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COMMERCE COMMISSION

Determination on the application for determination for access to and interconnection with Telecom's fixed PDN service 'Bitstream Access'

Decision 568

Determination under section 27 of the Telecommunications Act 2001 ('the Act') in the matter of an application for determination for the designated bitstream access service under section 20 of the Act by:

TELSTRACLEAR LIMITED

The Commission:	Douglas Webb Paula Rebstock Shaan Stevens
Summary of Application:	TelstraClear Limited applied for a determination with respect to the bitstream access and backhaul services under section 20 of the Act.
Date of Determination:	20 December 2005

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EXECUTIVE SUMMARY

i. Bitstream access is a circuit provided by Telecom between an end-user's premises and an ATM switch. This circuit is used by a telecommunications provider to deliver retail broadband services. A telecommunications provider must supply other components including national and international transmission, connection to the internet and ISP services.

ii. On 4 November 2004, TelstraClear applied to the Commission for a determination of the terms of access to the regulated bitstream service. This determination follows an extensive consultation process with the parties and the industry.

iii. Telecom is required to provide TelstraClear with bitstream access which has a downstream speed up to the maximum technical capacity of the DSLAM, and an upstream speed of 128kbps. The availability of full-speed bitstream access will allow TelstraClear to innovate and differentiate its broadband offerings from those of Telecom, providing significant long-term benefit to New Zealanders.

iv. In considering the benefits of full-speed services, careful consideration has been given to a risk that full-speed services could degrade broadband services to some customers located a significant distance from the local exchange. This degradation could occur as a result of increased 'noise' in copper cables sharing a common cable sheath.

v. The Commission has concluded that any such incremental risk would not outweigh the benefits that full-speed services will deliver to end-users. Telecom itself currently provides a significant number of full-speed services to retail customers. Any risk of degradation will be the same whether a full-speed service is provided by Telecom or TelstraClear.

vi. Telecom is required to provide bitstream access to TelstraClear at a uniform wholesale price which does not distinguish between customer type or speed. Maximum innovation will occur where TelstraClear is not constrained by Telecom's own retail price and product differentiation strategies. The Commission has concluded that a uniform wholesale price will not remove incentives for ongoing diversity in retail broadband services available at different prices.

vii. The Commission has determined that the price for bitstream access is $27.87 per month. The Commission deducted price elements attributable to service components not supplied by Telecom, by imputing a retail price having regard to Telecom's comparable Jetstream services. A further allowance has been made to reflect those costs that Telecom avoids when providing bitstream access at wholesale rather than retail.

viii. Telecom is required to make available, within specific timeframes, electronic operational support systems to facilitate the efficient provision of bitstream access to TelstraClear.

ix. Telecom and TelstraClear agree that bitstream access will be available to TelstraClear 18 working weeks after 31 January 2006.

x. This determination applies for 2 years.

INTRODUCTION

1. The Telecommunications Act 2001 ('the Act')[1] regulates the supply of telecommunications services in New Zealand.

2. The Commerce Commission ('the Commission') has a range of responsibilities under the Act, including making determinations in respect of designated access services. Subject to sections 22 and 23, applicants may make an application to the Commission under section 20 for a determination of all or some of the terms on which a designated access service must be supplied during the period of time specified in the determination.

3. On 4 November 2004, TelstraClear Limited ('TelstraClear') applied for a determination, under section 20, for access to the two designated access services, namely:

    - access to, and interconnection with, Telecom's fixed PDN ('bitstream access'); and
    - access to Telecom's fixed PDN backhaul (bitstream backhaul).[2]

4. This determination is made with respect to the bitstream access designated access service set out in the amendment to schedule 1 of the Act.

5. Commercially sensitive information cited in this determination was provided subject to an order made under section 15(i) of the Act and section 100 of the Commerce Act 1986. The order is available on the Commission's website and permits the classification of commercially sensitive material as 'Restricted Information'. Information designated in accordance with the provisions of that order is enclosed within square brackets and marked as RI. All such information has been extracted from the public version of the determination.

[1] All terms and phrases that are defined within the Act have the same meanings in this Determination. All references to Parts, Schedules and sections are to the Parts, Schedules and sections of the Act.
[2] On 18 April 2005, TelstraClear withdrew its request for bitstream backhaul.

THE APPLICATION

1. On 4 November 2004, the Commission received an application from TelstraClear under section 20 of the Act ('the Application').

2. The Application sought a determination in regard to:

    1. the designated access service called "access to, and interconnection with, Telecom's PDN" for supply by TelstraClear to residential and business customers (wholesale bitstream service); and
    2. the designated access service called "access to Telecom's PDN backhaul" (backhaul service),[3]

3. The Commission notified TelstraClear and Telecom (together 'the Parties') of the Application and sought submissions under section 24(c) of the Act.

4. On 25 November 2004 the Commission decided to investigate the Application under section 25.

5. The Commission received submissions on the Application from the Parties on 16 November 2004. The Commission subsequently released a proposed methodology to impute the retail price for bitstream service on 18 January 2005[4] for comment.

6. On 28 January 2005, the Commission received cross submissions on the Application which included comment on the proposed methodology for the imputation of the retail price.

7. On 11 February 2005, Commission staff held a workshop with the Parties to clarify the technical issues raised in the Parties' submissions and cross submissions.

8. On 18 April 2005, TelstraClear advised that it had withdrawn its request for the Commission to determine bitstream backhaul, from the Application.

9. On 21 April 2005, the Commission released its draft determination on bitstream access.[5] The Commission issued a correction to the draft determination on 27 April which amended the initial price for bitstream access for supply to business end-users.[6]

10. The Commission received submissions on the draft determination on 23 May 2005, and cross submissions on 9 June 2005.

11. On 23 June 2005, TelstraClear withdrew that part of its application relating to a general request for other non-price terms not specifically detailed in the Application.[7]

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[3] TelstraClear Application, Section 20: Application for Determination for Designated Access Services, 4 November 2004.
[4] Letter from the Commission (Webb) to Telecom (Forsyth) and TelstraClear (Parkes) *TelstraClear UBS Application. Calculation of the Initial Pricing Principle*, 18 January 2005.
[5] Commerce Commission, *TelstraClear Draft Determination on the application for determination for access to and interconnection with Telecom's fixed PDN service 'Bitstream Access'*, 21 April 2005.
[6] Commerce Commission, *TelstraClear Bitstream Draft Determination correction of business bitstream access calculation*, 27 April 2005.
[7] E-mail from TelstraClear (Dodd) to the Commission (Abbott), 23 June 2005.

12. The Commission held a conference on the draft determination on 4 and 5 July 2005. Commission staff held an Operational Support Systems ('OSS') and technical workshop on 21 and 22 July 2005.

13. On 30 August 2005, the Commission issued a proposed technical specification for bitstream access for comment.[8] The Commission clarified its proposed technical specification on 5 September 2005 following a request for clarification from Telecom.[9]

14. Between 9 and 20 September 2005, the Commission received submissions on the technical specification.

15. On 20 September 2005, Telecom requested that the Commission issue a second draft determination to allow parties to submit and cross submit on pricing of the bitstream service.[10]

16. On 3 October 2005, the Commission advised the Parties that it would issue a statement for comment on the technical specification of bitstream access, pricing, implementation, and relevant OSS.[11]

17. On 12 October 2005, the Commission issued a Statement for Consultation.[12] The Commission received submissions on 27 October 2005. Telecom provided an additional submission on the implementation of the proposed service on 7 November 2005.[13]

18. On 3 November 2005, Telecom submitted to the Commission a copy of a legal opinion prepared by David Goddard QC.[14] On 21 November 2005, TelstraClear submitted a legal opinion prepared by James Farmer QC in response.[15]

19. On 25 November 2005, Telecom submitted a further opinion by David Goddard QC commenting on James Farmer QC's opinion.[16]

20. Key documents are available on the Commission's website at: http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/Wholesale/WholesaleDeterminatons/telstraclearwholesalebitstreamserviceap.aspx

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[8] Commerce Commission, *Proposed technical specification of the Bitstream Access Service – Request for comment*, 30 August 2005.
[9] Commerce Commission, *TelstraClear bitstream application proposed technical specification of the Bitstream Access Service – Request for extension and clarification*, 5 September 2005.
[10] Letter from Telecom (Parkes) to the Commission (Webb), *Consultation on Unbundled Bitstream Service*, 20 September 2005.
[11] Letter from Commission (Abbott) to Telecom (Parkes), *TelstraClear Bitstream Application*, 3 October 2005.
[12] Commerce Commission, *TelstraClear Bitstream Application – Statement for Consultation*, 12 October 2005.
[13] Telecom, *Implementation of the bitstream access service specified in the Commission's Statement of Consultation*, 7 November 2005.
[14] David Goddard QC, *Bitstream Access: Wholesale Price Calculation*, 3 November 2005.
[15] James Farmer QC, *Telecom and Commerce Commission – bitstream access: wholesale pricing*, 21 November 2005.
[16] David Goddard QC, *Bitstream Access Application: comments on opinion from John Farmer QC*, 25 November 2005.

THE FRAMEWORK FOR THE DETERMINATION

21. This determination is made under Part 2 of the Act.

22. Section 18 states:

> (1) The purpose of this Part and Schedule 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 to 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.

23. Section 19 directs the Commission, when making a determination under Schedule 1, to satisfy itself that the determination best gives, or is likely to best give, effect to the purpose set out in section 18:

> If the Commission or the Minister (as the case may be) is required under this Part or any of Schedules 1 to 3 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 recommendation, determination, or decision that the Commissioner or Minister considers best gives, or is likely to best give, effect to the purpose set out in section 18.

24. Section 27 requires that after investigating the matter, the Commission must –

> (a) prepare a determination; and
> (b) give a copy of the determination to the parties to the determination; and
> (c) give public notice of the determination.

25. Section 28 requires that the Commission make reasonable efforts to prepare a determination under section 27 not later than 50 working days after the date on which it gave written notice to the parties of its decision to investigate, that being 15 February 2005. Despite reasonable efforts, the Commission was unable to meet that time limit.

26. Under section 29(a), a determination must, in the opinion of the Commission, be made in accordance with the applicable access principles and any limits on those applicable access principles, and any regulations made in respect of the applicable access principles.[17]

[17] No such regulations have been issued.

27. Sections 29(b) and (c) provide that a determination must, in the Commission's opinion, comply with any relevant approved codes,[18] and in the case of a determination regarding a designated access service, be made in accordance with the applicable initial pricing principle (as affected, if at all, by clause 2 or clause 3 of Schedule 1) and any regulations that specify how the applicable initial pricing principle must be applied.

28. Section 30 prescribes the matters to be included in the determination. A determination must include –

(a) the terms on which the service must be supplied; and

(b) the reasons for the determination; and

(c) the terms and conditions (if any) on which the determination is made; and

(d) the actions (if any) that a party to the determination must do or refrain from doing; and

(e) the expiry date of the determination.

29. This determination concerns the designated access service, *access to, and interconnection with, Telecom's fixed PDN,* set out in the amendment[19] to Part 2 of Schedule 1 of the Act ('bitstream access'):

30. Bitstream access is:

Description of service:	An asymmetric digital subscriber line enabled service (and its associated functions, including the associated functions of Telecom's operational support systems) that enables access to, and interconnection with, that part of Telecom's fixed PDN that connects an end-user's building (or, in the case of commercial buildings, the building distribution frames) to Telecom's first asynchronous transfer mode (ATM) data switch or equivalent facility other than a digital subscriber line access multiplexer (DSLAM)
Conditions:	That either- (a) Telecom faces limited, or is likely to face lessened, competition in a market for the service; or (b) Telecom does not face limited, or is not likely to face lessened, competition in a market for the service, and the Commission has decided to require that service 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 and the following additional limits: (a) the service requires a maximum upstream throughput rate of 128 kbps for data traffic sent from the end-user; and

[18] There are no such codes yet in existence.
[19] See Telecommunications (Fixed Public Data Network) Order 2004, 2 August 2004, clause 3.

	(b) the service requires a downstream throughput rate for data traffic sent to the end-user that must--- (i) not be less than 32 kbps; and (ii) have an average of not less than 256 kbps; and (c) the service is not required to support any function that relies on real time network capability; and (d) Telecom is only required to provide access to the trunk side of Telecom's first ATM data switch or equivalent facility (for which purpose a DSLAM is not an equivalent facility)
Initial pricing principle:	Either- (a) retail price (as imputed by the Commission having regard to any comparable service) less a discount benchmarked against discounts in comparable countries that apply retail price minus avoided costs saved pricing in respect of the service, in a case where Telecom faces limited, or is likely to face lessened, competition in a market for that service; or (b) retail price (as imputed by the Commission having regard to any comparable service) less a discount benchmarked against discounts in comparable countries that apply retail price minus actual costs saved pricing in respect of the service, in a case where Telecom does not face limited, or lessened, competition for that service
Final pricing principle:	Either- (a) retail price (as imputed by the Commission having regard to any comparable service) minus a discount comprising avoided costs saved pricing, in a case where Telecom faces limited, or is likely to face lessened, competition in a market for the service; or (b) retail price (as imputed by the Commission having regard to any comparable service) minus a discount comprising actual costs saved, in a case where Telecom does not face limited, or lessened, competition for the service
Requirement referred to in section 45 for final pricing principle:	Nil
Additional matters that must be considered regarding application of section 18:	Nil

31. The Application raises a number of issues as to the scope of the designated access service. These issues are discussed in the following section.

32. The Commission is required to determine the relevant market or markets, and the state of competition in those markets. In a relevant market for bitstream access in which Telecom faces limited competition, the Commission must determine terms of access. In a relevant market for bitstream access in which Telecom does not face limited competition, the Commission may nevertheless determine that access should be

provided if the Commission has decided to require that service to be wholesaled in that market.

33. The initial pricing principle ('IPP') for bitstream access requires that the Commission determine a wholesale price by imputing a retail price having regard to any comparable service, and deducting from that imputed retail price a discount benchmarked against discounts provided in comparable countries that apply retail price minus:

(i) avoided costs saved pricing, in respect of markets in which Telecom faces limited competition; or

(ii) actual costs saved pricing, in respect of markets in which Telecom does not face limited competition.

SCOPE OF THE BITSTREAM ACCESS SERVICE

34. The Application requests that the Commission determine specific price and non-price terms relating to the provision of bitstream access.

35. Bitstream access is described in Schedule 1 as:[20]

> An asymmetric digital subscriber line enabled service (and its associated functions, including the associated functions of Telecom's operational support systems) that enables access to, and interconnection with, that part of Telecom's fixed PDN that connects an end-user's building (or, in the case of commercial buildings, the building distribution frames) to Telecom's first asynchronous transfer mode (ATM) data switch or equivalent facility other than a digital subscriber line access multiplexer (DSLAM).

Access Principles & limits on the application of Standard Access Principles

36. The standard access principles and their limits must be considered in deciding the scope of bitstream access. The scope must also be consistent with the additional limits on the access principles set out in the designated bitstream access service.

37. Section 29 specifies the requirements for the determination and states that:

> A determination must, in the opinion of the Commission, -
>
> (a) be made in accordance with –
>
> (i) the applicable access principles and any limits on those applicable access principles; and
> (ii) any regulations made in respect of the applicable access principles and any limits on those applicable access principles.

38. The standard access principles and limits on the access principles in Schedule 1 are:

> **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.
>
> **6 Limits on application of standard access principles set out in clause 5**
>
> Principles 1 to 3 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:

[20] *See* Telecommunications (Fixed Data Network) Order 2004, 2 August 2004.

(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.

39. Additional limits on these standard access principles apply specifically to bitstream access. These additional limits are:[21]

> The limits on access principles set out in clause 6 and the following additional limits:
>
> (a) the service requires a maximum upstream throughput rate of 128kbps for data traffic sent from the end-user; and
>
> (b) the service requires a downstream throughput rate for data traffic sent to the end-user that must –
> (i) not be less than 32 kbps; and
> (ii) have an average of not less than 256 kbps; and
>
> (c) the service is not required to support any function that relies on real time network capability: and
>
> (d) Telecom is only required to provide access to the trunk side of Telecom's first ATM data switch or equivalent facility (for which purpose a DSLAM is not an equivalent facility)

Request for service equivalence

40. The Application requested that the Commission determine specific technical parameters including latency, jitter and contention ratios. Telecom submitted that such specific technical service parameters would result in the provision of a near real-time service, which would be inconsistent with the access principle limitation that the designated service is not required to support any function that relies on real-time network capability.[22]

41. Telecom submitted that there are significant issues as to whether it is reasonably technically and operationally practicable for Telecom to provide a number of the non-price terms requested by TelstraClear.[23]

42. At the Commission's workshop on 11 February, TelstraClear noted that it sought equivalence of network service parameters with Telecom's own Jetstream services.[24] This was further clarified in a letter to the Commission dated 18 February 2005.[25]

43. TelstraClear requested that the Commission require Telecom to provide service parameter equivalence between bitstream access and the underlying network supporting Telecom's Jetstream service. Specifically, TelstraClear noted that:

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[21] Telecommunications (Fixed Data Network) Order 2004, 2 August 2004.
[22] Telecom, *Telecom New Zealand's submissions in respect of the TelstraClear UBS and backhaul application*, 16 December 2004, p. 17.
[23] Ibid, p. 39.
[24] Commission technical workshop transcript, 11 February 2005, p. 82 – 83.
[25] Letter from TelstraClear (Forsyth) to the Commission (Borthwick), *Wholesale Bitstream Application*, 18 February 2005, para. 5.

> … equivalence requires both that the technical services levels achieved on the underlying layer 2 bitstream network service are demonstrated to be the same for wholesale customers and Telecom's retail arm via measuring and reporting and the technical service level parameters are known in advance …. Ex ante specification of network performance levels would enhance opportunities for innovation. [26]

44. Standard access principle 3 requires that the access provider supplies 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. With regard to bitstream access, this means that there should be no material difference between the network-based characteristics of the bitstream, including latency, jitter and contention ratios, supplied to TelstraClear and the characteristics of the bitstream access used by Telecom to supply its own retail services.

45. Telecom argued that Principle 3 cannot be used to require Telecom to provide a service that is clearly better than that which Telecom 'provides to itself' and it should be read as requiring Telecom to offer wholesale access to essentially the same infrastructure that it uses to provide its retail ADSL services.[27] Telecom indicated that it is difficult to apply Principle 3 to the designated bitstream service as it is not a service which Telecom provides to itself. It also argued that Principle 3 establishes a requirement for the designated access service to be provided on similar, but not identical (or 'equal'), terms and conditions as those on which Telecom provides to itself.[28]

46. Telecom agreed[29] that the underlying network performance of bitstream access should be consistent with Jetstream, and that the retail customers of access seekers should not experience any difference in non-network service aspects such as fault repair and provisioning.

47. TelstraClear acknowledged that: [30]

> It is appropriate to use Telecom's retail supply performance when there are no further steps in the chain of supply beyond Telecom supplying to itself that materially alter the wholesale equivalent input which is being measured. For example, if the packets from wholesale bitstream services and from retail Jetstream services are carried in the same packet stream, which Telecom says will be its approach, the access network performance quality provided to end-users and for wholesale customers should be exactly the same. The access network is engineered, as it were, to guarantee equivalence and therefore, non-discrimination is the only possible outcome.

48. TelstraClear submitted that 'Telecom should be required to monitor and periodically report against the service parameters for the supply of the bitstream service to access seekers and the supply of equivalent components of the network service supporting

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[26] Ibid.
[27] Telecom, *Telecom New Zealand's cross-submission in respect of the TelstraClear UBS and backhaul application*, 31 January 2005, para. 48.
[28] Ibid, paras. 50-51.
[29] Letter from Telecom (Parkes) to the Commission (Webb), *TelstraClear UBS Application*, 8 April 2005.
[30] Letter from TelstraClear (Forsyth) to the Commission (Webb), *TelstraClear UBS Application: Service Equivalence*, 22 March 2005, para. 5.

Jetstream.'[31]

49. Telecom does not provide guaranteed service levels to its customers around the latency, delay variation, packet loss or contention ratio of Xtra Jetstream services. Telecom's website states that: [32]

> While we always strive to provide a consistent service, there are a number of factors that influence reliability. For this reason, we do not guarantee bandwidth, latency (delay) or bit rate through our broadband network to Xtra at any one point in time…
>
> Xtra Jetstream is provided with an unspecified bit rate and offers no guaranteed minimum performance. As the Xtra Jetstream service can occasionally go down, we do not recommend Jetstream for 'mission critical' purposes. We cannot guarantee how quickly we can resolve problems with the network.

50. Telecom submitted that Jetstream services have been pitched to provide functional best efforts, internet grade service at an acceptable price for the mass market. [33] However, for engineering, as opposed to retail, purposes, Telecom has a set of design parameters around the latency, delay variation, packet loss and contention ratio for Jetstream services.[34]

51. In the draft determination, the Commission's preliminary view was that Telecom should provide regular reporting on key service parameters to ensure that consistency of service is achieved.[35] Reporting would enable an access seeker to identify whether consistency was being achieved.

52. At the technical workshop held on 21 and 22 July 2005, the Parties agreed that they would share a single virtual path from the Digital Subscriber Line Access Multiplexer ('DSLAM') to the Broadband Remote Access Server/Layer 2 Tunnelling Protocol Access Concentrator ('BRAS/LAC') which is provided for Telecom's Unspecified Bit Rate ('UBR') services. The effect of a shared virtual path ('VP') is that the underlying characteristics that TelstraClear receives will be the same as those that Telecom receives as an input to its Open Systems Interconnection ('OSI') layer 3 Jetstream services. Telecom is unable to prioritise traffic by origin within a shared VP for differing levels of service quality.

53. Jitter, latency and packet loss may vary across the network due to external factors such as noise, distance from the exchange, the Peak Information Rate ('PIR') and Sustained Information Rate ('SIR') applied to the service, and equipment used to provide bitstream access but will not vary between providers in the VP connection between the DSLAM and the BRAS/LAC.

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[31] Letter from TelstraClear (Forsyth) to the Commission (Borthwick), *Wholesale Bitstream Application*, 18 February 2005.
[32] Telecom Website, Jetstream Service Reliability, http://telecom.co.nz/print/0,3903,202924-202537,00.html.
[33] Telecom, TelstraClear Bitstream Workshop transcript, 11 February 2005, Dr Milner, p. 72.
[34] Ibid.
[35] Commerce Commission, *Draft Determination on the application for determination for access toand interconnection with Telecom's fixed PDN service 'Bitstream Access'*, 21 April 2005, paras. 244-247.

54. The Commission does not require that Telecom report on service parameters such as jitter, latency and packet loss because these will be identical for TelstraClear and Telecom.

55. TelstraClear can itself test the performance characteristics of bitstream access. TelstraClear can make decisions based on those tests to determine the retail broadband services that it will provide to end-users.

