, LECG subsequently expand this dataset to include other bandwidths.

consistent with costs increasing with respect to bandwidth and distance, but at a decreasing rate.[210]

17. The results of LECG's regression analysis are summarised in Table 13.

Table 13: LECG results (recurring charges)

	Coefficient
Constant	4.2057 ***
log(Distance)	0.4663 ***
log(Bandwidth)	0.5867 ***
Adjusted R^2	0.5953

*** significant at 1%

18. Using these estimates, LECG derived a set of backhaul prices, based on the bandwidth and distance features proposed by Telecom in their STP. These are set out in Table 14.

Table 14: LECG benchmarked backhaul prices for New Zealand (recurring charges)

Distance step	Mid-point	Recurring charge (NZ$ per month)			
(km)	(km)	50 Mbps	100 Mbps	200 Mbps	1 Gbps
0 to 5	2.5	$1,020	$1,532	$2,301	$5,916
5 to 10	7.5	$1,703	$2,558	$3,841	$9,874
10 to 15	12.5	$2,161	$3,246	$4,874	$12,530
15 to 20	17.5	$2,528	$3,797	$5,702	$14,658
20 to 25	22.5	$2,843	$4,269	$6,411	$16,481
25 to 30	27.5	$3,121	$4,687	$7,040	$18,097
30 to 40	35.0	$3,493	$5,245	$7,877	$20,251
40 to 50	45.0	$3,927	$5,897	$8,857	$22,768
50 to 60	55.0	$4,312	$6,476	$9,725	$25,001
60 to 70	65.0	$4,661	$7,000	$10,513	$27,026
70 to 80	75.0	$4,983	$7,483	$11,238	$28,891
80 to 90	85.0	$5,283	$7,933	$11,914	$30,627
90 to 100	95.0	$5,564	$8,355	$12,548	$32,257
100 to 125	112.5	$6,020	$9,041	$13,577	$34,903
125 to 150	137.5	$6,610	$9,927	$14,909	$38,327
150 to 175	162.5	$7,146	$10,732	$16,116	$41,431
175 to 200	187.5	$7,639	$11,472	$17,228	$44,290
200 to 225	212.5	$8,098	$12,161	$18,264	$46,951
225 to 250	237.5	$8,529	$12,809	$19,236	$49,450
250 & above		Priced according to distance			

19. LECG undertook a similar analysis in respect of non-recurring charges (where price is modelled as a function of bandwidth). LECG's model results, and resulting

[210] LECG, *Price benchmarking of UCLL and UBA Backhaul Services*, 14 March 2008, p 20.

benchmarked connection charges, are summarised in Table 15 and Table 16 respectively.

Table 15: LECG results (non-recurring charges)

	Coefficient
Constant	7.9032 ***
log(Bandwidth)	0.2822 ***
Adjusted R^2	0.3433

*** significant at 1%

Table 16: LECG benchmarked backhaul connection (non-recurring charges)

	Non-recurring charge per link (NZ$)
50 Mbps	$8,160
100 Mbps	$9,923
200 Mbps	$12,067
1 Gbps	$19,003

Vodafone submission

20. Vodafone submitted that the proposed Primary Link charges roughly approximate existing commercial pricing, whereas the proposed Secondary Link charges are prohibitively expensive. They also proposed some refinement to the geographic bands that were used for the pricing of the Primary Links in the draft STD.[211]

Orcon, Kordia and CallPlus submission[212]

21. Orcon, Kordia and CallPlus submitted that the prices in the draft UCLL Backhaul STD would represent a significant increase in backhaul costs for Access Seekers using the regulated services, compared to existing commercial charges for these services, and would discourage competition in broadband markets. Orcon, Kordia and CallPlus noted that the Secondary Link price contained in the draft STD of $272 per kilometre per month is based on a benchmark for a 10 Gbps service, which is ten times the maximum bandwidth option in New Zealand.

22. Their submission acknowledged the limited availability of regulated backhaul prices in overseas jurisdictions against which to benchmark, and supported the use of competitive commercial prices to increase the number of benchmarks. They also proposed a number of adjustments to the three bands used in the draft STD, in particular to encompass additional cities within Band A.