MARKET DEFINITION AND COMPETITION ASSESSMENT

56. This section provides the Commission's analysis of the relevant market for bitstream access, and whether Telecom faces limited competition in that market.

Introduction

57. The conditions for bitstream access are:

> That either –
> (a) Telecom faces limited, or is likely to face lessened, competition in a market for the service: or
> (b) Telecom does not face limited, or is not likely to face lessened, competition in a market for the service, and the Commission has decided to require that service to be wholesaled in that market

58. The Commission must accordingly identify the market in which bitstream access is supplied and the state of competition in that market.

59. The market discussed below forms the basis of the competition assessment. However, the concept of a market is an instrumental one, the defining of which is not an end in itself, but rather is an exercise intended to cast light on, or to assist with the analysis of, the conduct at issue. In *Queensland Wire*, the Court stated:[36]

> In identifying the relevant market, it must be borne in mind that the object is to discover the degree of the defendant's market power. Defining the market and evaluating the degree of power in that market are part of the same process, and it is for the sake of simplicity of analysis that the two are separated…

60. The process of identifying the relevant market(s) should keep in mind the object of so doing. In the present case, the objective is to determine the nature of the competition Telecom faces in the market in which bitstream access is supplied.

61. For the purpose of undertaking an assessment of the level of competition within a market, the standard process of establishing market boundaries can be seen as 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[37]. This approach focuses on all those close substitutes whose presence would prevent a hypothetical monopolist from exercising market power by raising its price or by other means. 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.

62. 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

[36] *Queensland Wire Industries Pty Ltd v Broken Hill Pty Co Ltd* (1989) 167 CLR 177.
[37] In some instances, it may also be relevant to consider a temporal dimension of market definition. However, as noted later, this is not considered relevant in the current case.

currently in production who are likely, in that event, to shift promptly to offer a suitable alternative product even though they do not do so currently.

63. One approach to identifying a significant degree of market power (in the context of market definition) is in terms of the ability of the hypothetical monopolist to increase profits by imposing a small but significant and non-transitory increase in price (a 'ssnip') above the competitive level. For the purposes of determining relevant markets, the Commission will generally consider a ssnip to involve a five to ten percent increase in price for a period of at least one year. Starting from a small initial group of close substitutes, other potential substitutes are added to the group, until the hypothetical monopolist is able to profitably impose a ssnip. When this occurs, then all possible close substitutes must be encompassed by the proposed market definition[38].

64. The degree of substitutability between telecommunications services, and thus the definition of telecommunications markets, is likely to be influenced by advances in technologies, and in particular the convergence of different technologies. The ssnip test allows for this. For example, by focusing on the relative functionality and pricing of services, the ssnip test assesses the extent to which services are regarded as economic substitutes. When considering the market for one service, if a second service passes this test, in the sense that sufficient switching would be expected so as to defeat the attempted price increase, that service should be included in the same market, irrespective of whether similar or different technologies are involved.

65. Therefore, in terms of the product dimension of telecommunications markets, the Commission considers this test to be a useful tool in assessing the likely demand-side and supply-side responses to a change in the relative price of functionally similar services. Importantly for a dynamic industry such as telecommunications, the New Zealand regulatory system allows for frequent regulatory reviews, at which point market definitions can be revisited in light of any technological or other developments.

66. The Commission defines relevant markets in terms of the following characteristics or dimensions:[39]

- 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).

[38] If, in response to the price increase, the reduction in sales of the product would be large enough that a hypothetical monopolist would not find it profitable to impose such an increase in price, then added to the group should be that good that is the next-best substitute for the good in question. This incremental process requires those goods considered the most likely to be close substitutes for the good in question to be added first to the group subject to the *ssnip* test. If this did not occur there may be goods or services which are added to the group which are not close substitutes.

[39] *See* Commerce Commission, Mergers and Acquisitions Guidelines, December 2003, section 3.

67. While telecommunications services often have a temporal dimension, for example the use of peak and off-peak pricing, this is not considered to be of particular relevance to market definition in the current context. Most of the discussion below is in relation to the product and geographic dimensions of telecommunications markets, although the relevant customer and functional levels are also briefly considered.

68. However, markets are not always easy to define in practice. In part this is because the process itself is inevitably an imprecise one since transactions in the economy do not always fall neatly into a series of discrete and easily observable markets. Hence it may not be practical — nor, indeed, always necessary — to identify the precise boundaries of the activities included in a market. Moreover, as already noted, it is appropriate to tailor the definitions used to meet the requirements of the case in hand.

Section 64 Local Loop Unbundling Review

69. During the Commission's local loop investigation, consideration was given to the market in which bitstream access services are supplied. In addition to bitstream access provided by copper-based local loops, there are other forms of broadband access to customers, such as fibre, cable, satellite, fixed wireless and mobile cellular.

70. In its final report to the Minister, the Commission noted that convergence of access technologies:[40]

> ... does raise an important issue in terms of the current and future development of services available over fixed network platforms other than Telecom's local loop network. A number of competing broadband and data networks have been deployed in certain areas.

71. As a result of this convergence, the Commission considered the effectiveness of alternative local access technologies as substitutes for Telecom's copper-based local loop network. For the purposes of that investigation, the Commission considered alternative broadband and data networks, including fibre-based access and fixed wireless access ('FWA'). The Commission concluded that FWA technology was unlikely to represent a sufficiently close substitute for Telecom's local loop network, due to the limitations of FWA arising in large part from the sharing of spectrum.

72. The Commission therefore focused on the presence of alternative fixed access networks, such as those deployed by TelstraClear, CityLink, and United Networks/Tangent.

73. In considering the relevant geographic markets, the Commission considered markets defined with reference to Exchange Service Areas ('ESAs'), on the basis that these areas are associated with a Telecom exchange, and thus represented a natural unit of analysis. An access seeker would have regard to how many customers within an ESA it is likely to capture utilising unbundled local loops or bitstream access, and would decide on that basis whether to enter. The ability to secure customers within an ESA would be an important determinant of the entry decision, in terms of defraying the fixed entry costs.

[40] Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, December 2003, para. 342.

74. The ESA approach also allowed the Commission to identify those ESAs in which alternative networks had been deployed, and to assess whether competitive conditions within those ESAs were likely to differ from elsewhere.

Telecom's commercial Unbundled Bitstream Service ('commercial UBS')

75. Following the Minister of Communications' acceptance of the Commission's recommendation to designate bitstream access and backhaul, Telecom developed its commercial UBS service which has differing characteristics from the regulated service. Telecom has made this offering available throughout New Zealand, and at a uniform national price. According to Telecom's commercial UBS user guide:[41]

> UBS is available nationwide where Telecom has deployed DSL based technology.

76. Commercial UBS pricing distinguishes between residential and business end-users, with the residential charge incorporating a volume-based pricing structure. However, there is no geographic de-averaging of the commercial UBS access price.[42]

Relevant Markets

77. The following section sets out the Commission's assessment of the relevant market for bitstream access.

Summary of views of the parties

78. TelstraClear submitted that the relevant market is a national market for bitstream services, and that this is evidenced by Telecom's national pricing for commercial UBS. TelstraClear noted that if sub-national markets are defined, the relevant markets should be based on aggregations of ESAs, referred to as Telecom's Unbundled Regional Service Areas (URSAs). While the Commission's unbundling report was concerned with a range of potential regulated access services, including full unbundling, line sharing, and bitstream access, the current issue only relates to bitstream access. TelstraClear noted that:[43]

> ... the delivery of Telecom's wholesale bitstream service has not been based on the Telecom ESA and is based instead on Telecom's 34 Unbundled Regional Service Areas (URSAs), which are the "catchment" areas for Telecom's ATM switches.

79. Therefore TelstraClear submitted that if a sub-national approach is taken to market definition in respect of bitstream services, the relevant markets should be based on the URSAs rather than the ESAs.

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[41] Telecom Unbundled Bitstream Service (UBS) User Guide, July 2005, p. 5.
[42] Ibid, p. 13.
[43] TelstraClear, *Submission to the Commerce Commission on the proposed price and non-price term for access to and interconnection with Telecom's fixed PDN and access to Telecom's fixed PDN backhaul "Wholesale Bitstream"*, 16 December 2004, para. 83.

80. Telecom's submissions referred to metropolitan and non-metropolitan broadband access markets, with the metropolitan markets defined to encompass all competing broadband access networks, including fibre and wireless access networks. Telecom also referred to downstream markets for retail broadband internet access services in metropolitan and non-metropolitan areas.

81. In its cross submission on the Application, Telecom stated that:[44]

> TelstraClear is incorrect to state that Telecom offers its commercial UBS service at a national price. The wholesale product prices are differentiated by metropolitan and non-metropolitan geographic areas.

Commission view

Product dimension

82. In determining the product dimension of the market in which bitstream services are supplied, the various local access products which may be regarded as substitutes for bitstream access are considered. In this sense, the Commission agrees with Telecom that the relevant market may be defined more broadly than for bitstream services, to the extent that there are economic substitutes for bitstream access. These alternative access products include alternative fixed access (such as cable, satellite and fibre-based access). The Commission has also considered whether wireless-based access (such as FWA) represents a sufficiently close substitute to be included in the same market.

83. TelstraClear has deployed a limited cable access network in Wellington and Christchurch, over which it supplies a range of retail telecommunications and broadband services. In its submission on the draft determination, TelstraClear noted that it currently offers a cable-based wholesale service in Wellington.[45] The Commission understands that this wholesale service is a cable modem tail which can be used to supply asymmetric broadband services.

84. This suggests that cable-based access should be regarded as being supplied in the same market as bitstream access.[46]

85. In terms of fibre-based access, operators such as Citylink, Wired Country, and United Networks/Tangent have deployed localised fibre networks. These networks can support a range of retail services, including high-capacity broadband and data services.

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[44] Telecom, *Telecom New Zealand's cross-submission in respect of the TelstraClear UBS and backhaul application*, 31 January 2005, para 99.
[45] TelstraClear, *TelstraClear submission in respect of the TelstraClear Bitstream draft determination*, 20 May 2005, Para 15, p. 7.
[46] Even in the absence of a wholesale service offered by TelstraClear, it is likely that retail services supplied over TelstraClear's network would provide some constraint on Telecom's bitstream service, through an indirect substitution effect. For example, see Ofcom, *Review of the wholesale local access market*, 16 December 2004, para. 3.72. In a similar review of the wholesale market for broadband access, Ofcom similarly found that 'cable would be an indirect constraint on the behaviour of the ADSL based wholesale internet access provider to such an extent that the appropriate wholesale market definition would include both ADSL and cable', Ofcom, *Review of the Wholesale Broadband Access Markets*, 13 May 2004, para. 2.150.

The potential capacity of fibre connections is significantly higher than copper-based connections, and this is reflected in the pricing of higher-end retail data services.

86. Fibre-based services are high-speed and are often (though as discussed below, not always) symmetric services, whereas retail ADSL services are asymmetric. These differences may suggest that fibre-based services may not be regarded as being substitutable for ADSL services. If, for example, the cost of supplying symmetric services is significantly different from the cost of supplying asymmetric services, the ability of the former to constrain the pricing of the latter may be limited.

87. However, the fibre-based networks do appear to offer services that are comparable to retail ADSL services. For example, Citylink's 'Connect' offerings are symmetric broadband services, designed specifically for medium-sized businesses and available through a number of ISPs on Citylink's network. Citylink regards its Connect4 products as offering direct competition to the higher end of the Jetstream product family, with customers typically migrating from Jetstream to Connect4 services.

88. Wired Country[47] offers asymmetric broadband services through retail service providers across wireless and/or fibre access, to both residential and business customers.

89. The Citylink Connect4 and Wired Country fibre plans generally appear to be competitively priced against Telecom's business ADSL plans. For example, ICONZ use both Wired Country and Citylink fibre to offer a range of retail broadband plans:

- the ICONZ/Wired Country fibre plans include asymmetric plans (offering download speeds of 2-10Mbps, and upload speeds of 256kbps-1Mbps) with monthly caps of 10-20GB[48], priced between $110-160 per month. By comparison, the Telecom ADSL plans with broadly similar speeds (download speeds of 1-2Mbps, and upload speeds of 128kbps) and caps (3-15GB) are priced at $119.95-$299.95 per month;

- the ICONZ/Citylink Connect 4 plans offer symmetric 4Mbps speeds, with monthly data caps of 1-10GB, and priced at $199-$349 per month.

[47] Wired Country is a wholly owned subsidiary of Compass Communications Limited.
[48] There is also an ICONZ/Wired Country plan with a 100GB monthly cap, priced at $425 per month.

90. Table 1 below summarises these fibre-based and ADSL broadband plans.

Table 1: Fibre-based and ADSL 1 and 2Mbps Business Broadband Plans

Fibre plans	Monthly fee	Cap	Speed (down/up)
ICONZ/Citylink			
Connect 1	$199	1GB	4Mbps/4Mbps
Connect 5	$249	5GB	4Mbps/4Mbps
Connect 10	$349	10GB	4Mbps/4Mbps
ICONZ/Wired Country			
Fibre 2Mbps	$140	20GB	2Mbps/256kbps
Fibre 10Mbps	$110	10GB	10Mbps/256kbps
Fibre 10Mbps	$160	20GB	10Mbps/1Mbps
Fibre 10Mbps	$425	100GB	10Mbps/1Mbps
ADSL plans			
Xtra Business 3GB	$119.95	3GB	1Mbps/128kbps
Xtra Business 10GB	$149.95	10GB	1Mbps/128kbps
Xtra Business 15GB	$299.95	15GB	2Mbps/128kbps

91. Given the comparable pricing, these fibre-based services are economic substitutes for an ADSL-based service.

92. Therefore, while the emergence of fibre-based networks is particularly relevant to high-end data services, they also offer broadband options at the lower end of the spectrum.

93. In terms of FWA technology, one key disadvantage that the Commission identified in the local loop investigation related to the sharing of radio spectrum among FWA customers, which has implications for contention ratios and the cost-effectiveness of delivering business-grade services. However, regulated bitstream access is restricted to an internet-grade service, and hence the limitations of FWA technology are less significant, given this restriction. This suggests weight is placed on FWA as an alternative to the regulated bitstream service, although as noted later, this weighting may be moderated as increasingly bandwidth-intensive end-user applications emerge over time.

94. A number of suppliers have started offering broadband services using FWA technology. These suppliers typically target SME and residential demand, and appear thus far to have established similar pricing points to those of ADSL-based services.

For example, the broadband plans offered by Woosh have download/upload speeds of 250/120kbps, and start at $29.95 with a 200MB monthly cap, $39.95 with a 1GB cap, $49.95 with a 3GB cap, and $69.95 with a 10GB.[49] The Telecom residential 256/128kbps plans range from $39.95 (1GB) to $49.95 (3GB), with a faster plan offering download speeds of 2Mbps available for $69.95 (with a 10GB cap).

95. The Commission considered whether the emergence of 3G mobile services would have any implications for the markets defined in this determination. In the past, mobile data services have been restricted in terms of the speed and range of services that could be delivered over a mobile network. However, with the deployment of 3G mobile networks, these limitations are likely to be relaxed over time.

96. At this stage, it is unlikely that a supplier of 3G mobile services would constrain a supplier of fixed network-based broadband internet access services. While available speeds are significantly higher than 2G services,[50] relatively high pricing for mobile broadband services limit their substitutability for the services relevant to this determination. This pricing includes upfront costs such as the purchase of a data card, as well as monthly and per-MB charges.

97. According to Telecom's website, a Mobile Broadband Data Card costs between $0-$699, depending on the plan and contract term. Telecom's Mobile Broadband plans range from the low usage Mobile Broadband Casual plan ($0 per month, per-MB fee $8), to the heavy use Mobile Broadband 500 plan ($199 per month, 500 MB per month included, $0.50 per additional MB).

98. By comparison, Telecom's Xtra Broadband Business 3GB service has a considerably higher monthly data allowance (3GB) than the Mobile Broadband 500 plan (500 MB). However, the Xtra 3GB plan has a monthly fee of $119.95, and a charge of $0.04 per additional MB (compared to $199 per month, and $0.50 per MB). Installation charges for the Xtra service range from $88 to $220, while modems cost around $300.[51] In addition, the Xtra 3GB plan provides download speeds of up to 1Mbps. In other words, it includes a higher monthly data allowance, at a lower monthly price (and lower additional per-MB charge), and also has a higher download speed.

99. Some of the pricing differential discussed above is likely to reflect a premium for the mobility feature of a mobile broadband service. However, this pricing differential is significant, and in the face of an increase in the price of a fixed broadband service, it is unlikely that a significant proportion of customers would value mobility sufficiently to switch services.[52]

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[49] Effective from 1 November, Woosh introduced the option of a higher download speed of 500kbps. There is no additional charge for customers on the Express 10Gb and Fusion plans. For other plans an additional charge of $5 per month is payable.

[50] For example, Telecom's T3G mobile network offers peak average download speeds of up to 500 kbps in certain centres, compared to speeds of 40-80 kbps available over its CDMA network. Vodafone's network offers peak average download speeds of up to 120kbps through their GPRS mobile data network.

[51] Telecom website, http://www.telecom.co.nz.

[52] In its Mergers and Acquisitions Guidelines, the Commission notes that the price of an alternative product 'may be so much higher that it is a poor substitute in an economic sense, *at least for the great majority of buyers*.' (emphasis added), p. 16.

100. It therefore appears unlikely at this stage that 3G mobile services are supplied within the same market as Jetstream services. However, this is based on evidence of existing services and pricing, and it may be appropriate to review this conclusion over time.

101. Telecom has also suggested that the market in which bitstream services are supplied should be delineated along customer and speed lines. While separate customer markets have been previously defined at the retail level, it is not clear why this would necessarily result in customer markets at the wholesale functional level at which bitstream services are supplied. Bitstream access as an input to a retail service does not differ depending on the classification of the end-user as either residential or business. Differences in the level of customer support may distinguish between retail customer groups, but these are features of delivery of the retail service, rather than relating to the upstream input. For example, in its local loop unbundling draft report, the Commission considered the question of customer segmentation, and noted that:[53]

> At the retail level, the Commission has previously defined residential and non-residential customer markets. For example, in a number of markets there is evidence of retail price discrimination between residential and business customers.
> ...
> The corporate:SME distinction was largely based on retail-related factors, such as the level of sales and post-sales support dedicated to corporate customers compared to smaller businesses and price discrimination. While these factors are relevant to consideration of retail markets, it is not clear that they would translate into a similar distinction at the network or wholesale level. A supplier of wholesale LLU services is indifferent to the type of end-user.

102. The Commission accordingly adopted a single market for the provision of local loop access, without distinction between residential and business connections. For the same reasons, separate customer markets are not relevant to the market in which bitstream services are supplied.

103. The Commission does not agree that Telecom's suggestion of separate markets for bitstream services up to 1 Mbps would be appropriate. Although Telecom suggests that there are different suppliers in each segment, both Telecom and Wired Country are present in both segments. In addition, although pricing is generally higher in the over-1Mbps segment, there are in fact a range of different speeds of service. It is not clear that there would be a sufficient break in substitutability around any particular service speed to justify a separation of markets in this way.

104. The Commission concludes that the relevant product market is that for wholesale broadband access, including copper-based bitstream, cable, satellite, fibre and FWA (but excluding 3G mobile services).

Functional dimension

105. Bitstream access is an input into the provision of retail broadband services. The relevant functional dimension of the market in which bitstream access services are supplied is the wholesale level.

[53] Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Amended Draft Report, 14 October 2003, paras. 388, 391.

106. Telecom submits that the wholesale broadband access market should not be considered in isolation from competition in the relevant downstream retail markets.

107. The above discussion of the product dimension does take into account the uses to which different forms of bitstream access are put. The main retail market is the market for broadband internet access. Telecom's Jetstream services are supplied in this retail market, along with a number of other broadband access services. For example, Woosh have recently launched a IP voice service, which can be used as a substitute for a fixed landline for calling.

108. Although the Commission has previously considered retail markets for telecommunications services, including retail broadband services, it is appropriate to focus on markets and competition at the wholesale level for the purposes of this determination. The regulated bitstream service is a wholesale service, as it is supplied to downstream competitors as an input into the provision of retail services. It is the availability of different forms of wholesale entry, including facilities-based entry and various forms of wholesale access, that determines the level of competition at the retail level.

109. This can be seen by noting that Telecom's bitstream access service is implicitly used to supply a number of downstream channels. Telecom's retail broadband connections include a bitstream-type component, as do resold connections and connections served by way of Telecom's commercial UBS.[54] Therefore, in terms of the market in which bitstream services are supplied, all the connections that are based on some form of access to Telecom's network should be aggregated, as all these connections involve a bitstream service. It is competition at this wholesale level which is of particular relevance to the current determination.

110. Although a separate assessment of competition at the retail level is not conducted as part of this determination, the Commission does consider the downstream retail market to be important, in particular as this is the market in which benefits to end-users are expected to emerge as a result of any access to the regulated bitstream service. To the extent that the regulated bitstream service is effective in promoting competition, this will become apparent in the prices, variety of service, and movements in market shares at the retail level.

Geographic dimension

111. The geographic dimension of the relevant market is usually defined with reference to the area within which demand- and/or supply-side substitution can take place. If a *ssnip* imposed by a hypothetical monopolist in a narrowly defined area resulted in suppliers in other areas switching capacity to serve customers in that area, or in customers switching to suppliers located elsewhere, it might be appropriate to expand the geographic market boundary to include those areas in which the switching takes place.

[54] In other words, each of these services include a high-speed connection from the customer premises, through a DSLAM, which is essentially the bitstream service.

112. However, such an approach applied to telecommunications services is likely to lead to extremely narrow markets, possibly at an individual customer level. Consideration is therefore usually given to the extent to which there may be a uniform or common pricing constraint, and to determine geographic markets on that basis. For example, in relation to residential local access services, the Commission has previously taken into account differentials in retail pricing in defining sub-national markets.[55]

113. The Commission also recognises that the deployment of competing infrastructure is likely to be relevant, in particular where this has generated geographic pricing responses which suggest that competitive conditions in those areas are likely to differ. In both Decisions 525 and 497, the Commission recognised that competing access infrastructure had been deployed in parts of New Zealand, and that this had led to geographically differentiated pricing for some services. Both of these factors were relevant in determining the geographic boundaries of the relevant markets.

114. The Commission considers that it is appropriate to examine any geographic pricing constraints faced by Telecom in supplying a particular service. In some cases, such a constraint may be exogenously imposed on Telecom. For example, under the Telecommunications Service Obligation Deed for local residential telephone service, Telecom is required to maintain a uniform residential line rental in respect of rural areas, although has some ability to selectively offer lower line rentals on a geographic basis.[56]

115. At the time of the local loop investigation, bitstream service was not commercially available in New Zealand. The Commission therefore determined geographic markets without reference to any wholesale pricing behaviour. An ESA approach was taken for reasons set out above.