[211] Vodafone, *Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 7 March 2008, paras 7 and 8.
[212] Orcon, Kordia and CallPlus, *Submission in response to the Draft Standard Terms Determinations for the Unbundled Copper Local Loop (UCLL) Backhaul Service and the Unbundled Bitstream Access (UBA) Backhaul Service*, 7 March 2008.

Covec submission[213]

23. Covec's submission on behalf of Orcon/Kordia and Vodafone/Ihug expressed concern over the reliability of the price benchmarks contained in the draft STD. Covec noted that the prices in the draft STD were based on a single benchmark. According to Covec, this contrasts with previous benchmarking exercises, in which a considerable amount of data had been available, allowing the Commission to filter out some data points. Covec noted that it had been unable to identify additional regulated backhaul services.

24. Covec also noted that the draft STDs for UCLL Backhaul and UBA Backhaul ended up setting quite different pricing structures. For example, the UBA Backhaul Service had an installation charge that varied with bandwidth, whereas the UCLL Backhaul Service had a flat connection fee, irrespective of bandwidth. The structure of the recurring charges also differed for the two backhaul services.

25. Covec submitted that the UCLL Backhaul and UBA Backhaul services are likely to have similar underlying cost structures. In particular, Covec considered that the cost of backhaul would generally vary with bandwidth and distance, and that for any given combination of bandwidth and distance, the cost of providing backhaul for UCLL purposes should be approximately the same as the cost of providing backhaul for UBA.

26. Given the lack of regulated backhaul services against which to benchmark, Covec submitted that it may be appropriate to look at competitive commercial prices for data transport services. They said that in competitive markets, prices are competed down to a level that reflects the cost of supply, and so the use of commercial prices from a market with effective competition would be consistent with the requirement to benchmark against cost-based prices.

27. Covec's submission referred to examples of competitive data transport routes. In New Zealand, Covec referred to the Auckland-Wellington route, where Telecom, TelstraClear, Kordia, and FX Networks provide data transport services. Covec also included some information on commercial backhaul prices in Australia, where access disputes can be referred to the ACCC for arbitration.[214]

28. For example, Covec submitted that urban backhaul prices sourced from Pipe Networks in Australia are broadly in line with the Primary Link charges in the draft STD. However, Covec found that inter-city transmission prices in Australia are significantly lower than the Secondary Link charge in the draft STD.

[213] Covec, *Regulated Backhaul Pricing*, March 2008.
[214] Covec suggested that although arbitration outcomes are confidential, the existence of commercial prices in Australia suggests that the prices are acceptable to access seekers, and provide adequate compensation for backhaul providers.

Vector Communications submission[215]

29. Vector's submission on the draft STD cautioned that a conservative approach to price benchmarking should be taken, given the limited number of benchmarks and the variation in the way in which backhaul services are specified. Vector submitted that Telecom's interim UCLL Backhaul service includes a connection charge that is lower than that benchmarked by the Commission, and that this may justify a rebalancing of charges to reduce the connection fee and increase the recurring charge. According to Vector, this would lower the switching costs faced by an Access Seeker who is considering a competitive alternative backhaul option.

30. Vector also noted that if an Access Seeker was allowed to purchase a high bandwidth connection and on-sell that capacity to other Access Seekers, that would reduce the number of customers and services over which a backhaul provider could recover its costs.

Covec cross-submission[216]

31. In its cross-submission, Covec commented on the benchmarking approach proposed by LECG. According to Covec:

    - the econometric results should be cross-checked using 'peer-group' methods;
    - the distance measures used by LECG could be improved;[217]
    - LECG's modelling is sensitive to the number of data points, which is a modelling choice; and
    - fewer distance bands would be better.

Peer group cross-checking

32. Covec compared the results of the econometric approach with the median prices of backhaul services for given combinations of bandwidth (100 Mbps, 1 Gbps) and distance (17.5 km). Covec found that for the 100 Mbps service, the predicted price using the econometric results ($3,789 per month) is close to the median actual price of backhaul services ($3,764 per month), while for the 1 Gbps service, the predicted price ($14,659 per month) is 18% above the median actual price ($12,426 per month).

33. As a result, Covec suggested that LECG's econometric results may be less reliable for the higher bandwidth services.

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[215] Vector, *Submission on the Telecommunications Commission's draft Standard Terms Determinations for UCLL and UBA Backhaul*, 7 March 2008.
[216] Covec, *UCLL and UBA Backhaul Cross Submission*, March 2008.
[217] In addition, Covec noted that the LECG dataset included the provincial DSL Collect Ethernet service in France, with a distance of 75 km. Covec amended this to 80 km, to be consistent with the body of the LECG report.

Distance measures

34. Covec noted that LECG's results were sensitive to the assumption made about the average distance for the backhaul service. Covec proposed two adjustments to the LECG average distances.

35. First, Covec submitted that whereas LECG took the midpoint from 0 km to a maximum distance for each distance band, a more appropriate approach would be for each band to start at the upper limit of the previous band. For example, LECG use bands of 0-35 km for metropolitan backhaul, and 0-160 km for provincial backhaul. Under the Covec proposal, the metropolitan band would be 0-35 km, and the provincial band would be 35-160 km. Covec justified this approach on the basis that the points of interconnection are likely to be located in metropolitan areas, and so the provincial band should start where the metropolitan band finishes, and similarly for the regional band.

36. Covec's other comment on distance related to LECG's use of the midpoint to derive the average distance in each band. According to Covec, a 'sum of squares' approach is more appropriate, as it equates the areas between the upper and lower limits in each band; in other words, it creates an equal probability of the actual distance lying above or below the point estimate.

37. Covec's proposed adjustments to the distance measures results in an increase in the average distance for metropolitan backhaul from 17.5 km to 24.7 km; for provincial backhaul from 80 km to 115.8 km; and for regional backhaul from 150 km to 240.4 km for France; and from 250 km to 371.2 km for Canada. Covec noted that these increases in average distances result in lower prices across all distance steps with the exception of LECG's 0-5 km step.

Number of observations

38. Covec submitted that LECG's dataset is disproportionately influenced by jurisdictions that have relatively high backhaul prices. Covec included the following table, in which the median percentage difference between the actual price and the predicted price for each jurisdiction is presented. The number of observations from each jurisdiction in the original LECG dataset was also included.

Table 17: Number of observations and median price differential by jurisdiction

Jurisdiction	Observations	Median
Canada	12	6%
France	8	21%
Holland	3	-60%
Italy	8	75%
UK	5	-60%

39. Covec submitted that actual backhaul prices in Holland and the UK are relatively low, compared to the prices predicted using LECG's model, while actual prices in Italy are relatively high. Holland and the UK also have relatively few observations (3 and 5

respectively). As a result, Covec submitted that the jurisdictions with higher prices tended to have more influence than those with relatively low prices.

40. In order to provide a more balanced dataset, Covec proposed the addition of other bandwidths for Holland (5 additional observations) and the UK (2 additional observations).

Summary of Covec's proposed benchmarking amendments

41. Covec presented the results of expanding the LECG dataset, and amending the distance assumptions. The combined effect of the amendments proposed by Covec leads to a reduction in the monthly charges of between 5% and 39%, with the most significant price effects occurring at low distances and high bandwidths.

42. Covec also proposed that the number of distance bands in the backhaul price structure be reduced, from the 20 bands proposed by Telecom, to five bands. According to Covec, a smaller number of bands is consistent with the steps used by LECG in its regression, as well as international practice.

43. The results of Covec's proposed adjustments are summarised in Table 18.

Table 18: Covec's proposed backhaul charges

Distance step	Average	Recurring charge (NZ$ per month)			
(km)	(km)	50 Mbps	100 Mbps	200 Mbps	1 Gbps
0 to 10	7.07	$1,161	$1,676	$2,420	$5,676
10 to 35	25.74	$2,376	$3,430	$4,951	$11,613
35 to 160	115.81	$5,467	$7,891	$11,392	$26,719
160 to 300	240.42	$8,193	$11,828	$17,075	$40,047
300+		priced according to distance			

Vodafone cross-submission[218]

44. In its cross-submission, Vodafone supported the use of distance-based pricing for UCLL Backhaul and UBA Backhaul. However, Vodafone argued that the number of distance bands proposed by Telecom is excessive. Vodafone noted that Telecom's interim UCLL Backhaul Service has distance-based pricing, with 0-15 km, 15-35 km, and 35 km+ bands.