116. In its submission on the decision to investigate, Telecom argues that the market definitions adopted by the Commission in the local loop investigation and Decision 497 are inappropriate for the current assessment, and that a fuller factual and commercial commonsense analysis is required.[57]

117. The Commission agrees with Telecom and TelstraClear that the markets defined in the local loop investigation should not be determinative of the markets for this determination. For example, given that the Application relates to the designated bitstream service, the use of ESAs is unlikely to be appropriate. Consideration of ESAs was relevant to the local loop investigation, as access seekers would likely assess the feasibility on an ESA basis of acquiring local loops to provide services. However, in the current case, it would appear that access seekers would be less concerned with individual ESAs, and would instead consider the wider URSA in making entry decisions.

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[55] Commerce Commission, *Determination on the TelstraClear Application for Determination for 'Residential Wholesale' Designated Access Services Decision 525*, 14 June 2004, para. 198.

[56] In such a case, where a uniform pricing constraint has been imposed by regulation, it should not be assumed that such uniform pricing would continue absent that regulation.

[57] Telecom, *Telecom New Zealand's submissions in respect of the TelstraClear UBS and backhaul application*, 16 December 2004, Para. 94.

118. Furthermore, Telecom's commercial UBS service has a uniform national bitstream access price, and Telecom offers the service on a national level. As noted earlier, Telecom's cross-submission disputes this, with Telecom instead submitting that its commercial UBS prices are geographically differentiated by metropolitan and non-metropolitan areas. However, Telecom's UBS User Guide does not provide for geographic de-averaging of the UBS access price. The access fee distinguishes between residential and business end users, as per Table 2 below. The residential access charge has a volume-based structure, varying according to the number of monthly net connections. There is no volume-based structure for business end users, or geographic de-averaging of the commercial UBS access price.

Table 2: Telecom's Commercial UBS Access Fee[58]

Net Connections/Month	Residential			Business		
	(256/128)	(1024/128)	(2048/128)	(256/128)	(1024/128)	(2048/128)
0-150	$27.95	$31.70	$33.85	$40.60	$97.20	$172.70
151-500	$25.50	$29.25	$31.40	$40.60	$97.20	$172.70
> 501	$24.50	$28.25	$30.40	$40.60	$97.20	$172.70

119. This indicates that Telecom's commercial assessment of, and response to, market developments in respect of its commercial bitstream service is based on a national market.

120. Telecom submitted that:[59]

> The geographic dimension of a market encompasses those areas in which a sufficient number of marginal customers could switch demand in the face of an increase in local prices, or entrants could easily switch to the supply of services in that area.

121. Such switching of marginal customers in those areas where competing broadband access networks have been deployed appears to have been insufficient to warrant a pricing reaction from Telecom in those areas.

122. Telecom submitted that it faces constraints which have prevented it from de-averaging its Jetstream prices, and that a substantial part of Telecom's national retail broadband pricing policy is driven through its direct commitment to the Government to achieve targets for mass broadband uptake by the end of 2005.

123. However, it is not clear how Telecom's commitment to attaining a residential broadband target would have prevented it from de-averaging prices in response to localised competition. Indeed, if local competition was sufficiently intense as to put at risk Telecom's achievement of its broadband target, this would have been a reason for Telecom to respond with pricing at a localised level, as it has done for other services such as residential line rentals.

[58] Telecom Unbundled Bitstream Service (UBS) User Guide, July 2005.
[59] Telecom, *Telecom New Zealand's submissions in respect of the TelstraClear UBS and backhaul application*, 16 December 2004, para. 104.

124. Telecom also submitted that it would be able to geographically differentiate its broadband pricing if it was operating in a market environment that was free of regulatory distortion. Telecom submitted that this is not the case as Telecom has a strong regulatory incentive to meet its broadband commitments. However, the broadband target only relates to residential connections. This raises the question as to why Telecom has not de-averaged its business pricing in response to competition. This is inconsistent with Telecom's claim that the 'regulatory distortion' created by Telecom's broadband commitment is a significant factor behind its national pricing, and instead suggests that, even absent its broadband commitment, Telecom would continue (and has continued) to price at a national level.

125. This is supported by comments made by Telecom at the conference on the draft determination. For example, in responding to a question whether, absent the residential broadband commitment, Telecom would geographically de-average its broadband pricing, Telecom commented that:[60]

> ... our strategic and commercial incentives are very strongly aligned with the national imperative to get broadband up. ... That's where I think the important thing is we strategically and commercially wanted to ramp up broadband uptake and de-regulated (sic) pricing is complicated and makes it difficult and slows it down. So I would say it's not connected to that {the regulatory commitment}.

126. Other pricing constraints put forward by Telecom include the mass-market nature of Jetstream services, which are marketed through national advertising campaigns and the possibility of adverse public perception of Telecom were it to geographically de-average its prices.[61]

127. When defining the geographic dimension of markets, the Commission considers a range of factors, [62] including product value and transport costs, as well as:

- the extent to which the prices of a product in different geographic areas move in unison; and
- the geographic scope and spread of advertising by market participants.

128. These factors correspond to a number of the constraints referred to by Telecom, and are, in light of Telecom's submission, indicative of a national market. In particular, Telecom appears to market its broadband services primarily at a national level. At the conference on the draft determination, Telecom noted that there is an 'underlying national advertising' campaign,[63] although there have been instances where Telecom has re-weighted its marketing at a regional level in response to competitors such as Woosh and TelstraClear.[64] Telecom also commented that geographically differentiated pricing adds considerable complexity in terms of marketing as well as

[60] Commerce Commission, Conference transcript, 4-5 July 2005, pp. 234-235.
[61] In its submission on the draft determination, Telecom clarified that it does not consider that adverse public perception would prevent it from profitably increasing its retail broadband prices by a small amount in non metropolitan areas.
[62] *See* Commerce Commission, Mergers and Acquisitions Guidelines, December 2003, section 3.
[63] Commerce Commission, Conference transcript, 4-5 July 2005, p. 235.
[64] Ibid, pp. 310-312.

operational issues such as billing. Telecom noted that national pricing is easier and more conducive to the kind of broadband uptake to which Telecom is committed.[65]

129. The above comments by Telecom suggest that geographically differentiated pricing in respect of Telecom's broadband services would be complicated from an operational perspective, particularly in terms of marketing and billing. As a result, Telecom has maintained a uniform national price for its Jetstream services.

130. The Commission considers that the relevant geographic market dimension for the purposes of this determination is national. In terms of the ability to exercise market power by raising prices, the above constraints identified by Telecom support the use of a national market as being the smallest area over which prices would be expected to be raised.

131. Although the local loop investigation defined geographic markets with reference to ESAs, market developments since the completion of that investigation support the definition of a national market in which bitstream access is supplied.[66]

132. The Commission accepts that within this national market, there will be differing levels of competitive intensity, given the localised deployment of competing infrastructure. However, the Commission's view is that a national market is supported both by market behaviour, such as pricing and marketing, and other constraints (including operational difficulties in moving away from national pricing) relating to the supply of broadband services.

Conclusion on market definition

133. The Commission adopts a national wholesale market for the provision of broadband access as the relevant market.

Competition assessment

134. The following section sets out the Commission's view on whether Telecom faces limited, or is likely to face lessened, competition in the national wholesale market for the provision of broadband access.

135. In assessing whether competition in a market is limited, the Commission considers the following factors:

Existing Competition

- the number and relative size of competitors in the market, including an assessment of trends in shares over time where possible;
- the extent to which there is product differentiation;
- the degree to which competitors engage in independent rivalry;
- the degree of vertical integration;

[65] Ibid, pp. 232-233.
[66] For a similar approach to telecommunications access market definition, see Ofcom, *Review of the wholesale local access market*, 16 December 2004, paras. 3.132-3.158.

- 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.

National wholesale market for the provision of broadband access

Existing competition

136. In the local loop investigation, the Commission concluded that the wholesale market in which bitstream access was supplied was subject to limited competition in all areas with the exception of a small number of ESAs. In those five ESAs (out of a total of more than 700 ESAs), multiple competing fixed access networks had been deployed. However, outside of those areas, deployment of alternative fixed networks was generally limited to TelstraClear fibre networks serving limited numbers of business premises.

137. In its submission on the Application, Telecom argued that the market definitions and competition assessments undertaken by the Commission during the local loop investigation are not appropriate for the current determination. In particular, Telecom submitted that the rate of deployment of broadband internet access technologies has continued since that investigation. Telecom listed more than 20 entrants who compete with Telecom in the provision of broadband access.[67]

138. A number of these operators resell services delivered over a wholesale open access network. Examples include ICONZ (who resell BCL, Wired Country, and Citylink services), Actrix (Citylink), and Wave Internet (Wired Country). Network operators include TelstraClear, Woosh, Wired Country, Pacific.net, BCL, Vector and Citylink. In total, Telecom list 12 competing broadband networks, representing a range of access technologies including cable, fibre, FWA, and satellite.

[67] Telecom, *Telecom submission on the application in respect of the TelstraClear Bitstream Application of the TelstraClear UBS and backhaul application*, 16 December 2004, Appendix B.

139. A number of these networks are present in parts of Wellington and Auckland. There has also been some regional deployment in smaller centres, especially based on FWA and satellite technology (for example the recent deployment of ipstar satellite broadband services focussing on rural customers without access to ADSL services).

140. The majority of the networks listed in Telecom's submission were also present during the local loop investigation. A number of new localised entrants have emerged more recently, based on wireless technologies. Telecom's submission refers to continuing deployment of wireless-based broadband access by operators such as Woosh and TelstraClear.[68]

141. Despite deployment of competing networks, Telecom's share of wholesale broadband access connections remains significant.[69] For example, according to Telecom,[70] the number of broadband connections to Telecom's network as of 30 September 2005 is 301,813 customers. Of this total, 246,082 were retail customers with the remaining connections supplied by Telecom to retail competitors, on a wholesale basis or under Telecom's commercial UBS offering. Telecom's broadband connection summary as of 30 September 2005 is presented in Table 3 below:

Table 3: Telecom Broadband Connections

	30 Sept 2004[71]	**31 Dec 2004[72]**	**31 Mar 2005[73]**	**30 June 2005[74]**	**30 Sept 2005[75]**	**Growth (12 months)**
Retail connections [A]	113,104	157,769	196,850	223,356	246,082	+132,978 (117%)
UBS connections	2	7,138	16,014	27,864 [B]	44282	
Wholesale connections	2,186	3,365	6,598	8,278 [B]	11449	
Total connections	**115,292**	**168,272**	**219,462**	**259,498**	**301,813**	**+186,521 (162%)**

[A] Includes Jetstream Partnering Programme.
[B] Estimate. According to Telecom, commercial UBS connections grew by 74% over the June 2005 quarter.[76]

142. Bitstream access is primarily used to provide retail broadband internet services. It is also an input into the various wholesale offerings reported in Table 3. For example, in the case of Jetstream resale, a bitstream access component is implicit in the end-to-end

[68] Telecom, *Telecom submission on the application in respect of the TelstraClear Bitstream Application of the TelstraClear UBS and backhaul application*, 16 December 2004, pp. 30.
[69] In Telecom's submission (27 August 2002) responding to TelstraClear's initial wholesale application, Telecom estimated that fixed network competitors had the potential to reach 35% of its business customers nationwide. This referred to the coverage of the competing fixed networks. The actual market share of those fixed network competitors is almost certainly significantly smaller, as Telecom continues to compete vigorously for those customers able to receive offers from competitors. A comparable figure for residential customers was not provided.
[70] Telecom Media Release, *Telecom powers past 250,000 broadband milestone,* 4 November 2005.
[71] Telecom Media Release, *Strongest Quarter yet for Broadband,* 4 February 2005.
[72] Ibid.
[73] Telecom Media Release, *Broadband numbers continue to swell*, 6 May 2005.
[74] Telecom Media Release, *Telecom powers past 250,000 broadband milestone*, 4 November 2005.
[75] Ibid.
[76] Telecom Media Release, *Telecom delivers strong mobile performance in full year result*, 5 August 2005.

service being resold. Telecom's commercial UBS offering is specifically a bitstream product. Therefore, in considering the market in which bitstream services are supplied, it is appropriate to aggregate Telecom's retail and wholesale broadband connections. As noted above, these amounted to just over 300,000 connections as of September 2005,[77] compared to 115,000 connections in September 2004.

143. As noted above, there are a number of other network operators in New Zealand providing broadband access. Some of these operators are vertically integrated, such as TelstraClear, while others have a wholesale or open-access model and provide access to service providers, who in turn deliver retail services to end-users. Open-access networks include those deployed by BCL, Wired Country, and Vector.

144. TelstraClear provides broadband access over its cable network to residential and business customers. Information provided by TelstraClear to the Commission shows that TelstraClear's on-net broadband customer base
[

]TCLRI.[78] However, the Commission notes that although TelstraClear's on-net customer base has been increasing, its addressable market will remain constrained by its geographically limited access network.

145. The Commission considers that the functionality and cost limitations of FWA technology will confine its role as a competitive platform for broadband internet access for the foreseeable future. Although FWA is currently deployed throughout parts of New Zealand[79], the advances in services being delivered over higher capacity fixed broadband infrastructure suggest that FWA is limited in its ability to act as a widespread constraint. As end-user applications demand more and more bandwidth over time, the economics of FWA may come under greater pressure.[80]

146. In this determination, the Commission is concerned with the state of competition over a limited two year period. In giving limited weight to the potential of FWA to act as a

[77] If retail connections were instead used, those retail services supplied by Telecom's competitors that rely on access to Telecom's network (such as through resale or commercial UBS) would be limited in their ability to engage in independent rivalry.
[78] In addition to these on-net totals, TelstraClear also provides retail services by reselling Telecom's Jetstream service.
[79] Woosh is expanding its network in Auckland, Wellington, Christchurch and Southland, and is planning further rollouts in cities such as Dunedin and Hamilton. Other operators such as Ihug, Watchdog, Packing Shed and Wave supply retail broadband products in Auckland, Pukekohe and Hamilton, using the Wired Country network, while ICONZ supplies SDSL services based on the BCL network.
[80] This trend is becoming apparent when recent offerings by Woosh and Telecom are compared. Both operators offer a product with a 10Gb monthly cap. Both services are priced at $69.95 per month (the Telecom service is for Telecom home line and calling customers. For customers who take direct dial calling from another supplier, the broadband service is priced at $79.95 per month). However, the Woosh service has a download speed of 250 kbps, whereas the Telecom service has a download speed of 2000 kbps. In other words, the Woosh price/bandwidth ratio is currently 0.28, while the Telecom ratio is 0.035 (or 0.04 where direct dial calling is excluded).

constraint on fixed suppliers of broadband access during that period, the Commission recognizes that emerging technologies such as WiMax and increasing enhancements to the reach and speed of FWA networks may shift the competitive boundaries in the longer term.

147. In terms of the number of customers served using fixed wireless broadband access, one estimate placed the number at around 15,000 customers at the end of 2004.[81] The majority of these customers appear to be supplied by Woosh. For example, in February 2005, Woosh reported a customer base of around 10,000 customers.[82] By the end of July 2005, the number of Woosh customers had increased to 15,000, with Woosh estimating that it has a market share of around 30% of broadband customers in those areas covered by its network.[83]

148. Information has been provided by a number of other broadband network operators. For example, Wired Country has deployed a wireless/fibre network throughout the Auckland and Hamilton regions, and offers broadband services through a number of retail service providers.
[

] WCRI

149. BCL also offers broadband services through retail service providers. BCL's Extend network has been designed to provide wireless broadband access to rural and provincial regions. While BCL's coverage does to some extent overlap with areas served by Telecom's ADSL-based services, it also appears that BCL's broadband service is used to complement areas which are not able to receive an ADSL service. For example, Xtra is one of the ISPs which offer BCL's Extend broadband service, and markets the 'Xtra Wireless' service as an option where Xtra Jetstream is not available.[84]

150. BCL has informed the Commission that it has [ ] BCLRI connections at present to its EXTEND network, compared to [ ] BCLRI in February 2005.

151. A number of smaller network operators also offer broadband services in parts of New Zealand. These include Vector, Citylink, ThePacific.net, and nzwireless, among others. The Commission has included an estimate of customers connected to these smaller networks. Satellite services, such as the IPStar service, are also available in New Zealand, although these services are typically targeting customers who cannot receive ADSL-based services, such as those in rural areas.

152. Table 4 summarises estimated broadband connections in New Zealand, split between Telecom and other broadband operators.

[81] http://www.researchandmarkets.com/reports/c11974/.
[82] Woosh media release, *Woosh continues its network expansion*.
[83] Woosh media release, *Woosh Wireless celebrates customer milestone*.
[84] http://jetstream.xtra.co.nz/chm/0,,203313-202321,00.html.

Table 4: Total broadband connections in New Zealand

	Dec 2004	Jun 2005	Sept 2005	ΔDec 2004-Sept 2005	Δ%
Connections:					
Telecom	168,272	259,498	301,813	+133,541	+79%
TelstraClear[A]	[ ]TCLRI	[ ]TCLRI	[ ]TCLRI	+[ ]TCLRI	+[ ]%TCLRI
Woosh[B]	10,000	15,000	15,000	+5,000	+50%
Others (est)	[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI
Total	195,275	295,415	340,699	+145,424	+74%
Share:					
Telecom	86.2%	87.8%	88.6%	91.8%	
TelstraClear	[ ]%CRI	[ ]% CRI	[ ]%CRI	[ ]%CRI	
Woosh	5.1%	5.1%	4.4%	3.4%	
Others	[ ]%CRI	[ ]%CRI	[ ]%CRI	[ ]%CRI	
Total	100%	100%	100%	100.0%	

[A] Figures as of Jan and Jul 2005; [B] Figures as of Feb and Jul 2005; [C] Figures as of Feb and Aug 2005.

153. Based on the above customer numbers, the Commission estimates that the total number of broadband connections in New Zealand increased from 195,275 connections in December 2004,[85] to 295,415 by June 2005, and to 340,699 by September 2005. This represents an increase of around 74% over the nine months to September 2005.

154. Telecom is estimated to have had around 89% of broadband connections in New Zealand as of September 2005 when FWA is included. Telecom's 89% share of broadband connections is an aggregation of its retail broadband connections with its wholesale and commercial UBS connections. In terms of the retail level only, Telecom has 246,082 connections, which represents an estimated retail market share of 72%.

155. Given Telecom's relatively rapid broadband connection growth (79% over the nine months to September 2005), its 89% share of total connections represents a slight increase in the estimated Telecom share of broadband connections, which stood at 86% in December 2004.

156. During the local loop investigation, TelstraClear commented on its forecasts for broadband growth over the medium term:[86]

[85] The estimates in the table are generally consistent with OECD figures for DSL, cable, and other broadband connections in New Zealand. For example, according to the OECD, New Zealand had a total of 191,695 broadband subscribers as of December 2004, with around 89% of these (or 171,000) being DSL customers. OECD Broadband Statistics, December 2004. By June 2005, the OECD's estimate of the DSL share in New Zealand was around 93%. As Telecom is the only DSL network operator in New Zealand, the DSL share is an approximation of Telecom's share of total broadband connections.

[86] Letter from TelstraClear (Forsyth) to Commission (Webb), 3 July 2003. The Commission requested that this material from TelstraClear be used in these proceedings and is under the confidentiality order dated 9 November 2005.

[

]TCLRI

157. During those proceedings, TelstraClear also indicated that it [
]TCLRI, and that:

[

]TCLRI

158. The number of broadband connections in New Zealand has increased significantly in recent years. Telecom in particular has been rapidly increasing the number of retail broadband subscribers connected to its network, from around 39,000 retail subscribers in June 2002,[87] to 223,356 customers as of June 2005[88], and further to 246,082 in September 2005[89]. When wholesale and commercial UBS customers are included, a total of 301,813 subscribers are supplied with broadband connections using Telecom's network. This represents an increase of 162% over the 12 months to September 2005.

159. The number of customers served by wireless operators such as Woosh has also increased recently. For example, as noted above, Woosh currently serves around 15,000 customers, up from 10,000 customers in early 2005. It appears that this growth reflects increasing levels of coverage, as well as increasing penetration, with Woosh claiming a 30% share of new connections in the coverage area. Further expansion in coverage is likely to continue, with a recent announcement that Woosh is purchasing 180 additional base station units.[90] These units are to be used to increase the capacity available on Woosh's 80 existing cell sites, as well as to extend its network coverage into new areas.[91] Woosh has also recently launched a commercial voice service bundled with its broadband service.[92]

160. Although such growth is likely to be moderate as earlier growth is from a relatively small base, this does suggest that FWA operators in particular are reaching increasing numbers of potential customers throughout New Zealand.

161. Therefore, there are an increasing number of network competitors supplying broadband services in New Zealand, along with growth in the intensity of retail competition from ISPs reliant on Telecom's wholesale products.

[87] Telecom Annual Report 2002, p. 33.
[88] Telecom Media Release, *Broadband numbers continue to swell*, 6 May 2005.
[89] Release, *Telecom powers past 250,000 broadband milestone*, 4 November 2005.
[90] Woosh media release, *Woosh continues its network expansion*.
[91] The Line, 15 April 2005.
[92] Woosh media release, *Woosh rings up phone services*.

162. While a number of competing suppliers have emerged, a large share of customer connections remains concentrated on Telecom's network, and there is some evidence that Telecom's relative market share has been increasing in recent years. This can be seen by considering recent broadband connection growth in New Zealand (Table 4). Over the nine months to September 2005, it is estimated that total broadband connections in New Zealand increased by around 145,000 connections, of which just over 133,000 connections were accounted for by Telecom. In other words, Telecom secured around 92% of this recent growth in total connections.

163. The Commission also notes that competing fixed networks are likely to remain geographically limited, while FWA networks which are being deployed throughout parts of New Zealand may be limited in terms of supplying more bandwidth-intensive end-user applications over time. In addition, at least in the case of some suppliers such as BCL, FWA is being used to target more remote areas which are not currently served by DSL broadband services or receive a DSL service of a diminished quality. By comparison, Telecom's local loop infrastructure over which bitstream services are delivered is ubiquitous. While Telecom still has to invest in equipment such as DSLAMs in order to be able to offer increasing broadband penetration, it is able to do so over its existing ubiquitous access network. This suggests that Telecom's market share of broadband connections is unlikely to be significantly eroded over time.

164. In addition to market shares and movements in market shares, the existence or otherwise of any barriers to customer switching is an important consideration. In this regard, the Commission notes that Telecom's pricing of its commercial UBS offering initially included a churn fee of $101.75 for residential and $105.50 for business. Telecom has recently reduced the commercial churn fee to $36.42.[93] The churn fee applies where an access seeker signs up an existing Telecom retail customer.