[218] Vodafone, *Cross Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 26 March 2008.

TelstraClear cross-submission[219]

45. TelstraClear's cross-submission included some comment on the possible inclusion of commercial prices for backhaul services that are supplied in competitive markets. According to TelstraClear, there would be practical difficulties in benchmarking against competitive commercial prices. For example, commercial backhaul rates may not be publically available, and are likely to reflect commercial outcomes rather than the TSLRIC of backhaul provision.

46. TelstraClear noted that any party could seek a pricing review of the Commission's initial determination, and that the price determined under such a review would be backdated to the date of the initial determination. TelstraClear argued that this minimises the risk that the initial price set by the Commission through benchmarking will be above or below the efficient costs of supplying the backhaul services.

Telecom cross-submission[220]

47. In commenting on the Orcon, Kordia and CallPlus submission, Telecom agreed that the benchmarking set out in the draft STD needed to be revisited. Further, according to Telecom, reference to commercial prices is not contemplated by the Act, nor is it required in light of the additional cost-based benchmarks identified by LECG. Telecom also submitted that the LECG benchmarking results are comparable to commercial pricing.[221]

48. At the conference LECG commented on Covec's proposed amendments to the LECG benchmarking approach. LECG agreed in principle with Covec's proposal that the regression results be cross-checked against actual prices for given combinations of distance and bandwidth, although noted that there are limitations, particularly given the small numbers of actual prices for some combinations.[222]

49. In respect of Covec's proposed distance assumptions, LECG agreed that the bounds of the distance bands should be defined in a contiguous manner, with the lower bound of a band equal to the upper bound of the preceding band. However, LECG argued that the midpoint of each band was appropriate, rather than the 'sum of squares' approach proposed by Covec. According to LECG, in the absence of information on the actual distribution of distances within each band, a reasonable assumption is that the distances are distributed symmetrically around the mean. LECG also noted that while Covec's approach might be appropriate for a distribution network in which coverage is important, it is not appropriate for a point-to-point transmission service.

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[219] TelstraClear Limited, *Cross-Submission on Draft Standard Terms Determinations for Unbundled Copper Local Loop and Unbundled Bitstream Access Backhaul Services*, 26 March 2008.
[220] Telecom, *Cross-submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 26 March 2008. Conference Transcript, *Price terms*, 11 April 2008, p 160-196.
[221] Telecom, *Cross-submissions on draft Standard Terms Determinations for Telecom's unbundled copper local loop backhaul and Telecom's unbundled bitstream access backhaul*, 26 March 2008, Schedule 4.
[222] LECG, *Responses to benchmarking issues raised by Covec*, 10 April 2008, slide 7.

50. LECG agreed with Covec that consideration should be given to additional bandwidths. According to LECG, all pricing data that complies with the cost-based criteria of the benchmarking study should be included, as the regression method estimates a relationship between price and bandwidth. However, Covec proposed to include only a subset of the additional bandwidths that are available. In addition, the UK observations that Covec proposed to include are for 155 Mbps and 622 Mbps services, which appear to relate to ATM services. LECG noted that the Commission had excluded ATM services in the draft UBA Backhaul STD.

51. LECG therefore included additional bandwidths for Holland, Italy, and Canada.

52. The updated benchmarking results produced by LECG at the conference represented an increase in the price of higher bandwidth backhaul services of up to 26% (compared to LECG's previous results), while the price of the lower bandwidth backhaul (50 Mbps, and some of the 100 Mbps prices) decline by up to 13%.[223]

53. In terms of the number of bands to include in the pricing structure of the backhaul service, LECG noted that Covec provided no evidence as to why five bands were better than Telecom's proposed 20 bands. However, LECG noted that they do not have a firm view on the appropriate number, and that their model is capable of calculating benchmarked prices for any number of bands.