165. Telecom argues that it has significantly reduced its residential and business broadband prices and improved service quality since the completion of the local loop investigation. In addition to price reductions, Telecom has also increased the monthly data caps applying to a number of its Jetstream products.

166. For example, Telecom refers to Jetstream pricing reductions that have occurred since late 2000, when the minimum price was $89.[94] Telecom quotes the following plans as evidence of these price reductions:

[93] Letter from Telecom (Butler) to Telecom wholesalers, 9 May 2005.
[94] Telecom, *Telecom New Zealand's Submission in respect of the TelstraClear UBS and backhaul application*, 16 December 2004, para. 140.

Table 5: Telecom Pricing Comparison

September 2003	Data Cap	Price
Xtra Jetstream Home 256K	500 MB	$49.95
(256K/256K)	1 GB	$59.95
	2 GB	$69.95
March 2004		
Xtra Jetstream Surf	1 GB	$39.95
(256K/128K)	3 GB	$49.95
	Flat rate	$69.95

167. According to Telecom,[95]

> ... these market changes show that Telecom is responding to the government's aim to grow penetration of broadband services and to the active competition it faces, particularly from wireless competitors.

168. The plans referred to in Table 5 have relatively low downstream speeds of 256 kbps, although the speed of the earlier plan priced at $89 is unclear. Telecom announced its entry-level Jetstart plan (128 kbps) in December 2000, with a monthly price of $29.95.[96]

169. However, Telecom has introduced a number of new services, and for a number of existing services, Telecom has increased the value per dollar through price reductions and increased data caps for customers. This includes significant pricing reductions for business services in particular.[97] This is likely to, at least in part, be a response to competitive developments, including those utilising FWA technology.

170. It is also likely that the proposed designation of a bitstream service resulting from the Commission's investigation and the launch of Telecom's commercial UBS offering may have provided some stimulus for these price reductions. This is based on the timing of the reductions, given that a number of the wireless deployments and announcements of FWA extensions had been in place for some time prior to the recent price reductions referred to by Telecom.

171. The Commission considered this issue in its final local loop unbundling report. The Commission noted that Telecom had previously responded to fixed network competition by reducing its prices on a geographic basis as soon as that competition emerged (or even prior to the activation of competing network, as was the case in Christchurch):[98]

[95] Ibid, para. 142.
[96] Telecom Media Release, *Telecom to introduce Jetstart Fast Internet Service*, 8 December 2000. Until the introduction of Jetstart, the Jetstream plans are understood to have had download speeds of 2 Mbps. This suggests the comparison in Telecom's submission may involve plans of considerably different speeds.
[97] Telecom Media Release, *New broadband plans deliver savings to businesses*, 8 June 2005.
[98] Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, December 2003, para. 391.

> These are examples of the way in which Telecom has responded on price to the entry of TelstraClear. In the case of the new residential pricing introduced in early 2001, this response actually pre-empted the commercial offering of TelstraClear.

172. The Commission then considered the response of Telecom to the emergence of BCL and Woosh, noting that the response (as of that date) had been relatively muted. A new 256 kbps service had been introduced in September 2003, and Xtra's monthly Jetstream prices were reduced by $10.[99]

> However, no changes have been made to the pricing of Telecom's residential Jetstream-only plans, despite the entry of two FWA networks. In addition, it does not appear that Telecom has altered any of its Jetstream business plans.
>
> That is not to say that Telecom will not respond in some way in the future. However, at this stage, the emergence of two FWA platforms does not appear to have initiated a significant competitive reaction from Telecom. This is compared to its previous response to local fixed access network competition, for example in Wellington and Christchurch.

173. Telecom's recent price reductions and introduction of new services have taken place against a backdrop of some competitor developments as well as proposed and actual regulatory intervention. It therefore appears that Telecom has reduced a number of its prices over time, and that these reductions are likely to have been in part a response to emerging competition.[100]

174. It is also likely that in setting a national price at both the wholesale and retail level, Telecom has balanced constraints from competitors in some geographic areas with the relative absence of constraints in other areas. The resulting prices would not be expected to fully reflect the constraints existing in areas with more competing access networks. The availability of competitive higher speed and symmetrical services in some areas has not driven the availability of equivalent functionality in Telecom's national service.

Potential competition

175. The nature and the height of the barriers to entry into this market depend on the form of that entry. There are a number of technologies that are used to deliver broadband internet access. For example, a new facilities-based entrant could use either fixed infrastructure such as fibre loops, or wireless infrastructure such as FWA, to provide broadband access services.

176. A significant entry barrier to the deployment of a fixed local loop network is the extent of sunk costs. These costs largely relate to the digging of trenches to house the fibre cables, or alternatively the hanging of such cables from poles. Once these costs have been incurred, they cannot be recovered upon exit from the market.

177. In considering the barriers to network deployment, the ACCC has previously noted that:[101]

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[99] Ibid, paras. 395-396.
[100] E-mail from Telecom (Williams) to Commission (Abbott), *Changes to Xtra Broadband Adventure pricing*, 4 November 2005.
[101] ACCC, *Declaration of local telecommunications services*, July 1999, p. 48.

> … the sunk nature of the customer access infrastructure increases the riskiness of that investment. Modelling work by Commission consultants indicates that trench and cable costs account for about 70 per cent of the costs of building a new fixed customer access network. Both these and, in particular, trench costs are likely to be sunk to a large degree. This means that investment in alternative customer access networks is difficult to reverse without incurring large losses due to the limited alternative uses for the investment.

178. Although these costs tend to be lower in the case of aerial lines, the deployment of an overhead network is likely to require additional consents. Even in relatively densely populated residential areas such as Auckland, new entry has not eventuated, TelstraClear has in the past experienced difficulties and delays in obtaining the necessary consents to deploy such a network. The costs associated with obtaining such consents are irrecoverable. The consent process is also likely to delay any new entry.

179. A second type of entry barrier is the presence of economies of density in a wireline access network. Given the high level of fixed costs in an access network, increasing the number of subscribers or traffic reduces unit costs. Unless a new entrant can capture a significant share of the market, it is likely to operate at a higher unit cost, and this is likely to limit the prospect of new entry.

180. In examining the barriers to new entry into the access market, Oftel identified sunk costs and economies of scale as important factors:[102]

> BT's economies of scale and scope, which are not available to the entrant, may reinforce its strategic advantage. The economies of scale and scope are, in part, due to the ubiquity of BT's network and legacy effects derived from its former monopoly status. The effect of these is to lower the marginal costs faced by BT. From the point of view of a potential entrant, it is less profitable to compete with an incumbent firm who has a lower rather than higher marginal cost level, because the incumbent is likely to compete more aggressively the lower its marginal costs. Thus, the economies of scale and scope mean that the risk of not recovering sunk entry costs is greater and the strategic entry barrier is more effective.

181. The continuing recent deployment of FWA by operators such as Woosh suggests that some of the above entry barriers may not be as significant for wireless entry. In particular, entry using FWA avoids some of the significant sunk costs involved in rolling out a wireline access network.

182. The Commission considers that further fixed wireless deployments are likely in the near term. However, there are limitations in terms of both satellite and FWA-based services being able to compete with fixed broadband services such as ADSL, particularly with respect to increasingly bandwidth-intensive services.

183. New entry is emerging through the continuing deployment of FWA and satellite, although during the period of this determination, the Commission expects that the portion of the market contestable by these technologies will be constrained by limitations of coverage, bandwidth, and in the case of satellite, significantly higher pricing.

[102] Oftel, *Final direction on LLU backhaul services*, 8 August 2002, para. B59.

Conclusion on competition assessment

184. In summary, there are a number of competing suppliers of broadband access, using a range of technologies. In addition to Telecom's ADSL-based services, competitors offer broadband access across cable and fibre networks, fixed wireless and by satellite.

185. Telecom's share of broadband connections remains high, at an estimated 89%, and there is some evidence that this share has been increasing in recent years. This is despite the emergence of FWA providers in particular, who can relatively rapidly deploy networks.

186. Telecom's prices have declined in recent years, and non-price terms such as monthly data caps, have also improved. The Commission considers that this is likely to be in part a response to the emerging competitors in this market, and the regulatory environment.

187. Given the barriers to entry and expansion that remain for fixed network operators, and the limitations of FWA technology, and the limited capacity and significantly higher pricing of satellite, the Commission concludes that Telecom faces limited competition in this market.

Conclusion on markets and competition assessment

188. The market relevant to this Application is a national wholesale market for the provision of broadband access.

189. The Commission considers that Telecom faces limited competition in that market.

CHARACTERISTICS OF THE BITSTREAM ACCESS SERVICE

190. This section sets out the Commission's conclusions as to the characteristics of the services to be supplied to TelstraClear.

191. The Commission has issued a draft determination, a revised technical specification and a further consultation statement for comment. In addition to receiving written submissions on these documents, the Commission has considered material provided at the Commission's conference and two technical workshops held with the Parties.

192. The Commission has focussed on the following characteristics of the service:

(A) The downstream speed for data traffic sent to the end-user;

i. the Peak Information Rate ('PIR');
ii. the Sustained Information Rate ('SIR');
iii. spectrum management rules; and
iv. line qualification database.

(B) the upstream speed;

(C) equivalence and the sharing of a single virtual path;

(D) whether interleaving should be optional;

(E) whether usage limits for data apply; and

(F) whether static IP addresses should be available.

Downstream Speed Configuration

193. The service description in the Act does not limit the downstream speed of the regulated bitstream access service. However, Telecom submitted that the availability of bitstream access with an unconstrained downstream speed would result in interference to the broadband service available to other users sharing that same cable route, resulting in a significant number of end-users suffering degradation, or loss, of service.

194. In determining the downstream speed of the service, the Commission has considered the appropriate setting for the PIR and the SIR. The PIR and SIR are quality of service settings, which determine the data rates under uncongested and congested network conditions. The PIR sets the maximum rate at which the data can flow on uncongested networks, while the SIR sets the minimum data rate that the service can fall back to in the case of data congestion.

195. The Application requested that:

(b) Telecom should not apply rate shaping to the Wholesale bitstream service unless otherwise required by TelstraClear in accordance with this paragraph. TelstraClear should be able to choose between two configurations when ordering a wholesale bitstream service:

(i) a wholesale bitstream service to the maximum speed of which the relevant DSLAM is capable without any rate shaping by Telecom. TelstraClear may undertake rate shaping of the wholesale bitstream service to configure the combination of upstream and downstream speeds it considers appropriate for its downstream ADSL services; or

(ii) a wholesale bitstream service which Telecom rate shapes to the configuration of upstream and downstream speeds nominated by TelstraClear, provided that the speeds are consistent with the "limitations on access principles" prescribed in the bitstream designated service and do not exceed the maximum speed of which the relevant DSLAM is capable. Without limiting this requirement, the rate-shaping options to be initially made available by Telecom should include:[103]

Downstream	Upstream
256 kbps	128 kbps
512 kbps	128 kbps
1 Mbps	128 kbps
2 Mbps	128 kbps
8 Mbps	128 kbps

196. TelstraClear noted that (b)(ii) above 'is intended as a fallback if the Commission rejects TelstraClear's request for non rate-shaped service'.[104]

197. The Commission stated in the draft determination that:

1. The Commission is satisfied that a bitstream service with a non rate-shaped downstream speed, and an upstream speed limited to 128kbps, as requested by TelstraClear, falls within the designated bitstream access service description.[105]

2. The result will be that TelstraClear will obtain a bitstream access service to the maximum downstream speed of which the relevant DSLAM is capable. Accordingly, the Commission does not consider it necessary to require access to the other downstream/upstream speed variations specified in paragraph 16.2 of the Application. TelstraClear may use the 'raw' bitstream to perform rate-shaping to provide the variants of downstream speed it requires.

3. The Commission directs that Telecom should apply rate-shaping to the bitstream service in respect to the upstream speed of 128kbps only. Telecom may not apply rate-shaping to the downstream speed, as the bitstream access service should be provided to the maximum capacity of each DSLAM.

[103] TelstraClear Application, *Section 20: Application for Determination for Designated Access Services,* 4 November 2004, para. 16.2, pp. 6 – 7.
[104] TelstraClear, *Cross submission in respect of the TelstraClear UBS and backhaul application,* 28 January 2005, Appendix B, p. 76.
[105] This view is also consistent with earlier statements that the regulated service includes all downstream speed variants capable of being supported by the network. Refer to Commerce Commission, *Statement on Unbundled Bitstream Service,* 10 September 2004.

198. In its submission on the draft determination, Telecom elaborated its concerns regarding potential noise, interference, and service degradation which may result from the regulated service.[106]

199. As at September 2005, Telecom provided [ ]TCNZRI retail Jetstream customers with unconstrained downstream speeds. Telecom submitted that it was moving away from offering unconstrained services due to the detrimental impact of noise which is aggravated by higher speeds and higher volumes.[107] Telecom also advised of its intention to undertake [

]TCNZRI [

]CRI

200. Full speed plans are still being offered by Telecom to new and existing customers. Moreover, the full speed plans are those that are more likely to be affected by increased noise in the cable sheath as they are more sensitive to increases in noise than the lower speed plans.

201. Noise is not solely the result of high speed ADSL services, and can occur from electromagnetic impulses, wiring within the home, splicing on the cable route, and interference from other power sources in close proximity to the cable sheath. An additional factor affecting reach of a copper pair is attenuation on the line. In effect this means the further an end user is from the DSLAM, the lower the speed that the end-user is able to achieve. Attenuation will occur regardless of the level of noise on a given copper line, and is a consequence of the length of copper and the bitstream speeds it will be able to support. This has been illustrated by TelstraClear[108].

202. At the conference, Telecom provided an estimate of the number of lines that may be excluded from accessing a DSL service based upon the non rate-shaped service specified in the draft determination.[109] The Commission requested that Telecom provide full details as to the assumptions used, identity of the exchange that was used as a purportedly representative exchange, the calculations used to derive the number of lines, and the number of existing users of Jetstream services which form the number of lines Telecom believed would be excluded from receiving DSL services.[110]

203. The Commission was not satisfied that robust conclusions could be drawn as to the nature and extent of the spectrum management risk based on the customer data presented. TelstraClear also argued that there may be issues with the quality of the representative sample of affected users provided by Telecom.[111]

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[106] Telecom, *Telecom New Zealand's Submission in respect of the TelstraClear Bitstream draft determination*, 20 May 2005.
[107] Ibid, paras. 70-79.
[108] TelstraClear, *TelstraClear Cross Submission in respect of the TelstraClear Bitstream draft determination*, 8 June 2005, para. 51.
[109] Commerce Commission, Conference Transcript, 4-5 July, section 18.
[110] Ibid, section 35.
[111] Ibid, section 95.

204. In preparation for the workshop on 21 and 22 July 2005, the Commission provided a technical specification for bitstream access which sought to address the spectrum management risk.[112] At the workshop, the Parties attempted to define and quantify the spectrum management issues associated with an unconstrained downstream DSL service. In particular, the Parties made submissions on the relative effects of internal interference (near-end and far-end cross talk) and external interference (such as electric fences) that might lead to degradation or non-supply of ADSL services for customers at the end of long lines.

205. The Commission assessed the Telecom and TelstraClear models that sought to quantify the risk arising from unconstrained services on reach. The Commission is not satisfied that either model is sufficiently robust to predict the likely effect of unconstrained services.

206. The Commission does not consider that TelstraClear's modelling provides sufficiently robust analysis for the following reasons:

(i) The results are based on Australian Communications Industry Forum ('ACIF') measured data from the Australian cable access network. The differing topology between New Zealand and Australia renders the data unreliable;
(ii) The results are based on the use of a different reference frequency to that used by Telecom, and so the two sets of results are unable to be compared directly;
(iii) The results do not confirm that Bit Rate Limiting ('BRL') is more effective than Worst Case Spectral Mask ('WCSM') or prove that
(iv) it is less effective; and
(v) There are no results based on different cable configurations – cables are assumed to all be of the same length.

207. Likewise, Telecom's model contains a number of deficiencies that mean that the Commission is unable to rely on those conclusions. The deficiencies include:

(i) The purpose built modelling simulator is not an industry standard and has not been independently verified;
(ii) The results are based on the use of a different reference frequency to that used by TelstraClear, and so the two sets of results are unable to be compared directly;
(iii) NEXT has been omitted from victim throughput analyses, and an unfair comparison is made with that of the WCSM benchmark which includes both NEXT and ISDN interferers.
(iv) Comparison is drawn between the dynamic simulation of throughput using BRL with the WCSM approach is inconsistent; and
(v) The analysis provides only a limited number of bit rates (3.5Mbps and 6Mbps).

208. Both models contain significant deficiencies, such that the Commission is unable to rely on either model to accurately predict the effect an unconstrained bitstream access service would have on existing and future end-users, and the effect of Telecom's current full-speed services.

[112] Letter from Commission (Borthwick) to Telecom (Oakley) and TelstraClear (Forsyth), *TelstraClear Bitstream Application, OSS and Technical Workshop Agenda and Questions*, 14 July 2005.

Revised Technical Specification

209. Having reviewed the information provided following the draft determination, the Commission considered whether it could mitigate potential spectrum management risks, by constraining the downstream PIR to 3.5Mbps consistent with Telecom's own preferred approach to network management. Accordingly, the Commission issued a revised technical specification on 30 August and sought comment from the parties.[113]

210. The approach suggested by the Commission was to set the PIR to either:

> a. 3.5 Mbps; or
> b. any speed above 3.5 Mbps where Telecom introduces an internet-grade best efforts service with a downstream PIR in excess of 3.5 Mbps on a common route; or
> c. the maximum feasible PIR where a line route qualification check confirms availability of a downstream speed PIR exceeding 3.5 Mbps on a common cable route.
>
> Except that where Telecom has limited capacity between the ATM switch and the DSLAM, the PIR is set to the maximum capacity available for dimensioning between the ATM switch and the DSLAM.

211. In response to a request from Telecom, the Commission provided the following clarification in respect of this proposed technical specification,[114] primarily relating to the maximum feasible downstream PIR (option (c) in paragraph 210):

> i) The maximum feasible PIR is set according to a constrained service.
>
> ii) The maximum feasible PIR would be a finite number of different PIRs. It would be either (i) a single PIR (for example 7.6Mbps); or (ii) a small number of PIRs for those lines which support higher speeds than 3.5Mbps (but lower than 7.6Mbps for example).
>
> iii) Where a route qualification check confirms availability of a downstream PIR exceeding 3.5Mbps on a common cable route, Telecom would be required to provide the maximum feasible PIR based on technology utilised on that route as at the date of TelstraClear's request.
>
> iv) All customers must be able to sync to 3.5Mbps where feasible. This will be subject to constraints due to attenuation, noise, and technical limitations.
>
> v) Where the PIR is amended as a result of a route qualification check, all other service specifications (upstream speed, SIR, shared VP) would remain unchanged.

[113] Commerce Commission, *Proposed technical specification request for comment*, 30 August 2005.
[114] Letter from the Commission (Abbott) to Telecom (Oakley), *Short consultation on UBS technical specification*, 5 September 2005.

Submissions from parties on the revised technical specification

Peak Information Rate ('PIR')

212. Telecom submitted that the baseline 3.5Mbps service and the enhancements to the baseline service based on Telecom's launch of new internet grade best efforts services with PIRs greater than 3.5Mbps were workable, subject to some modifications which Telecom detailed.[115]

213. The modifications Telecom proposed were in respect of a scenario where a given line is unable to synchronise up to the PIR of the regulated service.[116] This may be because either:[117]

i) The lines are connected to Conklin DSLAMs with transport of less than 4Mbps; or
ii) the lines are too long (attenuation).

214. Telecom submitted that the best way to deal with this scenario is to set a PIR which is determined by the line synchronisation rate.[118] This would take into account the achievable line speed, and an appropriate overhead.

215. However, Telecom did not consider that the enhancements to the baseline service based on line route qualification analysis were workable.[119] Telecom argued that there were a number of difficulties in provision of a line qualification database:[120]

i) Quality issues associated with use of the AM/FM database – 90% accurate at best;
ii) Line traces on the AM/FM database are highly labour intensive and costly [ ] TCNZRI;
iii) Development of an automated line qualification would likely cost in excess of [ ] TCNZRI, and the expected volume of line qualification tests is unknown;
iv) Ongoing changes in network topology may render a line qualification database out of date, and the database will require constant updating to ensure accurate automated line tests.

216. TelstraClear submitted that a PIR constrained below the theoretical maximum is not necessary. Therefore, TelstraClear argued that the PIR should be set to 7.6Mbps or higher when Telecom improves its technical capability.[121] However, given Telecom's concerns regarding spectrum management and the lack of available information, TelstraClear suggested that it would accept an initial PIR of 3.5Mbps for all lines, [122] on the basis that Telecom would be required to develop an efficient line qualification tool and make it available to TelstraClear within six months. Once the line qualification tool was available, the standard PIR of the bitstream service would

[115] Telecom, *Telecom New Zealand's Submission in respect of the proposed technical specification of the Bitstream Access Service*, 9 September 2005, p. 7.
[116] Telecom, *Telecom New Zealand submission in respect of the Commission's Proposed Technical Specification 30 August 2005*, 9 September 2005, para 40-44.
[117] Ibid.
[118] Ibid.
[119] Ibid, p. 15.
[120] Ibid, p. 18-20.
[121] TelstraClear, *TelstraClear submission in respect of the Commission's Proposed Technical Specification 30 August 2005*, 12 September 2005, p. 3.
[122] Ibid, p. 4.

become 7.6Mbps, unless the line qualification tool showed that the line could only support a lower speed without causing unreasonable interference to other lines.

217. Ihug[123] and InternetNZ[124] submitted that the default PIR should be as fast as the line could support and, if a particular line could not deliver 7.6Mbps, then the modem should drop back to the next highest possible speed. Both Ihug and InternetNZ supported the need for a line qualification check to identify a theoretical line speed for the line.

218. TelstraClear and Ihug agreed that where Telecom had limited capacity between the DSLAM and the ATM switch, the PIR should be set to the maximum capacity available for dimensioning between the DSLAM switch and the ATM, provided that this capacity was not less than Telecom provisions for itself.

Telecom's Full-Speed Jetstream Plans

219. Telecom submitted that the availability of an unconstrained bitstream service would lead to degradation of ADSL service to some customers on long lines, and that Telecom, through its strategy of bit rate limiting, was able to manage cross-talk interference to maximise the availability of broadband services to customers.

220. Telecom currently provides a range of full-speed Jetstream services where the downstream speed is between 2Mbps and 8Mbps. Telecom also offers a range of other broadband services such as One Office, where some plans have high speeds similar to that of full-speed services. [125]

221. Telecom does not have specific business rules at the retail level, or for internal provisioning purposes, to mitigate potential spectrum management risks associated with full-speed services.[126] Telecom submitted that it is moving away from full speed services and that the substantially higher pricing has acted as a constraint to their uptake.[127] Telecom provided subscriber numbers for full-speed services by month:

[123] Ihug, *Ihug submission in respect of the Commission's Proposed Technical Specification 30 August 2005,* 9 September 2005, p. 1.
[124] InternetNZ, *InternetNZ submission in respect of the Commission's Proposed Technical Specification 30 August 2005,* 16 September 2005, p. 10.
[125] Spectrum management risks are independent of the type of broadband service as these risks are the result of the technology.
[126] Letter from Telecom (Oakley) to Commission (Abbott), *TelstraClear Bitstream Service – Request for additional information,* 26 September 2005.
[127] Telecom submission, 27 October 2005, p. 5.

Table 6: Jetstream Business Full Speed Plans [128]

Month	Aggregate Number of full-speed services	% change
Oct 04	[ ]TCNZRI	
Nov 04	[ ]TCNZRI	[ ]TCNZRI
Dec 04	[ ]TCNZRI	[ ]TCNZRI
Jan 05	[ ]TCNZRI	[ ]TCNZRI
Feb 05	[ ]TCNZRI	[ ]TCNZRI
Mar 05	[ ]TCNZRI	[ ]TCNZRI
Apr 05	[ ]TCNZRI	[ ]TCNZRI
May 05	[ ]TCNZRI	[ ]TCNZRI
Jun 05	[ ]TCNZRI	[ ]TCNZRI
Jul 05	[ ]TCNZRI	[ ]TCNZRI
Aug 05	[ ]TCNZRI	[ ]TCNZRI
Sep 05	[ ]TCNZRI	[ ]TCNZRI
Overall Change		[ ]TCNZRI

Figure 1: Aggregate Telecom Fullspeed Jetstream Services Oct 2004 – Sept 2005

[

] CRI

222. Telecom submitted that while full-speed services represented 53% of the total retail Jetstream connections in 2003, they now represent 16% of the total.[129] The Commission considers that this change is a likely result of the recent uptake of mass market plans relative to the business plans. While total demand for these full-speed services declined between October 2004 and September 2005, Telecom continues to provide these services to a significant number of existing customers, and new

[128] Aggregated from Jetstream fullspeed plans 600, 1200, 1800, 3000, 5000, 10000, 20000 and 30000.
[129] Letter from Telecom (Oakley) to Commission (Abbott), *TelstraClear Bitstream Service – Request for additional information*, 26 September 2005.

customers continue to be able to purchase full-speed services subject to the capability of their line to support the service.

223. The demand for higher speed services is evident with the significant number of Telecom full-speed service customers, who continue to purchase these services despite the availability of lower speed plans at considerably lower prices.

224. While a risk exists that an unconstrained service may lead to reduced reach to some customers, the Commission considers that the risk would be materially the same irrespective of whether an unconstrained service was provided to an end-user by Telecom at a retail level, or by an access seeker using bitstream access. Telecom's full-speed services remain available to new customers notwithstanding the risk that supplying that new customer with an unconstrained service might degrade the service available on other lines in the same binder.[130]

Statement for Consultation 12 October

225. On 12 October 2005, the Commission issued a Statement for Consultation and sought comment from the Parties. That statement concluded that the long-term benefits to end-users of bitstream access with an unconstrained downstream PIR would likely exceed the incremental risk that an additional unconstrained circuit might interfere with other circuits.

226. The Statement for Consultation noted that if Telecom developed fit-for-purpose spectrum management rules to mitigate the risk, Telecom could, subject to the Commission's approval of those spectrum management rules, require that all new bitstream access service connections thereafter comply with those rules.[131] The Commission would require that the spectrum management regime be applied in the same manner to Telecom connections as for those of the access seeker.[132]

227. The use of dynamic spectrum management to optimise network utilisation over the longer term would be likely to balance competing objectives of the availability of higher speed services against degradation of service to marginal customers.[133] Telecom has previously acknowledged that dynamic spectrum management is the future direction of methods for spectrum management.[134]

228. The Statement for Consultation proposed that the PIR be set to the maximum theoretical line rate that the DSLAM could support excluding allowances for DSL overheads. Using current technology, that PIR value would be approximately 7.6 Mbps with lower PIR values for some mini-DSLAMs due to technical limitations. The maximum PIR could increase in the future as Telecom utilises new network

[130] Letter from Telecom (Oakley) to the Commission (Abbott), *Request for Additional Information,* 26 September 2005.
[131] Commerce Commission, *Statement for Consultation,* 12 October 2005, p. 3.
[132] Ibid.
[133] Ibid, p. 2.
[134] Commerce Commission, *TelstraClear Bitstream Conference transcript*, 4-5 July 2005, Dr L. Garth p. 103.

technologies for the delivery of ADSL services.

229. In the Statement for Consultation, the Commission concluded that the development and evolution of the broadband market in New Zealand has revealed significant demand for higher speed services and diversity in broadband service characteristics. Consumer demands are increasing, requiring larger amounts of data to be downloaded faster, and a growing number of uses for high speed data.

230. Telecom disagreed that the benefits to end-users of an unconstrained service would be as significant as attributed by the Commission and that the Commission had seriously understated the risks.[135] Telecom submitted that an unconstrained service would affect reach and cause degradation of service and also that it would be forced over time to change all of its services to supply unconstrained downstream services, in order to remain competitive.

231. On the development of a spectrum management tool, Telecom submitted that any form of spectrum management (dynamic or static) would not be possible if all DSL lines are allocated the maximum available power on all frequencies supported by the DSLAM across the entire usable cable spectrum. However, Telecom did consider that the ACIF performance benchmark used in the Australian market may have some benefits.[136]

232. TelstraClear submitted that an unconstrained downstream PIR would not give rise to material additional risks to existing users and considered that a constrained PIR (eg. 3.5Mbps) would not materially assist in minimising the power spectral density which in turn would maximise reach. [137] Rather, reach is impacted more by other factors such as radio frequency interference and customer wiring.

233. TelstraClear supported the proposal that, if Telecom introduced a spectrum management tool for its own retail and unregulated wholesale services, Telecom could seek the Commission's approval to apply the same management rules to regulated wholesale services.[138]

234. TUANZ submitted that Telecom's claims that an unconstrained service may place the service to some customers at risk have little credibility and should not be given any weight.[139]

235. Ihug also considered that Telecom had not provided any substantiated evidence that there would be any significant effect on customers at the farthest reach of the service.[140]

236. Business New Zealand submitted that it was unclear in the Statement for Consultation, how the Commission made the trade-off between an unconstrained speed and a risk of

[135] Telecom, *Telecom New Zealand submission in respect of the Commission's Statement for Consultation*, 27 October 2005, p. 4.
[136] Ibid, p. 6.
[137] TelstraClear, *TelstraClear submission in respect of the Statement for Consultation*, 27 October 2005, p. 5.
[138] Ibid, p. 6.
[139] TUANZ, *TUANZ submission in respect of the Statement for Consultation*, p. 2.
[140] Ihug, *Ihug submission in respect of the Statement for Consultation*, 27 October 2005, p. 2.

degradation. Business New Zealand submitted that 'the Commission needs to take an analytically robust approach and lay out such assumptions'.[141]

237. Federated Farmers submitted that an unconstrained downstream speed would compromise the reach of Telecom's DSL network and that the use of dynamic spectrum management would not alleviate these effects.[142]. Federated Farmers was concerned that any reduction in reach would adversely impact those customers on the boundaries of Telecom's broadband enabled exchanges, largely their members. The Clutha District Council,[143] Rural Women New Zealand[144] and BayCity New Zealand Limited[145] expressed similar views.

238. Enterprise Northland submitted that while higher broadband speeds would be welcomed, it was concerned about the possible detrimental effect that might occur to either existing or future users of broadband DSL services. Enterprise Northland also submitted that this might impact upon Telecom's future broadband investment decisions.[146]

Commission's conclusion on the PIR

239. Bitstream access with full-speed downstream PIR is within the scope of the regulated service, is consistent with the standard access principles, and is likely to accelerate competition in broadband markets for the long-term benefit of end-users through the availability of new services, expanded uptake of broadband services, and reduction in prices. There will be increased opportunity for service innovation, product differentiation, and price discrimination arising from the ability of TelstraClear to shape the service for retail customers.

240. The Commission accepts that there is a risk that interference from higher speed services could result in degraded service quality or loss of ADSL services for some end-users on long lines. The Commission does not consider however that either Telecom or TelstraClear have accurately quantified the extent of this risk or demonstrated its materiality.

241. The Commission gives weight to the fact that, should Telecom consider that the incremental risk to its ADSL services of TelstraClear full-speed services is material, Telecom may introduce a suitable dynamic spectrum management regime to mitigate that risk. This incentive creates a market-led test of the extent and viability of Telecom's concerns. Should such a regime be introduced in a form approved by the

[141] Business New Zealand, *Business New Zealand submission in respect of the Statement for Consultation*, 27 October 2005, p. 2.
[142] Federated Farmers, *Federated Farmers submission in respect of the Statement for Consultation*, 27 October 2005, p. 2.
[143] Clutha District Council, *Clutha District Council submission in respect of the Statement for Consultation*, 11 November 2005.
[144] Rural Women NZ, *Rural Women NZ submission in respect of the Statement for Consultation*, 26 October 2005 p. 2.
[145] BayCity New Zealand Limited, *BayCity New Zealand Limited submission in respect of the Statement for Consultation*, 27 October 2005, p. 1.
[146] Enterprise Northland, *Enterprise Northland submission in respect of the Statement for Consultation*, 14 November 2005 p. 1.

Commission, the Commission requires that all new bitstream access service connections thereafter comply with those rules. As noted in the Statement for Consultation, the regime would be expected to apply in the same manner to new Telecom connections and to those of TelstraClear.

242. In its response to the Statement for Consultation, Telecom argues that if TelstraClear has full-speed bitstream access, Telecom would be forced by customer expectations to change all of its own services to full-speed and to abandon rate limiting. If all transmitters are allocated the maximum available operating power on all frequencies supported by the DSLAM across the entire usable cable spectrum, then no management of the spectrum is possible. As discussed below, the Commission does not agree with Telecom that TelstraClear is likely to offer only full-speed retail services, and accordingly the Commission remains of the view that dynamic spectrum management is a feasible means for Telecom to respond to the perceived risk to reach.

243. Telecom has argued that some customers may be unable to access a DSL service following the introduction of a full-speed bitstream service under this determination. In considering the efficiency consequences of such a loss of service to current or potential customers, regard must also be had to the potential for those customers to obtain service from alternative broadband platforms. In this regard, fixed wireless services are providing a level of broadband service to customers in more remote areas who are not currently serviced by Telecom DSL or receive DSL service of a diminished quality. Satellite services such as IPStar are also targeting customers who cannot receive ADSL services, such as those in rural areas. The presence of these alternatives mitigates the potential impact of a loss of ADSL services by some Jetstream customers.

244. In weighing up these considerations as against the benefits to all consumers of increased competition in retail broadband markets, the Commission concludes that the competitive benefits outweigh the possible detriments identified by Telecom. The Commission therefore requires Telecom to provide TelstraClear with bitstream access with a downstream PIR equal to the maximum theoretical line rate that a DSLAM is able to support. In respect of the minimum speed to which a service can degrade at peak busy times, Telecom is required to provide TelstraClear with an SIR calculated as not less than the weighted average of the SIRs of Telecom's best efforts retail broadband services. The reasons for the Commission adopting this approach to the SIR are discussed in the following section.

245. Telecom argues that in making the judgment as to the appropriate trade-off between reach and speed, the Commission should conduct a proper cost-benefit analysis to calculate how many customers will benefit from additional speed and lower prices compared to the detriments arising from the customers who will be negatively impacted from either paying higher prices, not being able to afford broadband services, no longer having access to broadband services or receiving degraded services.[147] Federated Farmers and Business New Zealand similarly argue that the Commission should provide empirical analysis of this issue.

[147] Telecom, *Telecom's response to Statement for Consultation in respect of TelstraClear's bitstream application,* 27 October 2005, p. 2. Telecom also argues that the cost-benefit analysis should include

246. While a quantified cost-benefit analysis can be useful in informing a decision as to the consumer benefits or detriments of alternative future scenarios, the Commission rejects the claim that it is a mandatory requirement for this aspect of the decision-making process. The Commission does not consider that the present issue is one where a cost-benefit analysis would be feasible or helpful, for several reasons. First, the evidence available to the Commission does not adequately isolate the impact of a full-speed service on reach from the impact of other contributing factors. Second, there would be significant difficulties in making a judgment as to the extent of the substitution possibilities of FWA and satellite services, given the relative immaturity of these offerings and the absence of evidence as to the sensitivity of the availability/price/quality trade-offs as against ADSL. Third, the Commission does not, in any event, believe that the risk posed to reach by the availability to TelstraClear of full-speed services is either qualitatively or quantitatively different to the status quo, where Telecom has its own full-speed services in the market.

Sustained Information Rate (SIR)

247. The downstream SIR is the minimum speed that data sent to an end-user can fall to during peak network congestion. As the uptake of ADSL services increases, so does the utilisation of backhaul, including the virtual path between the DSLAM and the BRAS/LAC, resulting in increased congestion.

248. At the technical workshop, TelstraClear requested that the SIR for bitstream access be the weighted average SIR of Telecom's retail best-efforts services across the network. TelstraClear requested that the SIR be reviewed quarterly and the access seeker's SIR be updated following each review.

249. The resulting SIR would likely be less than the SIR for Telecom's own higher speed retail services. While the service description requires a downstream throughput rate that must not be less than 32 kbps, the weighted average SIR requested by TelstraClear may fall below that speed during peak network congestion.

250. Telecom submitted that it is able to provide any active connection using the regulated service with a throughput at least equal to the weighted average SIR for most of the time, even at peak busy periods.[148] Telecom considers that this service commitment must be made in the context of a best efforts service and will not apply all of the time as best efforts services can never assure this outcome. However Telecom can design the service in such a manner to ensure that this outcome is normally achieved, in line with that achieved for its own retail and wholesale comparable services. Changes to the SIR would take 4 weeks to replicate across Telecom's entire network.

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consideration of customers negatively affected from investment in the network slowing. This aspect is discussed at para 315.

[148] Telecom, *Submission in respect of the Commission's proposed technical specification of the Bitstream Access Service*, 9 September 2005, p. 23.

251. Telecom also noted that the new minimum SIR would only apply when the end-user re-authenticated. TelstraClear agreed that the SIR should be the weighted average SIR allocated per end-user by Telecom for its retail best efforts services.[149]

252. TelstraClear's request for a weighted average SIR differs from Telecom's own banded SIR approach for its retail services. Telecom currently sets SIRs for Jetstream services using a defined contention ratio of 50:1. For example, Telecom's service which is 256kbps downstream would have an SIR of approximately 5kbps, and Telecom's 2Mbps would have an SIR of 41kbps.[150]

253. TelstraClear's request for an average SIR means that, when the network is congested, all bitstream access connections will degrade to the same downstream speed.

254. This means during congestion, TelstraClear's service would be slower relative to Telecom's service for higher speeds, and faster relative to Telecom's services for lower speeds.

255. Ihug submitted that products with higher PIR should have higher SIR, everything else being equal.[151] Ihug noted that the proposed SIR specification could see customers of access seekers with a 7.6 Mbps service receiving a lower SIR than a Telecom customer with a 2 Mbps service. InternetNZ and CallPlus concurred with Ihug's view.[152] Ihug submitted that the SIR should be defined as Telecom does today for its retail and unregulated wholesale products, using a 50:1 contention ratio. Ihug noted that even the minimum throughput of 32 kbps defined in the access principles would be inadequate for a service with unconstrained PIR.

256. Ihug[153], CallPlus[154] and InternetNZ[155] submitted that, while TelstraClear is the access seeker and has proposed the use of a weighted average SIR, a weighted average SIR would not suit other ISPs as it would constrain their ability to deliver quality services at higher speeds. TUANZ consider that, while the application under consideration was specific to TelstraClear, it should not be allowed to become a ceiling for other ISPs, as TelstraClear's customer base is likely to be skewed towards customers who are relatively undemanding in terms of the bandwidth and services they require.[156]

[149] TelstraClear, *TelstraClear Wholesale Bitstream – comments on proposed specification*, 12 September 2005, p. 5.
[150] As per Telecom's approach outlined in the Wholesale services roadshow handout, June 2005, p. 18.
[151] Ihug, *Ihug submission on the Commission's Proposed Technical Specification of the Bitstream Access Service*, 9 September 2005, p. 3.
[152] InternetNZ, *InternetNZ submission in respect of the Commission's Proposed Technical Specification of the Bitstream Access Service*, 16 September 2005, p. 11.
[153] Ihug, *Ihug Response to Statement for Consultation*, 27 October 2005, p. 2.
[154] CallPlus, *CallPlus submission on the Commission's Statement for Consultation on Bitstream Application*, 27 October 2005, p. 2.
[155] InternetNZ, *InternetNZ Response to the Commission's Statement for Consultation*, 27 October 2005, p. 3.
[156] TUANZ, *TUANZ submission on the Commission's Statement for Consultation*, 27 October 2005, p. 1.

Commission's conclusion on the SIR

257. The Commission requires that Telecom provide bitstream access to TelstraClear with an SIR not less than the weighted average of the SIRs of Telecom's best-effort retail services across its network.

258. Telecom is required to recalculate and amend the weighted average SIR applicable to TelstraClear's bitstream access on a quarterly basis, and advise both TelstraClear and the Commission.

259. It is TelstraClear's responsibility to ensure that its end-users re-authenticate after the SIR has been updated to achieve the updated weighted average SIR.

260. In accepting TelstraClear's request, the Commission notes that the weighted average SIR may fall below the limitation on the access principle which requires the service to support a throughput rate that is not less than 32kbps. Subpart 2 clause 6(e) of the Act allows an access seeker to request a lesser standard of service in respect of designated or specified services.

Virtual Path

Provisioning

261. The frequency with which a network will become congested, and therefore the time that services will degrade to the SIR, is dependent on the capacity provisioned by Telecom in its network.

262. TelstraClear requested that its weighted average SIR proposal be considered along with provisioning for capacity on the shared virtual path.

263. Ihug[157] and CallPlus[158] submitted that provisioning rules need to be considered for the dimensioning of the traffic on the shared virtual path so that it is never congested above a certain utilisation percentage for a specific period of time.

264. The characteristics of a weighted average SIR mean that some end-users would receive relatively higher, and others relatively lower, SIRs than Telecom's own services. Specific provisioning parameters would not remove that relativity. However, the amount of time that the network experiences congestion would be reduced.

265. Telecom advised that it does not have specific rules relating to the maximum utilisation levels applying to VPs from the DSLAM to the BRAS/LAC for best-efforts services. Telecom noted that it is currently progressing Service Performance Management ('SPM') which will put in place provisioning rules targeted at

[157] Ihug, *Submission in respect of the Statement for Consultation*, 27 October 2005, para 3.5.
[158] CallPlus, *Submission in respect of the Statement for Consultation*, 27 October 2005.

standardising the customer service experience for best-efforts broadband based on dimensioning around the number of customers attached to a DSLAM.[159]

266. The Commission does not consider that it is necessary or appropriate to set specific provisioning parameters. TelstraClear has requested underlying network equivalence and the sharing of the virtual path.

267. For some time, the majority of traffic sharing the virtual path will continue to be Telecom's own retail Jetstream customers. The Commission considers that Telecom has an incentive to adequately provision its network to ensure that its own customers are relatively satisfied with the Jetstream services. In particular, given the significant number of Telecom retail customers with 256kbps services, the Commission does not consider that Telecom would operate its network with an SIR of 5kbps for any significant period of time given Telecom's current network dimensioning rules.

Shared Virtual Path

268. Telecom[160] and TelstraClear[161] agree that both Parties will share a single virtual path from the DSLAM to the LAC/BRAS currently used for Telecom's best efforts services.

269. All retail and wholesale services within the virtual path will experience similar statistical distributions of latency, packet delay variation and packet loss, and will behave similarly under congested conditions. Under congestion, the available resources will be allocated across services based on their relative SIR.

Upstream speed configuration

270. The designated service requires that the maximum upstream speed for data traffic sent from the end-user to the DSLAM is limited to 128kbps.

Interleaving

271. The purpose of interleaving is to make a connection more reliable and extend the geographic range of ADSL services. Interleaving is an algorithm applied on a per port basis within a DSLAM that can improve the performance for the end-user.

272. The Application requested that Telecom provide TelstraClear with the option to have interleaving either on or off, at the request of TelstraClear.[162]

273. Telecom currently has a policy of always having interleaving turned on.[163] Telecom submitted that interleaving enables: [164]

[159] Letter from Telecom (Oakley) to the Commission (Abbott), *TelstraClear Bitstream Application – Request for Information*, 5 December 2005.
[160] Telecom, *Telecom's submission on the Commission's Statement for Consultation*, 27 October 2005, p. 9.
[161] TelstraClear, *TelstraClear submission in respect of the Statement for Consultation*,, 27 October 2005, p. 10.
[162] TelstraClear, *Section 20: Application for Determination for Designated Access Services*, 4 November 2004.

> '…carriers to better manage the noise and interference present on copper cables today. This includes noise like impulse noise, exchange noise from our own exchange equipment, road noise, noise induced from power lines… The noise and interference manifest themselves as packet loss as the signal traverses the copper cable between the customer and the DSLAM.'

274. Telecom further submitted that turning interleaving off or changing its characteristics with existing ADSL would result in highly unpredictable performance, especially for longer cable reach situations.[165]

275. The Commission considers that there is no reasonable technical impediment to TelstraClear's ports being individually configured for interleaving. The Commission understands that some carriers in other countries have interleaving turned off and activate it only on ports that have a reduced performance, generally due to distance from the exchange.

276. In addition, while TelstraClear has requested service equivalency, TelstraClear is prepared to accept a lesser standard of service for its bitstream access service where such service degradation occurs as a result of interleaving being turned off.

277. Telecom notes that, while it is technically feasible to turn interleaving off at the DSLAM on a line-by-line basis[166], it does not currently have an automated capability for provisioning services with interleaving off as an option so there could be considerable cost to implement this option specifically for TelstraClear.[167]

278. The Commission requires that Telecom switch interleaving off for bitstream access connections when requested to do so by TelstraClear. Should Telecom consider that it will incur incremental costs in supporting this interleaving option, Telecom may request the Commission to approve an efficient charge for that service.