[223] LECG, *Responses to benchmarking issues raised by Covec*, 10 April 2008, slide 12.

APPENDIX F: INITIAL BENCHMARKING DATASET – RECURRING MONTHLY RENTAL RATES

	Service	Distance km	BW Mbps	Price NZD
Canada	metro	32	50	$ 3,745
Canada	provincial	350	50	$ 5,232
Canada	regional	400	50	$ 5,542
Italy	metro	32	50	$ 2,671
Italy	provincial	112	50	$ 6,262
Canada	metro	32	100	$ 4,364
Canada	provincial	350	100	$ 7,340
Canada	regional	400	100	$ 7,960
UK	ONBS	15	100	$ 2,748
UK	BES	32	100	$ 4,881
Holland	metro	32	100	$ 1,776
Italy	metro	32	100	$ 5,342
Italy	provincial	112	100	$ 12,524
France	DSL Collect IP	32	100	$ 5,432
France	DSL Collect IP	112	100	$ 5,432
France	DSL Collect IP	230	100	$ 5,432
Canada	metro	32	150	$ 6,113
Canada	provincial	350	150	$ 10,576
Canada	regional	400	150	$ 11,506
Italy	metro	32	150	$ 8,012
Italy	provincial	112	150	$ 18,786
Canada	metro	32	200	$ 6,733
Canada	provincial	350	200	$ 12,684
Canada	regional	400	200	$ 13,924
Italy	metro	32	200	$ 10,683
Italy	provincial	112	200	$ 25,048
Holland	metro	32	200	$ 2,289
Canada	metro	32	300	$ 7,973
Canada	provincial	350	300	$ 16,900
Canada	regional	400	300	$ 18,760
Italy	metro	32	300	$ 16,025
Italy	provincial	112	300	$ 37,572
Holland	metro	32	300	$ 2,682
Italy	metro	32	400	$ 21,366
Italy	provincial	112	400	$ 50,096
Holland	metro	32	400	$ 3,013
Canada	metro	32	500	$ 10,452
Canada	provincial	350	500	$ 25,331
Canada	regional	400	500	$ 28,431
Italy	metro	32	500	$ 26,708
Italy	provincial	112	500	$ 62,620
Holland	metro	32	500	$ 3,305
Italy	metro	32	600	$ 32,049
Italy	provincial	112	600	$ 75,144
Holland	metro	32	600	$ 3,569
Italy	metro	32	700	$ 37,391
Italy	provincial	112	700	$ 87,667
Holland	metro	32	700	$ 3,811

	Service	Distance km	BW Mbps	Price NZD
Italy	metro	32	800	$ 42,732
Italy	provincial	112	800	$ 100,191
Holland	metro	32	800	$ 4,038
Italy	metro	32	900	$ 48,074
Italy	provincial	112	900	$ 112,715
Holland	metro	32	900	$ 4,250
UK	BNS	32	1000	$ 3,665
UK	BNS (max distance)	70	1000	$ 6,563
Canada	metro	32	1000	$ 16,652
Canada	provincial	350	1000	$ 46,410
Canada	regional	400	1000	$ 52,610
France	DSL Collect Ethernet	32	1000	$ 34,222
France	DSL Collect Ethernet	112	1000	$ 99,407
UK	ONBS	15	1000	$ 4,815
UK	BES	32	1000	$ 6,966
UK	BES (max distance)	35	1000	$ 8,200
Holland	metro	32	1000	$ 4,451
Italy	metro	32	1000	$ 53,415
Italy	provincial	112	1000	$ 125,239
France	DSL Collect IP	32	1000	$ 17,202
France	DSL Collect IP	112	1000	$ 17,202
France	DSL Collect IP	230	1000	$ 17,202