Usage limits on data downloads and uploads

279. TelstraClear submits that there should be no usage limits on data downloads for individual or aggregated bitstream access services.[168] Telecom accepts this requirement and notes that it does not impose usage limits on data downloads on its commercial UBS service.[169]

280. The bitstream access service will be provided without any usage limits on data download or upload.

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[163] Commerce Commission, *Bitstream Workshop transcript*, 11 February 2005, Dr Milner, p. 64.
[164] Ibid, p. 62.
[165] Ibid, p. 65.
[166] Ibid, p. 64.
[167] Ibid, p. 66.
[168] TelstraClear, Section 20: Application for Determination for Designated Access Services, 4 November 2004, para 16.2(a), p. 6.
[169] Telecom, *Telecom submission in respect of the TelstraClear UBS and backhaul application*, 16 December 2004, Appendix A, p. 50.

Static IP addresses

281. The Application requests that Telecom should configure bitstream access so that TelstraClear can utilise static IP addresses for end users.[170]

282. Telecom submitted that it currently provides static IP addresses to a limited number of residential and SME end-users who pay a monthly fee for these addresses.[171]

283. TelstraClear submitted that, as bitstream access is a layer 2 service, the access seeker is responsible for addressing, including the assignment and management of static addresses. TelstraClear's request is that Telecom do nothing in the configuration of the service which impedes static IP addressing.[172] TelstraClear further submits that '[t]he addressing role of the access provider's network is essentially limited to addressing necessary to create the "tunnel" between the end-user's modem and the access seeker's layer 2 network server.'[173]

284. At the wholesale workshop, Telecom noted that '[o]bviously the UBS service is a layer 2 service, or more strictly a layer 2 tunnel protocol service, which means the layer 3 activities are performed by the service provider, either Xtra in our case, or another ISP, which includes address management.'[174]

285. Telecom noted that 'the indiscriminate use of IP addresses would put pressure on the overall IP address space… it is a finite resource', and that 'static IP addresses are valued by end-users and because of that service that includes static IP addresses attach a premium price and, in a retail-minus construct which we have here, our view is that that should be reflected through into the price of the underlying services.'[175]

286. Telecom is required to provide bitstream access in a manner that does not prevent TelstraClear from providing end-users with either a static or dynamic IP address.

287. Table 7 sets out the key characteristics of bitstream access.

[170] TelstraClear, Section 20: Application for Determination for Designated Access Services , 4 November 2004, para. 16.2(e), p. 8.
[171] Telecom, *Telecom New Zealand submission in respect of the TelstraClear UBS and backhaul application*, 16 December 2004, Appendix A, p. 55.
[172] TelstraClear, *TelstraClear cross submissions in respect of the TelstraClear UBS and backhaul application*, 28 January 2005, pp. 9-10.
[173] Ibid, p. 68.
[174] Commerce Commission , *Commission Technical Workshop Transcript*, 11 February 2005, Ralph Chivers, p. 89.
[175] Ibid, p. 89.

Table 7: Key Characteristics Summary

Downstream speed	**Peak Information Rate** • The maximum theoretical line rate that the DSLAM can support allowing for standard DSL overheads. • The PIR may differ where Telecom has limited transport capacity between the DSLAM and ATM switch. **Sustained Information Rate** • Calculated as the weighted average of SIRs of Telecom's retail best efforts services across its whole network. • The SIR which applies to TelstraClear's bitstream access connections is to be recalculated by Telecom and updated quarterly.
Upstream speed[176]	• The upstream speed is prescribed in the Act. • A maximum throughput rate of 128kbps for data traffic sent from the end-user.
Shared Virtual Path	• Telecom and TelstraClear are required to share a single Virtual Path from the DSLAM to the LAC currently used by Telecom's best efforts traffic – Unspecified Bit Rate Plus (UBR+) services.
Data downloads and uploads	• No limits to be applied
Interleaving	• TelstraClear may request that interleaving is switched off for specific end-users.
IP Addressing	• The service must not prevent TelstraClear from providing end-users with either a static or dynamic IP address.

[176] In accordance with Schedule 1, *'Limits on access principles: (a) the service requires a maximum upstream throughput rate of 128 Kbps for data traffic sent from the end-users'.*

APPLICATION OF THE INITIAL PRICING PRINCIPLE

288. This section sets out the Commission's approach to the application of the Initial Pricing Principle ('IPP') to calculate the price payable for bitstream access.[177] The Commission is required to impute the retail price having regard to any comparable service and apply a discount in respect of the avoided costs saved to derive the price for bitstream access.

289. The IPP for the bitstream access service is 'retail price (as imputed by the Commission having regard to any comparable service) less a discount benchmarked against discounts in comparable countries that apply the retail price minus avoided costs saved pricing in respect of the service, in a case where Telecom faces limited, or is likely to face lessened competition in a market for that service'.

290. In the draft determination, the Commission concluded that Telecom should make the bitstream access service available to TelstraClear at two separate prices dependant on whether the circuit was used to provide services to a residential or business end-user. After considering submissions on that determination, the Commission revised that position in the Statement for Consultation, and proposed that the service would be provided at a single uniform wholesale price, irrespective of the ultimate end-user of the resulting retail broadband service.

291. Telecom submitted that there should be an imputed retail price for each wholesale bitstream service intended to be regulated,[178] and that, in making a determination, the Commission is required to preserve Telecom's own retail price structure.

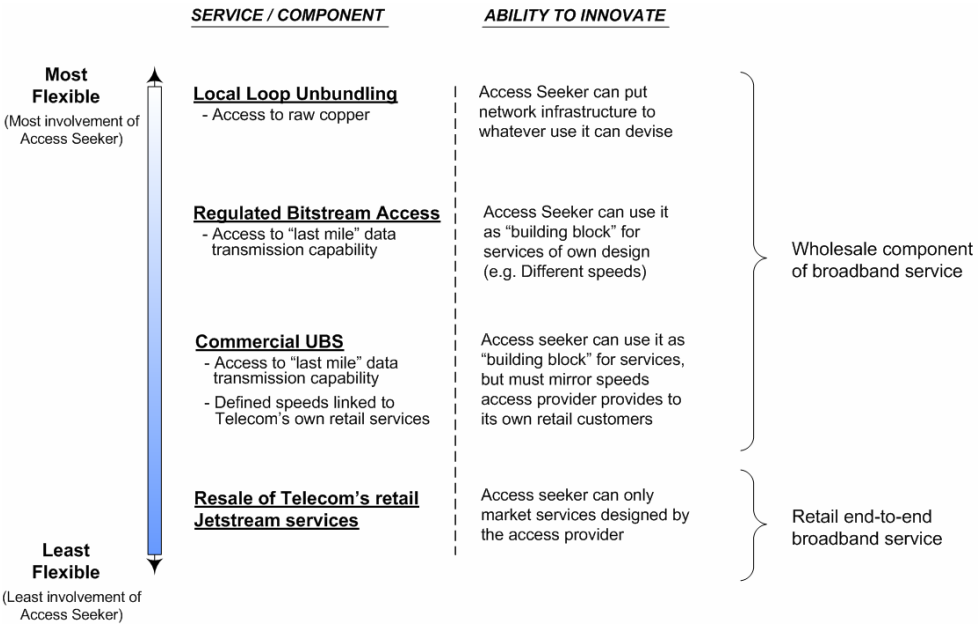
292. Telecom also submitted that the Commission's approach to pricing will materially reduce Telecom's average revenue per broadband subscriber, particularly for business customers.[179] Many of its investments in DSLAMs are only marginally economic at current prices. Competitors will soon cherry pick high speed residential and business customers forcing Telecom's retail prices to converge towards a single price point. The lower resultant revenue will make many currently marginal DSLAMs uneconomic. Telecom says that the consequence will be reduced investment by Telecom and therefore reduced opportunities for the expansion of ADSL coverage and for capacity increases in existing coverage areas.

Wholesale Service

293. There is a continuum of broadband telecommunication access services which require differing levels of input by the access seeker, and differing ability to distinguish its retail services from the access provider. This can be depicted in Figure 2.

[177] Unless otherwise noted, all prices referred to in this section are exclusive of GST.
[178] Telecom, *Telecom Cross submission in respect of TelstraClear's Application for access to and interconnection with Telecom's fixed PDN service,* ,28 January 2005, Para 114, p. 28.
[179] Telecom, *Telecom's response to Commerce Commission Statement for Consultation in respect of TelstraClear's bitstream application,* 27 October 2005, p. 1.

Figure 2: Service/component innovation matrix



294. In the LLU report, the Commission concluded that regulation of bitstream access and backhaul would promote competition for the long-term benefit of end-users. The Commission considered that, in this form, regulated bitstream would limit the risk of disincentives to investment by Telecom, while at the same time encouraging innovation. The Commission anticipated that the bitstream service would, in comparison to resale of Telecom's retail service, provide access seekers with increased flexibility to offer different broadband products, such as services with unlimited data download caps, and would sharpen price competition in the broadband market.

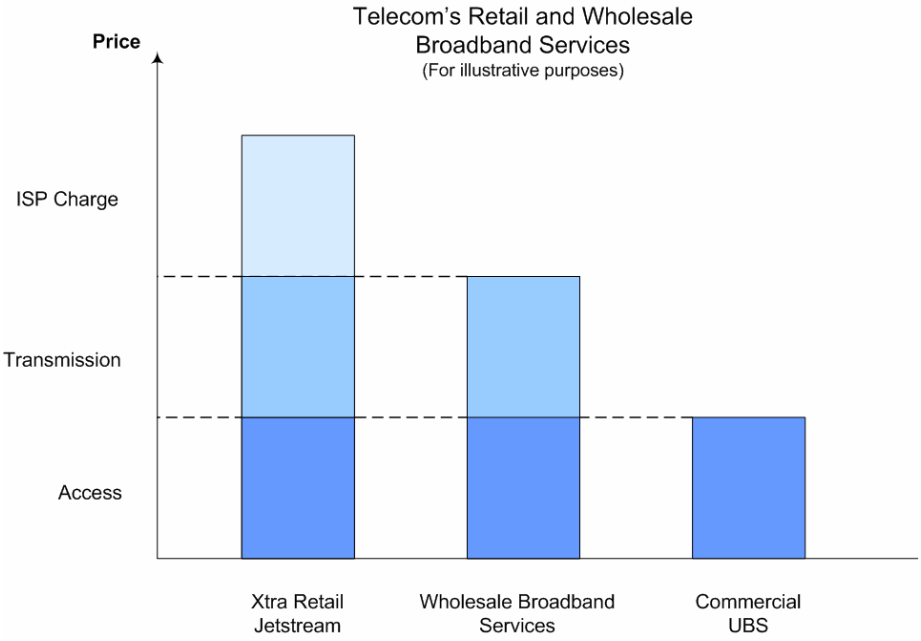
295. The Commission dealt with the resale of retail services in Decisions 497 and 525.[180] Resale services do not require that an access seeker provide network functions to deliver the service, other than retail-related activities to service the end-user. The relevant IPP for resale services is 'retail-minus' being the retail price less those costs that Telecom avoids by not having to deal with retail customers directly. In its resale decisions, the Commission has maintained the tight link between Telecom's services and retail prices.

296. Bitstream access is a wholesale service and differs from regulated resale of retail services. It is an input into a retail broadband service, along with ISP services, national and international data transmission, and associated retail functions such as sales, marketing and call centres.

297. The difference between Telecom's retail Jetstream service, its Wholesale Broadband Service (WBS) and commercial UBS services is demonstrated in Figure 3.

[180] In Decision 497 and 525, while the parties and the Commission referred to "wholesale" services, the nature of the regulated services in these decisions are more accurately described as the resale of end-to-end services.

Figure 3: Comparison between Telecom's retail and wholesale broadband services



298. The price payable by the access seeker for bitstream access excludes other components of the retail service that are provided by the access seeker. To impute a price for bitstream access from Jetstream prices, the elements of those retail prices that are attributable to other components of those services are subtracted.

299. The Commission does not agree with Telecom that it is required to maintain a tight link approach for the wholesale bitstream access service of the type adopted for the resold services under Decisions 497 and 525. This would, in effect, give rise to a resale rather than wholesale environment, with Telecom's own retail offers constraining TelstraClear's ability to differentiate its services from Telecom's own retail offers.

300. It is the Commission's view that the potential for dynamic efficiency benefits in the form of increased innovation – both in terms of product variety (product differentiation) and pricing – will be greatest where a uniform access price is determined. This is consistent with the outcome anticipated by the Commission when it recommended the regulation of this bitstream service to the Minister.

301. Telecom is concerned that a uniform access price will make uneconomic some investments by Telecom in its broadband services. The Commission expects that the uniform access price will lead to more intense retail price competition. To that extent, the outcome anticipated by Telecom - that its average revenue per broadband subscriber might fall - is indeed consistent with a more competitive broadband market. However, as discussed in the next section, TelstraClear will have similar incentives to Telecom to implement retail price discrimination, and in particular to seek higher margins in the relatively inelastic segment of the retail market. Ongoing retail price discrimination will, albeit at a lower level, allow the preservation of lower margins for more price-sensitive customers.

302. In summary, the Commission rejects Telecom's argument that it should be shielded from the results of increased competition in the broadband market to allow it to make otherwise marginal investments. Such an outcome would be unlikely to be in the long-term interests of end-users as a class, even though it might be beneficial to individual consumers in high-cost areas.

Incentives for retail price discrimination

303. Telecom argued that a uniform wholesale price would undermine incentives for price discrimination at the retail level, and would result in the retail broadband market collapsing to a full-speed offering at a single retail price. Telecom submitted that this would not be in the interest of end-users because cheaper entry-level broadband services would no longer be available to price-sensitive customers.

304. Telecom further argued that the Commission had only examined the short-term dynamics of the market in setting a uniform bitstream price, rather than considering Telecom's incentives to price discriminate due to its high level of common and fixed costs. Telecom further stated that as soon as another access seeker (with low common and fixed costs) enters the market, and targets solely high-speed customers, both Telecom and TelstraClear would be forced to respond.[181]

305. On behalf of Telecom, Professor Hausman[182] submitted that customer welfare is improved with retail price discrimination, that price discrimination is common in competitive industries with large fixed costs, that telecommunications networks have significant fixed costs, and that prices must be set above the marginal cost to allow the recovery of fixed costs. Professor Hausman argued that a single wholesale price for business and residential end-users would undermine price discrimination in the retail market and a single offering to residential and business customers would result. TelstraClear would offer a cheaper high speed service as it would face low input costs (the average price of high and low speed services) and would have little or no fixed and sunk costs. This outcome would result in Telecom only offering to sell a single broadband service, a Gresham's law outcome, reducing consumer welfare and adversely impacting on the long-term interest of end-users.

306. TelstraClear[183] submitted that the ability to differentiate services, being speed and monthly data limits, depends most significantly on national and international transmission, a function provided by the access seeker. TelstraClear argued that access seekers face the same retail customer demand with differing elasticities as

[181] Letter from Telecom (Parkes) to the Commission (Webb), *Telecom's response to Commerce Commission's Statement for Consultation in respect of TelstraClear's bitstream application*, 27 October 2005, Annex B, Para 10-11, pp. 11

[182] Professor Hausman in Telecom, *Submission in respect of the Commission's draft determination on the application for access to and interconnection with Telecom's fixed PDN service*, Annex C – Economic Paper from Professor Hausman, 20 May 2005, and *Cross submission in respect of the Commission's draft determination on the application for access to and interconnection with Telecom's fixed PDN service ('Bitstream Access')*, Annex D – Response to TelstraClear submission, by Jerry Hausman, 8 June 2005.

[183] TelstraClear, *Response to the draft determination on the proposed price and non-price terms for access to and interconnection with Telecom's fixed PDN and access to Telecom's fixed PDN backhaul*, 20 May 2005.

Telecom does and that it would also incur high fixed costs. Access seekers would face the same incentives to differentiate their products and charge differing prices as Telecom does. TelstraClear argued that a single wholesale price would provide the maximum scope for product differentiation and efficient price discrimination.

307. Professor Ordover[184], on behalf of TelstraClear, submitted that downstream price discrimination is not generally dependent upon upstream discrimination in the pricing of one of the inputs. Whereas price discrimination can, and often is, an efficient means for recovering fixed costs, the social welfare benefits of a monopolist's price discrimination in a downstream market is less certain. Professor Ordover submitted that acceptance of Telecom's view would result in the substitution of the monopolist's downstream price discrimination for upstream price discrimination in the provision of a bottleneck element, in the downstream service. Professor Ordover also argued that product differentiation, accompanied by price discrimination can be consistent with Ramsey pricing and deliver increased value and innovation.

308. The Commission considers that incentives to price discriminate at the retail level will remain, even where a uniform wholesale bitstream price is set. This is because the general conditions that underpin the incentives to engage in price discrimination are likely to remain undisturbed by the use of a single bitstream price.

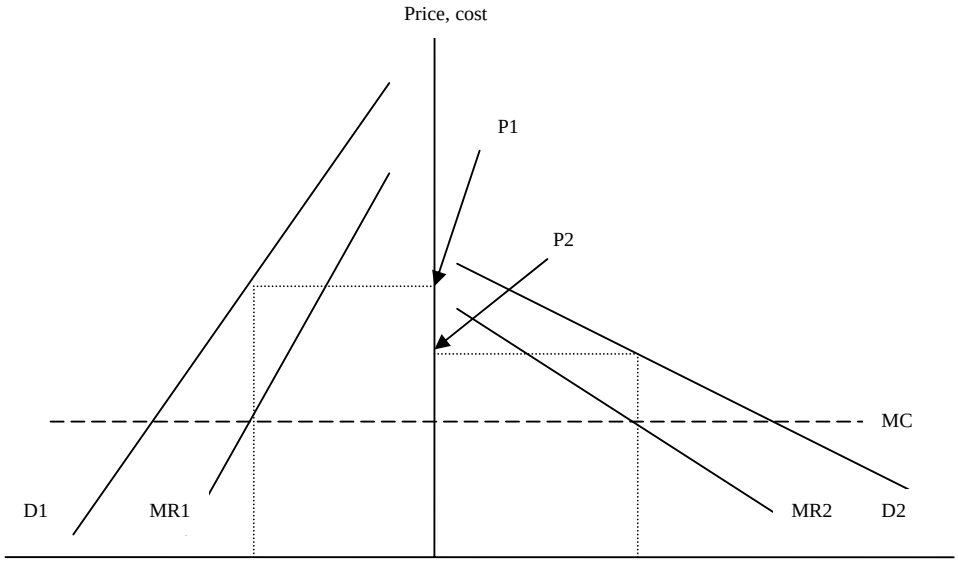
309. The following conditions are typically required for a firm to be able to engage in price discrimination between discrete groups or segments of consumers:

- the firm has some degree of market power (or at least can set prices above marginal cost);
- the firm can identify different customer groups, each with a different willingness to pay; and
- the firm can prevent resale between customer groups.

310. The incentive for retail price discrimination, with a uniform wholesale price, can be seen from Figure 4. The uniform cost line represents the wholesale bitstream price paid by an access seeker. If that access seeker attempts to maximise profits (i.e. by equating marginal revenues with marginal costs) and can segment the retail market according to different demand elasticities, then retail price discrimination may result, with a higher retail price (P1) being charged for those customers with relatively inelastic demand. With a constant marginal access price, price discrimination may naturally result from profit maximising behaviour, rather than the need to recover high fixed/common costs efficiently. The latter is not necessarily a condition for the former.

[184] Professor Ordover in TelstraClear, *Comments on Submissions by Telecom New Zealand Limited on the Commerce Commission's draft determination on the proposed price and non-price terms for access to and interconnection with Telecom's fixed PDN and access to Telecom's fixed PDN backhaul*, Annex 3 – Ordover Economic Opinion, 8 June 2005.

Figure 4: Retail price discrimination



311. The decision of TelstraClear to price discriminate at a retail level is not solely predicated on whether a uniform wholesale price is available for the bitstream access circuit. To deliver a retail broadband service, TelstraClear is also required to provide transmission, ISP services and associated retail functions.

312. As noted above, TelstraClear is likely to utilise its own network to provide transmission services using its existing network infrastructure beyond the ATM switch. TelstraClear will face a similar level of fixed costs in relation to those transmission services which Telecom would incur if it were the service provider.

313. TelstraClear would be likely to price discriminate in order to fund these fixed network costs through the differing price-cost margins in the two customer segments. For example, in terms of TelstraClear's retail pricing, a relatively high price-cost margin would be expected in the relatively inelastic segment of the retail market, while a lower margin would apply to the more price-sensitive customers.

Incentives of other access seekers

314. The level of common and fixed costs will vary between firms dependent upon the size of the firm, efficiency of operations, and strategic intent. Existing access seekers and potential new entrants with differing levels of fixed and common costs will seek to efficiently price discriminate, as they seek to maximise the long-term return on their investment. To do otherwise would reduce the long-term gains that may be received from lower prices (with an increased subscriber base). Both fixed and common costs would be expected to rise if subscriber numbers rose as the result of increased uptake of low-priced high-speed plans. Therefore, the incentive for forward-looking firms would be to price discriminate just as firms with higher common and fixed costs to ensure that in the future they were still able to compete,.

315. Telecom argues that ISPs, with high variable costs but low fixed costs due to lower investment in transmission infrastructure, would not face the same incentives to price discriminate to recover these costs. Telecom considers that an ISP who acquires bitstream access at a uniform wholesale price, and who does not face the level of fixed and common costs as Telecom and TelstraClear, would undermine price discrimination at the retail level. According to Telecom, this would result in all service providers moving to a single uniform retail price, removing the welfare enhancing effects of retail price discrimination.

316. Even in the absence of substantial fixed and common costs incurred by access seekers, retail price discrimination may still occur with a uniform wholesale price, as long as access seekers are assumed to be profit-maximising. As noted above, if an access seeker can identify different demand characteristics across different customer groups, it may be possible to increase profits through price discrimination, compared to a uniform retail price.

317. In response to the Commission's Statement for Consultation,[185] Telecom submitted that Ihug's recent broadband offers are evidence of movement to a uniform price for the bitstream service. Ihug provides all residential customers with a downstream speed of 2Mbps and with prices differentiated by data cap. However, the availability of differently structured plans, by Ihug for example, demonstrates product differentiation, price discrimination and commercial strategies differing from those of Telecom, and is likely to benefit end-users in the long-term by increasing choice and diversity in the broadband market. Since Ihug's pricing is a form of price discrimination, albeit differing from that adopted by Telecom, the Commission does not agree that any inference can be drawn as to TelstraClear's likely behaviour, or that of any other potential access seeker.

318. The Commission therefore disagrees with Telecom that there should be an imputed retail price for each variant of Telecom's own Jetstream service. Faced with differing demand elasticities, the provision of a uniform price for bitstream access will not remove incentives for an access seeker to product differentiate and/or price discriminate in the downstream market. Rather, the incentives remain for a profit-maximising firm to extract the most a consumer is willing to pay for a given plan, and price discrimination may be an efficient way of doing so.