APPENDIX G: FINAL BENCHMARKING DATASET – RECURRING MONTHLY RENTAL RATES

		Distance	BW	Price
		km	Mbps	NZD
Canada	metro	32	50	$ 3,745
Canada	provincial	350	50	$ 5,232
Canada	regional	400	50	$ 5,542
Italy	metro	32	50	$ 2,671
Italy	provincial	112	50	$ 6,262
Canada	metro	32	100	$ 4,364
Canada	provincial	350	100	$ 7,340
Canada	regional	400	100	$ 7,960
UK	ONBS	15	100	$ 2,748
UK	BES	32	100	$ 4,881
Holland	metro	32	100	$ 1,776
Italy	metro	32	100	$ 5,342
Italy	provincial	112	100	$ 12,524
France	DSL Collect IP	32	100	$ 5,432
France	DSL Collect IP	112	100	$ 5,432
France	DSL Collect IP	230	100	$ 5,432
Italy	metro	32	150	$ 8,012
Italy	provincial	112	150	$ 18,786
Canada	metro	32	200	$ 6,733
Canada	provincial	350	200	$ 12,684
Canada	regional	400	200	$ 13,924
Italy	metro	32	200	$ 10,683
Italy	provincial	112	200	$ 25,048
Holland	metro	32	200	$ 2,289
Holland	metro	32	300	$ 2,682
Holland	metro	32	400	$ 3,013
Holland	metro	32	500	$ 3,305
Holland	metro	32	600	$ 3,569
Holland	metro	32	700	$ 3,811
Holland	metro	32	800	$ 4,038
Holland	metro	32	900	$ 4,250
UK	BNS	32	1000	$ 3,665
UK	BNS (max distance)	70	1000	$ 6,563
Canada	metro	32	1000	$ 16,652
Canada	provincial	350	1000	$ 46,410
Canada	regional	400	1000	$ 52,610
France	DSL Collect Ethernet	32	1000	$ 34,222
France	DSL Collect Ethernet	112	1000	$ 99,407
UK	ONBS	15	1000	$ 4,815
UK	BES	32	1000	$ 6,966
UK	BES (max distance)	35	1000	$ 8,200
Holland	metro	32	1000	$ 4,451
France	DSL Collect IP	32	1000	$ 17,202
France	DSL Collect IP	112	1000	$ 17,202
France	DSL Collect IP	230	1000	$ 17,202

APPENDIX H: FINAL BENCHMARKING DATASET – NON-RECURRING CONNECTION RATES

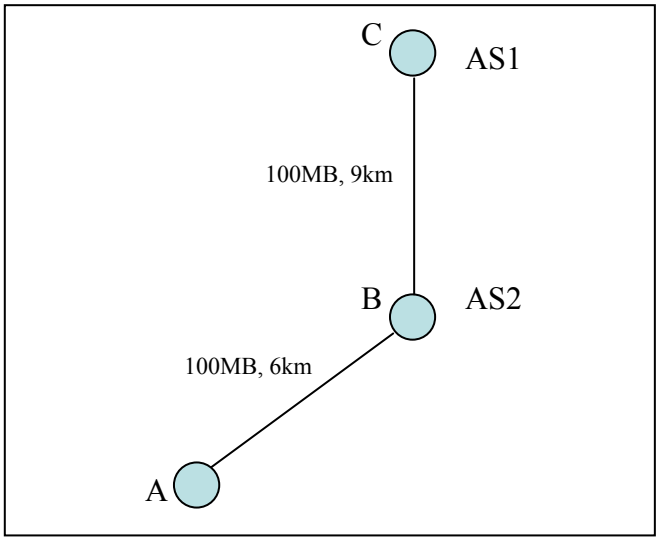
	service	Connection charge
Canada	metro	$ 6,820
Canada	provincial	$ 6,820
Canada	regional	$ 6,820
Italy	metro	$ 14,636
Italy	provincial	$ 14,636
Canada	metro	$ 6,820
Canada	provincial	$ 6,820
Canada	regional	$ 6,820
UK	ONBS	$ 14,486
UK	BES	$ 14,486
Holland	metro	$ 1,691
Italy	metro	$ 14,636
Italy	provincial	$ 14,636
France	DSL Collect IP	$ 7,243
France	DSL Collect IP	$ 7,243
France	DSL Collect IP	$ 7,243
Italy	metro	$ 14,636
Italy	provincial	$ 14,636
Canada	metro	$ 8,059
Canada	provincial	$ 8,059
Canada	regional	$ 8,059
Italy	metro	$ 14,636
Italy	provincial	$ 14,636
Holland	metro	$ 1,691
Holland	metro	$ 1,691
Holland	metro	$ 1,691
Holland	metro	$ 1,691
Holland	metro	$ 1,691
Holland	metro	$ 1,691
Holland	metro	$ 1,691
Holland	metro	$ 1,691
Holland	metro	$ 1,691
UK	BNS	$ 68,738
UK	BNS (max distance)	$ 68,738
Canada	metro	$ 8,059
Canada	provincial	$ 8,059
Canada	regional	$ 8,059
France	DSL Collect Ethernet	$ 18,107
France	DSL Collect Ethernet	$ 18,107
UK	ONBS	$ 27,391
UK	BES	$ 27,391
UK	BES (max distance)	$ 27,391
Holland	metro	$ 1,691
France	DSL Collect IP	$ 12,675
France	DSL Collect IP	$ 12,675
France	DSL Collect IP	$ 12,675

APPENDIX I: APPLICATION OF CHARGES

This Appendix provides a number of examples of how the monthly rental (service components 2.1 to 2.12 of the UCLL Backhaul Price List) and non-recurring connection charges (service components 1.1 and 1.2 of the UCLL Backhaul Price List) are to be applied under this STD.

Example 1:

Where the Access Seeker requires the same capacity on both the Primary and Secondary Links of the UCLL Backhaul Service, the monthly rental rate (and connection charge) is determined as follows.



Access Seeker 1

Access Seeker 1 (AS1) has a DSLAM located in exchange A. The Parent POI is at B, and AS1 is located near C (ie C is the ASNAPOI for AS1). The UCLL Backhaul Service required by AS1 would have the following prices:

Monthly Rental Rate A-C (100Mbps, 15kms):	$2,181 per month
Total Connection Charge (A, C):	$8,059 (one-off)

Access Seeker 2

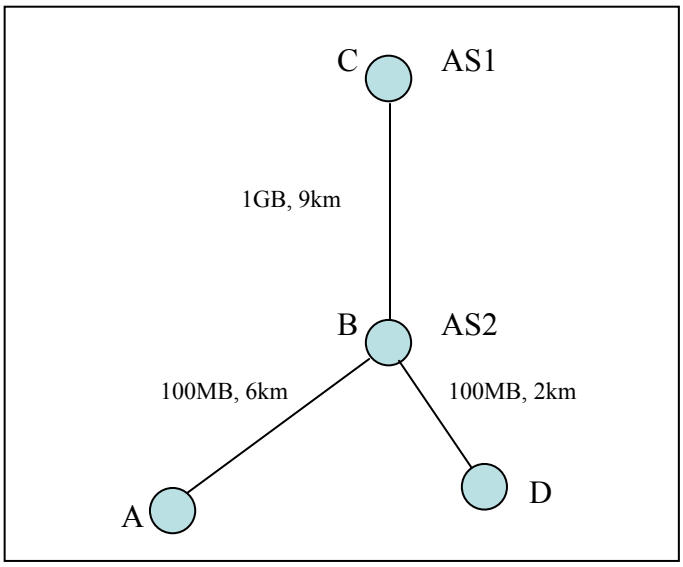
Access Seeker 2 (AS2) has a DSLAM located in exchange A. The Parent POI is at B, and AS2 is also located near B (ie B is the ASNAPOI for AS2). The UCLL Backhaul Service required by AS2 would have the following prices:

Monthly Rental Rate A-B (100Mbps, 6kms):	$1,683 per month
Total Connection Charge (A, B):	$8,059 (one-off)

In the above example, AS1 pays a higher monthly rental than AS2, as AS1 requires the UCLL Backhaul Service over a greater distance. The connection charge is the same, as both Access Seekers require connection at two ends, and the connection charge is not distance-related.