319. The Commission is in any event not required at this stage to draw any conclusions as to the likelihood that an ISP would choose to price discriminate if provided with a single uniform bitstream access price. This determination deals only with the terms of supply of the bitstream service to TelstraClear, and it will in the first instance be a matter for ISPs to negotiate with Telecom if they also wish to obtain a similar service.

Incentives to product differentiate

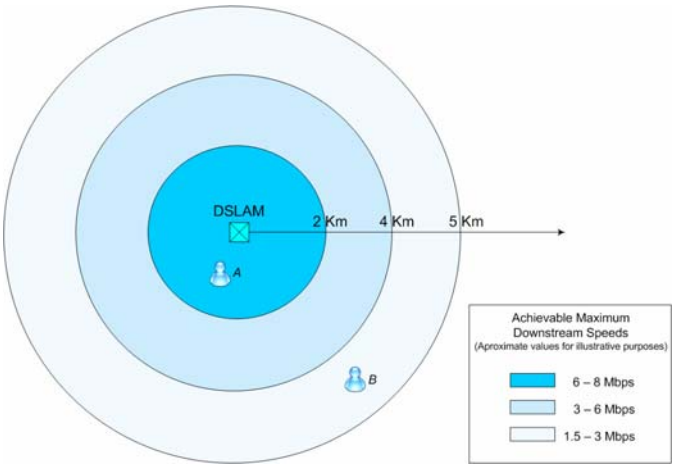
320. Telecom submitted that the availability of unconstrained bitstream access at a uniform price would result in a single high-speed service at a single price.

[185] Commerce Commission, *Statement for Consultation*, 12 October 2005.

321. Full-speed bitstream access will not mean that TelstraClear will be able, or commercially motivated, to provide all end-users with a broadband service with a downstream speed of 7.6Mbps.

322. Line attenuation means that the further a customer is away from the DSLAM, the lower the speed that will be achievable by the end-user. This is diagrammatically represented in Figure 5. Telecom estimates that only 20% of customers will synchronise at a line rate of 7.6Mbps – the current maximum technical capacity of Telecom's DSLAMs.[186]

Figure 5: Illustration of achievable line speeds



323. The Commission does not agree that TelstraClear, as a profit-maximising firm, would price a retail service available to customer A in Figure 5 (who has an achievable downstream speed of 7Mbps for example) the same as the service provided to customer B (who has a lower achievable downstream speed of 2Mbps in this example).

324. A key function of the regulated service is the ability for TelstraClear to set the speed of the service, using rate shaping, to supply different speeds to different end-users. For example, an access seeker may choose to provide a 2Mbps service to both customers A and B, or to offer a higher speed service above 2 Mbps to customer A only.

Discrimination between residential and business end-users

325. TelstraClear submitted that 'averaging the imputed business and residential retail prices to produce a wholesale price will skew the competitive focus to SME customers, whereas the Commission recognized in its Unbundling Report that broadband penetration amongst residential customers was especially poor. If the Telecom residential and business Jetstream services are technically equivalent, any differentiated downstream retail pricing by Telecom between customer segments

[186] Telecom, *Telecom Submission in respect of the Commission's proposed technical specification of the Bitstream Access Service,* 9 September 2005, para. 74, pp. 17.

reflects Telecom's retail pricing strategy, which should not influence wholesale pricing for its competitors'.[187]

326. A significant benefit of bitstream access, which differentiates the service from the resale of Telecom's existing Jetstream plans, is the ability of access seekers to practice efficient downstream price discrimination and also employ product differentiation. TelstraClear may offer different plans of different speeds, data usage allowances, levels of customer service and allow for different end-user profiling dependent on the use of the bitstream service.

327. A uniform bitstream access price will not preclude an access seeker from offering differentiated plans at the retail level, where it is economically efficient to do so. The Commission does not consider that providing bitstream access to an access seeker at a uniform price will result in that access seeker selling only one retail high-speed service at a single uniform price. TelstraClear is unlikely to dump the capacity of a single unconstrained broadband service on the market at a single price. Promotion of competition will occur with the development of product differentiation and price discrimination strategies that differ from Telecom's own retail strategies. TelstraClear faces the same incentives as Telecom to both differentiate its products and price discriminate. Both are profit-maximising firms, where higher margins may be achieved through customer segmentation. Differentiation of broadband services can occur for example by data cap, PIR of the service, price, and customer segment.

328. The Commission concludes that a single bitstream access price should be set without reference to the characteristics of the end-user. The Commission has balanced the benefits of a uniform price to promote competition through the creation of opportunities to innovate and enhance end-user choice, against a risk that a single price would reduce the incentives of both Telecom and TelstraClear to undertake efficient price discrimination for the long-term benefit of end-users. The Commission is satisfied, having considered any inefficiencies that may result, that the benefits of a uniform access price outweigh any such risk.

Conclusion on uniform bitstream access price

329. The Commission has concluded that a uniform wholesale price is likely to best give effect to the promotion of competition for the long-term benefit of end-users. In reaching this conclusion, the Commission has considered the efficiencies that would result, or would be likely to result, from such a price. The availability of a uniform wholesale price will provide TelstraClear with maximum flexibility to use bitstream access to differentiate its services from Telecom's own retail offerings. The Commission is also satisfied that the availability of a uniform wholesale price will not remove incentives to undertake efficient price discrimination in the retail broadband markets.

330. Telecom argues that the Commission has not outlined the empirical basis on which it has made the relevant trade-offs in deciding to adopt a single full-speed service at a

[187] TelstraClear, *TelstraClear Cross submission in respect of the TelstraClear's Application for access to and interconnection with Telecom's fixed PDN service ('Bitstream Access')*, 28 January 2005, Para 9 (b), p. 8.

single price as against a range of service speeds and business and residential prices. The Commission has not undertaken such cost-benefit analyses in the course of making any prior determinations in respect of regulated services under the Act. In any event, since the Commission has concluded that TelstraClear will have similar incentives to Telecom in using retail price discrimination, the Commission sees no reason, and indeed significant disadvantages, in setting a number of access prices linked to Telecom's retail price structure. The Commission also observes that it is unlikely that the drafters of the Act would have expected that cost-benefit analyses would be carried out for initial price determinations, given the requirement of the Act that the Commission make reasonable efforts to conclude the determination process within 50 working days.

Calculation of the uniform bitstream access price

331. The IPP for the regulated bitstream service is:

> retail price (as imputed by the Commission having regard to any comparable service) less a discount benchmarked against discounts in comparable countries that apply retail price minus avoided costs saved pricing in respect of the service, in a case where Telecom faces limited, or is likely to face lessened competition, in a market for that service

332. In imputing the retail price for bitstream access, the Commission is required to determine a price which reflects only the bitstream access component and excludes other components, such as transmission and ISP components. In determining such a retail price, Telecom's bundling of residential retail Jetstream and calling services is also taken into account.

333. The Commission undertook extensive consultation on a methodology to impute the retail price. On 18 January 2005, the Commission released a proposed methodology for the calculation and sought comment on the proposed methodology as part of cross submissions on the Application.[188] That methodology provided for the calculation of a single weighted price applicable for residential and business end-users. The Parties provided comment on that proposed methodology in cross submissions received on 31 January 2005.

334. The Commission refined its position in the draft determination on the proposed methodology. The approach proposed was as follows:

(i) Consider Telecom Jetstream residential and business retail prices as comparable services;
(ii) Deduct ISP service charges from the relevant Jetstream retail prices;
(iii) Impute stand-alone Jetstream retail prices from Jetstream services using the imputation methodology set out in the designated service 'Retail services offered by means of Telecom's fixed telecommunications network as a bundle of retail services';
(iv) Deduct the data transmission charges from the Jetstream services for business and residential Jetstream offerings separately, using the data cap as the independent variable

[188] The Commission released this draft methodology regarding the calculation of the IPP on 18 January 2005. The Commission had considered an approach to the imputation of retail price, in its consideration of another application from Ihug for bitstream access dated 5 November 2004. Although Ihug withdrew its application for determination on 22 December 2004, the Commission considered that releasing its preliminary views on an imputation methodology would assist the parties to make further submissions on the matter.

and the monthly adjusted retail price as the dependent variable to remove the effects of data transport; and

(v) Deduct the avoided costs saved, using a 16% discount.

335. Following the submission process and conference on the draft determination, the Statement for Consultation was issued with a further evolution of the Commission's thinking on the access price. As noted above, that statement proposed that the service would be provided at a single uniform wholesale price. The Commission has adopted that position in this determination.

336. The next step is to identify the single imputed retail price 'having regard to any comparable services'.

Comparable Services

337. The requirement that the Commission *have regard to* comparable services recognises that services with identical characteristics are unlikely. The Commission, in imputing a retail price is accordingly required to identify services that exhibit similar, but not necessarily the same, characteristics as the regulated service. The Commission considers that the quality of service is the relevant parameter to assist in identifying comparable services for the purpose of imputing a retail price for bitstream access.

338. The Oxford dictionary defines 'comparable' as:[189]

Comparable *adj.* **1** (often foll. by *with*) able to be compared; worth comparing

339. The Act includes other references to comparability, and the Commission has previously considered whether an observation is comparable in its determinations under the Act.

340. In Decision 477[190], the Commission was required to determine an initial price based on the 'benchmarking against interconnection prices in *comparable* countries that result from the application to networks that are similar to the access provider's fixed PSTN'. [191] [emphasis added] In assessing comparable countries, the Commission identified specific screening criteria to determine those jurisdictions which were comparable.[192]

341. The Commission considered that it was reasonable to select comparability criteria recognising that there was no single measure that determined comparability between countries. Accordingly, the Commission chose to consider the range of comparability criteria rather than focus on a single measure.

[189] The Concise Oxford Dictionary, 9th Edition.
[190] Commerce Commission, *Determination of the TelstraClear Application for Determination of Designated Access Services*, Decision 477, 5 November 2002.
[191] Telecommunications Act, Schedule 1, Part 2, Interconnection with Telecom's fixed PSTN, Initial Pricing Principle.
[192] Op cit Decision 477, Appendix 4, *International Benchmarking Report: A Comparative Review of Interconnection Pricing*, 2 September 2002, p. 9.

342. In Decision 497,[193] the Commission was required to determine initial prices for the resale of Telecom retail services based on an IPP of retail prices 'less a discount benchmarked against discounts in *comparable* countries that apply retail price minus avoided costs saved, in markets in which Telecom faces limited competition'.[194] [emphasis added] In assessing comparable countries, the Commission identified those jurisdictions that applied a retail price minus avoided costs saved methodology.

343. In the Commission's previous consideration of comparability, the Commission necessarily focussed its analysis of comparability on a finite set of key criteria, acknowledging that other less significant criteria were also at hand.

344. The Commission has consulted with the Parties, and the Parties have made a number of submissions, on which services should be considered comparable. As noted below, Telecom has at various times argued that there are no comparable services, that all Jetstream services are comparable, and most recently that only those Jetstream services with what it regards as having the same speed characteristics as the bitstream access service are comparable.

345. On 18 January 2005, the Commission released a proposed methodology for the calculation of the bitstream access price, and sought comment from the Parties as a part of cross submissions on the Application.[195] The Commission proposed that Telecom Jetstream residential and business services should be considered as comparable services.

346. In response to the Commission's proposed methodology, Telecom concurred with the Commission's preliminary view that Telecom's Jetstream residential and business services should be used as comparable services, while disagreeing with the averaging approach using those comparable services.[196] TelstraClear submitted that only those Jetstream services with an upstream speed of 128kbps should be comparable services.[197] Alternatively, TelstraClear submitted that retail pricing of Jetstream services with higher upstream speeds would need to be adjusted to impute a price which is comparable with bitstream access.[198] Neither party submitted that the Commission should treat Telecom's commercial UBS services as comparable services for the purposes of the IPP calculation.

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[193] Commerce Commission, Decision 497, *Determination on the TelstraClear Application for Determination of "Wholesale" Designated Access Services*, 12 May 2003.
[194] Telecommunications Act, Schedule 1, Part 2, Retail Services offered by means of Telecom's fixed telecommunications network, Initial Pricing Principle.
[195] Letter from the Commission (Borthwick) to Telecom (Parkes) & TelstraClear (Forsyth), *TelstraClear UBS Application Calculation of the Initial Pricing Principle*, 18 January 2005. The Commission released an approach, in advance of its draft determination, regarding the calculation of the IPP to assist the Parties to prepare cross submissions on TelstraClear's Application. The Commission had, in its consideration of another application from Ihug dated 5 November 2004, considered an approach to the imputation of retail prices. As Ihug withdrew its application for determination on 22 December 2004, the Commission considered that releasing its preliminary views on an imputation methodology would assist the Parties to make submissions on the matter.
[196] Telecom, *Telecom cross-submission in respect of the TelstraClear UBS and backhaul application*, 31 January 2005, p. 26.
[197] TelstraClear, *TelstraClear cross-submission in respect of the TelstraClear UBS and backhaul application*, 28 January 2005, para 125, p. 50.
[198] TelstraClear, *Response to Telecom Submission to the Commerce Commission on the proposed price and non-price terms for access to and interconnection with Telecom's fixed PDN and access to Telecom's fixed PDN backhaul ("Wholesale Bitstream")*, 28 January 2005, p. 50.

347. In the draft determination, the Commission considered that residential Jetstream plans were comparable to the residential bitstream access service, and that business Jetstream plans (excluding Jetstream venture flat rate[199]) were comparable to the business bitstream access price.

348. In its submission on the draft determination, Telecom argued that no Jetstream service is comparable to the service to be designated by the Commission.[200] Telecom submitted that there must be comparability across key service specifications.[201] Telecom then submitted that the most comparable service is the Jetstream Full Speed 30,000 service.[202]

349. TelstraClear submitted that comparability is derived by assessing common characteristics across all retail Jetstream plans. TelstraClear submitted that downstream speed is a material factor in assessing comparability and that full-speed Jetstream plans are most comparable to the regulated full-speed service. TelstraClear further submitted that the new business plans differ in characteristics and suggest that these plans be disregarded on the grounds that they are not comparable services.[203]

350. Telecom submitted that the new business broadband plans[204] are directly comparable to corresponding Full Speed Jetstream plans where plans have been adjusted to include similar data caps.[205]

351. At the conference the Commission questioned both Telecom and TelstraClear as to which business and residential plans should be included when imputing a single bitstream access price. Telecom stated that only business[206] and residential[207] Jetstream plans with an upstream speed of 128kbps should be included but that no plans were directly comparable. TelstraClear stated that all business and full speed plans should be included.[208]

352. Telecom submitted that the regulated service is the same on most dimensions as a range of services offered by Telecom, but on one dimension is superior or inferior to some Telecom services, and that the appropriate comparator services must be selected by reference to the dimensions that drive retail pricing. [209]

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[199] The services must be comparable in their sub categories to maintain consistency.
[200] Telecom, *Telecom submission in respect of the Commission's draft determination on the application for access to, and interconnection with Telecom's fixed PDN service*, 20 May 2005, para 331 p. 67.
[201] Ibid, para 333 p. 68.
[202] Ibid, para 338 p. 69. The plan designation refers to the data cap assigned to the plan (30Gb).
[203] TelstraClear, *TelstraClear cross-submission in respect of the Commission's draft determination on the application for access to, and interconnection with Telecom's fixed PDN service*, 9 June 2005, annex 4, p. 7.
[204] Telecom announced on 8 June 2005 new Xtra broadband plans for business available from 8 July 2005.
[205] Telecom, *Telecom cross-submission in respect of the Commission's draft determination on the application for access to, and interconnection with Telecom's fixed PDN service*, 8 June 2005, para 117, p. 32.
[206] Commerce Commission, Conference transcript, 4-5 July 2005, Nik Haden, section 48.
[207] Ibid, Nik Haden, section 53.
[208] Ibid, Suella Hansen, section 50.
[209] Letter from David Goddard QC to Telecom (Knight and Oakley), *Bitstream Access: Wholesale price calculation*, 3 November 2005, p. 7.

353. The Commission does not consider that it is appropriate to consider Telecom's respective commercial UBS or WBS as comparable services, as these services are Telecom's own variants of its retail bitstream services, with an allowance made for transmission and ISP charges avoided in respect of commercial UBS, and ISP charges in respect of WBS. Telecom has applied its own pricing constructs to develop its wholesale pricing of these services, and these, in part, reinforce Telecom's own retail price discrimination practices.

354. To consider these services at wholesale would mean that regulated wholesale prices would be driven off the commercial wholesale prices which prompted the access dispute. Further, neither party suggested that the Commission should, in assessing the population of comparable services, also consider those wholesale services.[210]

355. In assessing those services that are comparable, the Commission has considered different criteria that could be used as a basis for comparability, including the quality of service and the downstream and upstream speeds.

Quality of Service

356. Telecom's Jetstream services are 'best-efforts' services. In the LLU report, the Commission recommended the designation of bitstream access and backhaul services based on current Jetstream functionality with specific limitations on the access principles, on the basis that the designation of business grade quality of service bitstream services would impact on Telecom's NGN investment.[211]

357. 'Best efforts' can be defined as 'a term for a Quality of Service (QoS) class with no specified parameters, and with no assurance that traffic will be delivered across the network to the target device. Examples of best efforts services include ATM's ABR ('Available Bit Rate') and UBR (Unspecified Bit Rate)'.[212] In contrast, business-grade services are higher grade services which generally offer defined QoS parameters.

358. Telecom's website sets out the expected performance of Jetstream services:[213]

> We cannot guarantee specific speed performance or that your Broadband connection will be continuous or fault free. There is no guaranteed minimum speed for Xtra Broadband.
>
> With your Broadband plan you should expect connection speeds up to your stated plan speed depending on the plan you choose, which can be up to 50 times faster than a standard dial- up connection. You should be aware that your stated plan speed for each plan is the maximum possible speed achievable and you should expect actual speeds to vary.

[210] Though Mr Goddard in his memorandum to Telecom of 25 November appears to suggest that the Commission should have regard to certain of Telecom's commercial UBS service prices to establish what he calls "an absolute floor" for the imputed retail price and for the corresponding wholesale access price. It is unclear whether this is a position advocated by Telecom but it would be inconsistent with Telecom's other submissions on relevant price points.
[211] Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, 22 December 2003, p. 198.
[212] Newton's Telecom Dictionary, 21st Edition, 2005.
[213] http://www.telecom.co.nz/chm/0,5123,204578-203764,00.html.

> While Telecom is unable to provide specific performance guarantees, we are committed to providing a consistent and reliable service.

359. Bitstream access is delivered using a virtual path that is shared with Telecom's Jetstream services. The QoS characteristics of the bitstream access and Jetstream services on OSI Layer 2 will be the same excepting the SIR of the virtual circuit. QoS is accordingly consistent with the use of all Jetstream services as comparable.

Downstream speed

360. Bitstream access does not have a particular downstream speed setting (other than a minimum speed) and is consistent with the fact that broadband services can operate at a range of speeds. The access seeker can control the speed that an end-user receives via its transmission capacity and commercial strategy.

361. Telecom submitted that the most comparable service to the regulated bitstream service is Telecom's retail services where the downstream speed is the same, or substantially similar, to the regulated bitstream service.[214] Telecom does not actively market a service with equivalent speeds for residential customers.[215]

362. Bitstream access is an input capable of supplying an infinite number of downstream speeds to end-users. An unconstrained service will not mean that all end-users receive a downstream speed of 7.6Mbps as discussed above. The regulated service will also deliver service to some customers with significantly slower downstream speeds, either due to technical constraints and/or as a result of commercial strategy.

363. Telecom's view that its highest speed Jetstream services are the most closely comparable service appears to be closely linked to its view that the market will collapse to a single maximum speed product. As noted above, this is not the Commission's view.

364. The Commission considers that the selection of comparable services should be insensitive to the downstream speed. The regulated service will deliver a number of achievable downstream speeds based on the technical capability of the DSLAM, and specific limitations on individual bitstream connections due to the distance from the exchange, for example. For this reason, comparison should not be tightly linked to downstream speed, as bitstream access will allow TelstraClear to deliver a range of speeds between Telecom's low-speed and full-speed services.

Upstream speed

365. TelstraClear submitted that, when considering comparable services, the Commission should only take into account those services where the upstream speed was 128kbps,

[214] Telecom, *Submission in respect of the Commission's draft determination on the application for access to, and interconnection with Telecom's fixed PDN service,* 23 May 2005, para 338, p. 69.
[215] The Commission notes that a residential end-user is not prevented from purchasing the Jetstream Full Speed services for residential use.

or alternatively discount the retail price to reflect a higher upstream speed.[216]

366. The designated service specifically limits the upstream speed to 128kbps. In the LLU report, the Commission recommended bitstream access with an upstream speed limitation which would not encompass the future features of Telecom's NGN. The upstream limitation of 128kbps is likely to constrain the ability of TelstraClear to deliver NGN services using bitstream access. This constraint will not occur, or will be much reduced, where upstream speeds are greater than 128kbps, such as Telecom's full-speed services which have an upstream speed of 672kbps.

367. Accordingly, the Commission considers that only those Jetstream services with an upstream speed of 128kbps are comparable services.

Conclusion on comparable services

368. When imputing the retail price for the service, the Commission considers that the population of comparable services to which it should have regard are Telecom's residential and business Jetstream plans, other than Telecom's full-speed plans.

Removal of ISP charges

369. Telecom submitted in response to the Statement for Consultation that removing the ISP service charge is inconsistent with the requirement to subtract the avoided costs saved. Telecom argued that the ISP service deduction does not relate to any retail plan that Telecom has in the market, and is a historical figure representing the historical price difference between the JPPs and its Xtra equivalents. Telecom submitted that the Commission is only entitled to deduct the avoided costs saved in relation to the ISP service and then only through the benchmarking exercise required under the initial pricing principle.[217]

370. TelstraClear submitted that:[218]

> 'The IPP requires the Commission to first impute a retail price and then to move on to calculate the discount based on avoidable costs, rather than requiring that the entire price setting exercise be done on an avoidable cost calculation. In the first step, the Commission has to assign a notional price that downstream retail customers would pay for the services not forming part of the wholesale price to arrive at the imputed price that they would pay for a retail service that is equivalent to the wholesale service. Telecom's downstream retail prices, particularly given that the Commission has determined the market is not competitive, are not cost based. Using a cost based formula to arrive at the imputed retail price for a service equivalent to the wholesale bitstream service would have the practical effect of loading all of the excess retail rents earned by Telecom across the whole retail service stack into the wholesale product. An avoidable cost approach is no less inappropriate for the ISP component as it is for the transmission component.'