Example 2:

Where the Access Seeker requires differing capacity on the Primary and Secondary Links of the UCLL Backhaul Service, the monthly rental rate (and connection charge) is determined as follows.



Access Seeker 1

Access Seeker 1 (AS1) has DSLAMs located in exchanges A and D. The Parent POI is at B, and AS1 is located near C (ie C is the ASNAPOI for AS1). The UCLL Backhaul Service required by AS1 would have the following prices:

Monthly Rental Rate A-B (100Mbps, 6kms):	$1,683 per month
Monthly Rental Rate D-B (100Mbps, 2kms):	$ 964 per month
Monthly Rental Rate B-C (1Gbps, 9kms):	$4,091 per month
Total Monthly Rental Rate:	$6,738 per month
Total Connection Charge (A, C, D):	$12,089 (one-off)

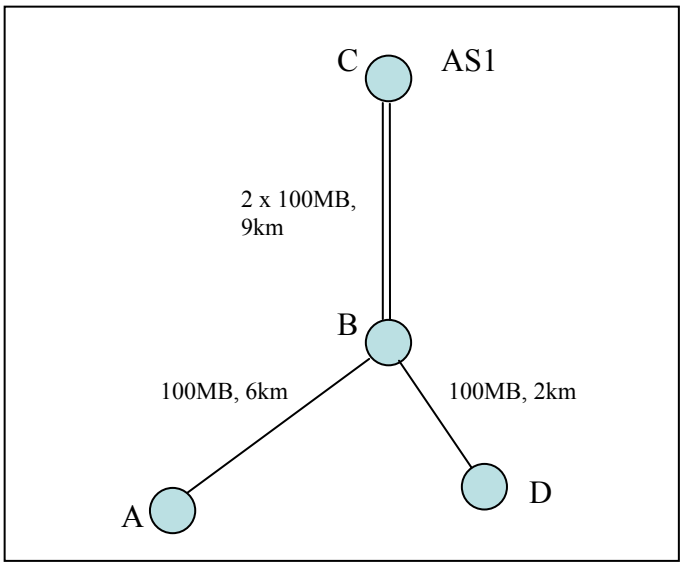
Access Seeker 2

Access Seeker 2 (AS2) has DSLAMs located in exchanges A and D. The Parent POI is at B, and AS2 is also located near B (ie B is the ASNAPOI for AS2). The UCLL Backhaul Service required by AS2 would have the following prices:

Monthly Rental Rate A-B (100Mbps, 6kms):	$1,683 per month
Monthly Rental Rate D-B (100Mbps, 2kms):	$ 964 per month
Total Monthly Rental Rate:	$2,647 per month
Total Connection Charge (A, B, D):	$12,089 (one-off)

In example 2, AS1 pays a higher monthly rental than AS2, as AS1 requires the UCLL Backhaul Service over a greater distance. The connection charge is the same but is higher than under example 1, as both Access Seekers require connection at three ends.

Example 3:



Access Seeker 1

Access Seeker 1 (AS1) has DSLAMs located in exchanges A and D. The Parent POI is at B, and AS1 is located near C (ie C is the ASNAPOI for AS1). In this example, AS1 purchases two UCLL Backhaul Services (A-C and D-C), which would have the following prices:

Monthly Rental Rate A-C (100Mbps, 15kms):	$2,181 per month
Monthly Rental Rate D-C (100Mbps, 11kms):	$2,181 per month
Total Monthly Rental Rate:	$4,362 per month
Total Connection Charge (A, C, D, C):	$16,118 (one-off ie 2 x $8,059)

Compared to example 2, AS1 pays a lower monthly rental of $4,362 per month, and a higher connection charge of $16,118. AS1 will face a trade-off between incurring the higher monthly rental associated with the higher capacity 1Gbps Secondary Link in example 2, and the higher connection charges associated with smaller multiple Secondary Links in example 3. AS1's expectations about the amount of capacity required at B (ie the number of unbundled exchanges it will serve from that Parent POI) will determine the optimal configuration of Primary and Secondary Links.