[216] TelstraClear, *TelstraClear cross-submission in respect of the TelstraClear UBS and backhaul application*, 28 January 2005, para 125, p. 50.
[217] Telecom, *Response to Commerce Commission Statement for Consultation in respect of TelstraClear's bitstream application*, 27 October 2005, annex B. para. 20.
[218] TelstraClear, *Response to the Statement for Consultation on TelstraClear's application for access to, and interconnection with, Telecom's fixed PDN*, 27 October 2005, para. 49, p. 15.

371. The Commission agrees with TelstraClear that, as there is no equivalent retail component of the ISP charge, a notional price must be removed from the retail prices of the comparable services, and that an avoided cost approach is not appropriate.

372. Telecom has previously disclosed ISP charges in its Jetstream retail prices on its website and no longer does so.[219] The differential in residential retail prices including and excluding the ISP charge was $8.89 (excluding GST) across all speed variants.[220]

373. The retail prices of the various Jetstream plans have remained unchanged since the introduction of Wholesale Broadband Solutions. Previously, under the JPP, Telecom performed all ISP functions for Jetstream, and the access seeker was reselling the service only.

374. TelstraClear submitted that the ISP charge may be higher than the amount calculated by the Commission. TelstraClear does not consider that the amount of $8.89 fully reflects the costs and value of an internet service, and proposes a greater proportion of the relevant Telecom Jetstream price be deducted when imputing the retail price. TelstraClear provided a benchmark study on ISP charges from other countries. The price for this service varies markedly among different countries, and for different plans.[221] TelstraClear submitted that the ISP service charge should be $15 based upon a selection of overseas prices.

375. The Commission rejects TelstraClear's benchmarking exercise, and does not see any justification for departing from the price component attributed to Xtra ISP services.

376. Accordingly, the Commission has removed $8.89 from the retail price of the Xtra Jetstream plans to reflect the retail component relating to ISP services as part of the imputation process. This adjustment is set out in Table 8 in respect of Telecom's residential Xtra Jetstream services.

Table 8: Residential Xtra Jetstream Services

Plan name	Speed (downstream/ upstream)	Data Cap (GB)	Retail Xtra Jetstream Price (excl GST)	Excess usage ($/Mb)	ISP component (excl GST)	Standalone retail Jetstream price (excl ISP)
Go	256/128 kbps	1	$44.40	Throttle on cap[222]	$8.89	$35.51
Discover	1M/128 kbps	1	$48.84	Throttle on cap	$8.89	$39.95
Explorer	256/128 kbps	3	$53.29	Throttle on cap	$8.89	$44.40
Adventure	2M/128 kbps	10	$62.18	Throttle on cap	$8.89	$53.29
Navigate	2M/128 kbps	10	$62.18	0.02	$8.89	$53.29

[219] Telecom website: http://www.telecom.co.nz/chm/0,5123,203071-202533,00.html.
[220] Telecom Wholesale Informer, *Jetstream Changes*, 24 September 2004.
[221] TelstraClear, *Response to the Statement for Consultation*, 27 October 2005, Exhibit 1: Retail ADSL Internet connectivity price preliminary benchmarking.
[222] The speed of the service is reduced to (56kbps) once the end-user reaches the monthly data allowance.

Removal of the effects of residential bundle pricing

377. Telecom provides a discount to residential end-users who purchase a bundle of services comprising Homeline, toll calling, ISP services, and a Jetstream service. If these services are purchased from Telecom, the Xtra Jetstream price is reduced by $8.89. The Commission has calculated how that bundle discount ($8.89) should be allocated across the services within the bundle, so that an equally efficient access seeker could compete.

378. The methodology used is the imputation of a retail price where services are provided in a bundle under the designated service 'Retail services offered by means of Telecom's fixed telecommunications network as part of a bundle of retail services'. This service requires that:

> The imputed retail price must –
>
> (a) be based on the observed discount of the bundle relative to the total price of the services offered separately; and
> (b) take account of any price difference that arises from the lower cost of providing the services as a bundle, the lower cost of quantity supply, any difference in the cost of providing the services between different markets, and any other difference in costs

379. The Homeline service is made available to access seekers at a uniform 2% wholesale discount by Telecom. Telecom submitted that Homeline should be included as one of the services used to apportion the tolls discount.[223] However, it is unlikely that an equally efficient access seeker would be able to profitably provide the Homeline service as a stand alone service. As an example, in areas outside Wellington, Auckland, and Christchurch, there is a uniform national price of $39.85 including GST for residential Homeline.[224] This equates to a wholesale discount of $0.80 including GST. Therefore, the Commission has excluded Homeline from the package of services to which the $8.89 tolls discount is applied.

380. Telecom provided data on the average toll calling spend of residential Jetstream customers who also purchased calling services from Telecom under the bundle.[225] The monthly mean for December 2004, January and February 2005 is [ ]CRI.

381. The ISP service is purchased in conjunction with the Telecom Jetstream service irrespective of whether Homeline or tolls are being purchased. Inclusion of the ISP charge in the calculation of the Jetstream portion of the tolls discount ensures the discount applied to Telecom Jetstream's retail price will accurately reflect the bundled discount for Jetstream services.

382. Finally, the Jetstream service is a component of the bundle offer, and the Commission has included the Jetstream service in the allocation of the tolls discount.

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[223] Telecom, *Op cit*, 20 May 2005, Annex F, Para 7.
[224] Telecom website, *http://www.telecom.co.nz – phone/connections/homeline.*
[225] Letter from Telecom (Knight) to the Commission (Webb), *Notice under section 98(a) of the Commerce Act – UBS proceedings, calling spend information*, 5 April 2005.

383. The Commission has therefore allocated the tolls discount ($8.89) across three services: the toll calling service, the ISP service, and the Jetstream service. Consistent with the IPP referred to in paragraph 378 above, the following methodology is used to calculate the imputed residential retail Jetstream price:[226]

- Step 1: Isolate the stand-alone price of each of the three services;
- Step 2: Calculate the bundled price as a percentage of the total price of the 3 services (tolls, ISP and Jetstream) offered separately.[227]
- Step 3: Apply this percentage to the stand-alone Jetstream price, to determine the imputed price of the Jetstream service within the bundle.

384. This is illustrated in Table 9 for the residential Jetstream services, where the tolls discount ($8.89) is allocated across the following three services:

- the toll calling service (the average toll spend is [ ]CRI);
- the ISP service (the ISP charge is $8.89); and
- the Jetstream service (the Jetstream price is the unbundled Jetstream price, less the ISP charge ($8.89)).

Table 9: Calculation of the Monthly Adjusted Retail Price[228]

Residential Jetstream		**Go**	**Discover**	**Explorer**	**Adventure**	**Navigate**
Standalone Prices	Jetstream[229]	$35.51	$39.95	$44.40	$53.29	$53.29
	ISP	$8.89	$8.89	$8.89	$8.89	$8.89
	Tolls	[ ]TCNZRI	[ ]TCNZRI	[ ]TCNZRI	[ ]TCNZRI	[ ]TCNZRI
Total standalone price		[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI
Tolls discount		$8.89	$8.89	$8.89	$8.89	$8.89
Bundled price		[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI
Bundled price as % of total standalone		[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI
Imputed Jetstream Price		**[ ]CRI**	**[ ]CRI**	**[ ]CRI**	**[ ]CRI**	**[ ]CRI**

385. The imputed Jetstream prices for the residential Jetstream plans are used as an input for removing data transmission charges.

[226] This is the price that will be used for each residential Jetstream plan as an input into the Commission's regression.
[227] This shall reflect the total monthly bill of an end-user who purchases Telecom Jetstream, ISP services and toll calling as unbundled products. The tolls discount is effectively spread across three separate services (the ISP charge is a tie-in product with Telecom Jetstream and unable to be sold separately from Telecom Jetstream).
[228] All prices in this table are current as at 1 December 2005.
[229] See standalone Jetstream prices in Table 8: Residential Xtra Jetstream Services
.

Removal of data transmission charges

386. Retail Jetstream prices are used as part of the imputation process to arrive at a single bitstream access price. Jetstream plans are allocated a fixed amount of national and international data transmission per customer, which may be throttled back once the individual customer allowance is reached, or charged for the amount on a per MB basis for the quantity of data which exceeds the allowance. This allowance is known as a 'data cap'.

387. National and international data transmission is not part of bitstream access. TelstraClear will provide its own data transmission across its own backhaul infrastructure, or alternatively will purchase backhaul from Telecom on commercial terms.

Regression Methodology

388. In the draft determination, the Commission applied a linear regression methodology to remove the data transmission component from the retail price. This is necessary to impute a retail price for bitstream access, as data transmission is not included in the price in an explicit or transparent manner.

389. The adjusted monthly price of the Jetstream plan was the dependent variable and the data cap was the independent variable. The relevant bitstream access price was estimated as the price with a data cap of zero. The y-intercept of the linear regression was the monthly price for bitstream access, which is independent of any price component associated with the transmission of data.

390. Telecom submitted that the Commission's imputation's underlying assumptions contained the following deficiencies: [230]

- utilisation of all Jetstream ADSL services as comparable services in imputing a retail price regardless of speed;
- the Commission has departed from a retail minus based approach to a cost based (or at least an inappropriately cost-influenced) approach;
- there is no comparable retail service for an unconstrained service;
- the assumption that additional speed has no additional cost is erroneous;
- the Commission imputes a single price for residential users and a single price for business users regardless of speed.

391. Telecom submitted that, in removing the transmission charge, the Commission has not given appropriate consideration for a speed differential at the retail level. Telecom's retail pricing strategy differs between residential and business users according to data and speed charges.

[230] Telecom, *Submission in respect of the Commission's draft determination in the application for access to and interconnection with Telecom's fixed PDN service,* 20 May 2005, para 324, p. 65.

392. As at September 2005, Telecom had [ ]TCNZRI full-speed Jetstream customers. Telecom's range of full-speed plans are summarised in Table 10. All full-speed services have the same downstream and upstream speed characteristics, namely between 2-8Mbps downstream and 672k upstream.[231] The fact that price differential is based on the data cap transmission allowance demonstrates that, in respect of full-speed Jetstream services, Telecom's price discrimination and product differentiation is based on transmission charges alone. In this regard, Telecom's price discrimination is the same as that adopted by Ihug.

Table 10: Jetstream Full-speed plans[232]

Service Name	Data Cap	Monthly Charge	Excess Usage (per Mb)
Xtra Jetstream 600	600 MB	$79.11	$0.18
Xtra Jetstream 1200	1.2 GB	$137.78	$0.17
Xtra Jetstream 1800	1.8 GB	$193.78	$0.16
Xtra Jetstream 3000	3 GB	$309.78	$0.143
Xtra Jetstream 5000	5 GB	$475.78	$0.125
Xtra Jetstream 10000	10 GB	$906.78	$0.107
Xtra Jetstream 20000	20 GB	$1617.78	$0.09
Xtra Jetstream 30000	30 GB	$2417.78	$0.09

393. Telecom adopts a different price discrimination strategy in respect of other Jetstream plans where speeds are limited. Other retail Jetstream plans available to business customers are set out in Table 11.

Table 11: Limited Speed Jetstream Business plans

Service Name	Speed		Data Cap	Monthly Charge	Excess Usage (per Mb)
	Downstream	Upstream			
Xtra Broadband Venture 1Gb	256kbps	128kbps	1GB	$59.95	$0.0444
Xtra Broadband Venture 3Gb	256kbps	128kbps	3GB	$79.95	$0.0444
Xtra Broadband Venture Flat Rate	256kbps	128kbps	10Gb	$99.95	Throttle on Cap
Xtra Broadband Business 3GB	1Mbps	128kbps	3Gb	$119.95	$0.0444 or Throttle on Cap
Xtra Broadband Business 10GB	1Mbps	128kbps	10Gb	$149.95	$0.0444 or Throttle on Cap
Xtra Broadband Business 15GB	2Mbps	128kbps	15Gb	$299.95	$0.0444 or Throttle on Cap

[231] Telecom website 'Speed Explained' http://www.telecom.co.nz/chm/0,5123,204848-203868,00.html.
[232] http://www.telecom.co.nz/chm/0,5123,204848-203868,00.html.

394. For these plans, Telecom appears to differentiate its retail services by customer type, speed of service and the data cap.

Alternative approaches to the removal of transmission charges

395. Telecom and TelstraClear suggested alternative approaches to remove the transmission component from retail prices.

396. Telecom proposed a log-linear regression model[233] for residential Jetstream prices which takes the form:

$$\text{Price} = a + b.\ln(\text{Speed}) + c.\ln(\text{Data})$$

397. It is unclear as to how the price component of data transmission is dealt with in Telecom's log-linear function. The Jetstream retail plans contain components of bitstream access as well as national and international bandwidth. Jetstream is a complete end-to-end ADSL service, and there is no transparency as to how the data prices have been dealt with in Telecom's regression.

398. Furthermore, Telecom's log-linear function does not give a meaningful result when 0 is set for either the data or speed in the equation, which indicates that it may not be reliable.

399. Accordingly, the Commission considers that Telecom's log-linear function is not suitable to impute the access price.

400. Telecom also submitted an alternative methodology to calculate the price. This methodology was based on an assumption that because TelstraClear would be receiving a weighted average SIR, TelstraClear should also receive a weighted average price.

401. Telecom submitted that the shape of the regulated service[234] was more valuable than Telecom's Jetstream service with a 50:1 contention ratio, because the speed of the end-users' service off-peak would be relative faster. Telecom acknowledged that a similar service will be less valuable during periods of peak congestion.[235]

402. TelstraClear[236] submitted that the Commission's imputation methodology contains the following deficiencies:

- Prices per MB are not constant across all plans, but decrease as the data cap increases;
- Price is influenced by factors other than the data cap;
- The underlying pricing strategies for the access and traffic components differ markedly for the business and residential plans.

[233] Ibid, Annex F – Telecom's comments on the regression analysis, para 16, p. 109.
[234] As outlined by the Commission in the 12 October Statement for Consultation.
[235] Ibid, para 166, p.39.
[236] Telecom, op cit, p. 65.

403. TelstraClear submitted an algebraic approach to remove data transmission charges as an alternative approach to the Commission's regression[237]. Based on results from the algebraic approach, TelstraClear submitted that the imputed retail price for residential plans is $10.40 per month, for Venture business plans between $7.06-$41.06,[238] and for full-speed business plans between $2.66-$13.47.

404. The Commission does not consider that TelstraClear's method for estimating an access price is appropriate. TelstraClear's approach produces a range of prices, and chooses an arbitrary midpoint with no supporting justification in order to approximate the access price for each subset of plans available. Furthermore, TelstraClear failed to apply a test of whether a service will be a comparable service as set out in Schedule 1, Part 2 of the Act. This results in an access price the Commission considers to be unreasonably low.

405. TelstraClear also submitted an alternative approach to their algebraic approach using an non-linear functional approach to calculate the imputed retail price:

$$Price = a + b^{cxcap} \, x \, cap \; c<0$$[239]

where *a*, *b* and *c* are parameters to be estimated, *cap* represents the data cap, and *price* is the price of the plan.[240]

406. The Commission notes that estimation of *a, b and c* by TelstraClear was inconclusive[241].

407. The Commission does not consider that the alternative methodologies to calculate the imputed price for bitstream access provide more appropriate functional forms, and accordingly the Commission considers that linear regression is the most appropriate tool to remove transmission charges.

Reference points for the linear regression

408. The Commission has had regard to Telecom's limited speed Jetstream services when considering what services to include as reference price points for the regression. Having had regard to this group of comparable services, the Commission has decided that it should not include all comparable Jetstream plans into a single regression. The use of residential plans only is likely to provide an acceptable explanation of the removal of transmission from retail prices.

409. In the draft determination, the Commission proposed to use all residential Jetstream price points as inputs for the imputation of the residential bitstream access price, and to use all 'full-speed' plans and Venture 1 and 3Gb plans as inputs for the calculation of the business bitstream access price.

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[237] Network Strategies, *Report for TelstraClear*, 19 May 2005, p. 7.
[238] Ibid, pp. 15.
[239] *Network Strategies*, Report for TelstraClear, 19 May 2005, p.5.
[240] This type of analysis requires specialised statistical software in order to determine values for the parameters. When Network Strategies examined the non-linear approach outlined above they found the data is insufficient to develop estimates of the parameters.
[241] Network Strategies, Report for TelstraClear, 19 May 2005, p.5.

410. Having now decided to determine a single bitstream access price (without reference to the type of end-user), the Commission has found that the inclusion of all Jetstream plans (both residential and business) into a single regression does not provide statistically significant results. This is because of two factors: the small data set combined with inconsistent retail price constructs (some dependent on transmission only, and others dependent on both transmission and speed) applied by Telecom across its range of products. These two factors in combination mean that it is statistically unreliable to use the full range of Jetstream services for the analysis.

411. Given the significant proportion of residential Jetstream customers relative to business customers,[242] the active marketing and growth in numbers of residential Jetstream customers, and the relatively flat growth in numbers of new Jetstream business customers, Telecom is likely to be recovering its costs of providing Jetstream services to residential customers without cross-subsidisation from business to residential customers in respect of the bitstream access component. The absence of cross-subsidisation means that the use of residential plans alone will reflect a uniform bitstream access price that could be generalised across all best-efforts internet-grade services.

412. No other means of implementing the IPP has been suggested to the Commission which is both consistent with sections 18 and 19 of the Act and performs the key function of stripping out transmission charges. Using all Jetstream services in the regression analysis would lead to a result that cannot be relied upon with any confidence. This is because there are additional factors such as price discrimination and product differentiation which are not applied uniformly to all Jetstream services. Having regard to such factors would not merely lead to a statistically unreliable result, but would also lead to a result inappropriate for an input service and inconsistent with Section 18.

413. The Commission considers that the inclusion of residential plans only in the regression provides an acceptable explanation of the removal of data transmission from Jetstream retail prices.

414. The relevant residential Jetstream prices are summarised in Table 12, along with the corresponding data caps.

Table 12: Residential Jetstream Plans

	Go	Discover	Explorer	Adventure	Navigate
Imputed price	[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI	[ ]CRI
Data cap (GB)	1	1	3	10	10

[242] As at 30 September 2005, 81% of broadband connections are to residential customers, Telecom Media Release, *Telecom powers past 250,000 Broadband milestone*, 4 November 2005.

Retail Price Imputation

415. The residential Jetstream plans set out in Table 12 are used in the Commission's linear regression. These prices incorporate adjustments made to remove ISP charges, and also to allow for Telecom's discount offered to its retail customers who purchase Jetstream together with toll calling.

416. The adjusted retail price (with ISP charges removed and an allowance made for the calling discount) is then regressed against the data cap. Figure 6 shows the regression of the data cap (x-axis) against the monthly adjusted retail price (y-axis) for residential access.

Figure 6: Linear Regression of residential Jetstream services

[

]CRI

417. The constant term of 33.181 in Figure 6 represents the estimated price when the data cap is zero. This reflects an imputed retail price of bitstream access of $33.18 per month.

Removal of retail related costs (avoided costs saved)

418. Following imputation of the retail price for bitstream access, the IPP requires that a further deduction is made for the benchmarked costs that an access provider avoids by providing a service at wholesale rather than retail. Avoided costs saved is defined as:[243]

> 'the difference in the access provider's costs between supplying the service on a wholesale basis only and supplying the service on both a wholesale and retail basis, including a share of the retail-specific costs.'

[243] Schedule 1, part 1, subpart 1, clause 1.

419. Telecom agrees that a deduction is required and is not opposed to the use of the 16% discount derived from previous benchmarking. [244] TelstraClear considers that 16% is too conservative for the avoided costs saved component. [245] As the imputation price methodology removes the avoided network elements such as ISP charges and transmission, the Commission does not consider that it is necessary to further consider such deductions when assessing the avoided costs saved between the provision of wholesale and retail.

420. The Commission has previously conducted benchmarking studies of the retail avoided costs saved providing services at wholesale. The Commission takes the same approach as in Decision 497 and Decision 525, and adopts the same discount rate for avoided costs saved at 16%.

421. Therefore a discount of 16% is deducted from the imputed retail price of $33.18. The benchmarking study is provided in Appendix A

Initial Price Payable for Bitstream Access

422. The Commission requires Telecom to make the bitstream access service available to TelstraClear as an input for the delivery of broadband services to end-users at the following monthly price:

Imputed Retail Price	$33.18
less avoided costs saved (16%)	$5.31
Bitstream Access Price per month	**$27.87 + GST**

[244] Telecom, *Telecom Cross submission in respect of the TelstraClear's Application for access to and interconnection with Telecom's fixed PDN service*, 28 January 2005, Para 154, p. 34.
[245] TelstraClear, *Cross submission in respect of the TelstraClear's Application for access to and interconnection with Telecom's fixed PDN service*, 28 January 2005, Para 141, p. 56.

Wholesale Price Adjustments during the Determination

423. Under a retail minus pricing principle, retail price changes must flow through to wholesale prices to allow efficient access seekers to continue to compete in retail markets. The use of the regression methodology to reflect further changes is inappropriate given the sensitivity of such analysis to the introduction of any new price and the possibility that such analysis would result in updated access prices being derived from statistically unreliable results. Moreover, such an approach may be prone to gaming by the access seeker, wherein decreases in the retail prices of one or more of their higher-end services increase the imputed access price.

424. An appropriate mechanism to reflect such changes is to allow the bitstream access price to move in proportion to movements in a weighted average retail price (an index price). The weighted average retail price is derived by weighting the prices of Jetstream residential services by subscriber levels. This mechanism will allow changes in retail prices to translate through to changes in the bitstream access price.

425. The bitstream access price needs to be periodically adjusted over time to reflect changes in the imputed retail price base.

426. This mechanism is illustrated in Table 13 with hypothetical subscriber numbers for each residential plan:

Table 13: Hypothetical Distribution of Retail Subscribers at time Xo

Plans	Price	Subscribers at period X_0	% of total[246]	Contribution to weighted average
Xtra Go	$ 39.95	60,000	40%	$15.98
Xtra Discover	$ 44.95	25,000	16.67%	$7.49
Xtra Explorer	$ 49.95	40,000	26.67%	$13.32
Xtra Adventure	$ 59.95	15,000	10%	$6.00
Xtra Navigate	$ 59.95	10,000	6.67%	$4.00
Weighted Average Retail Price at time X_0				**$46.78**

427. Based on these hypothetical numbers, the weighted average retail price (across the plans used to derive the access price) is $46.78. Telecom is required to calculate the weighted average retail price as at the date of the final determination.

428. For example, if Telecom introduced a low-priced new plan, at a price $5 below Xtra Go, and subscribers to existing plans remain constant while the new plan attracts 10,000 new customers, the distribution of subscribers across plans, and the weighted average retail price, would be as set out in Table 14:

[246] Rounded to 2 decimal places.

Table 14: Hypothetical Distribution of Retail Subscribers at time X1

Plan		Price	Subscribers at period X_1	% of total	Contribution to weighted average
New Low Plan	$	34.95	10,000	6.25%	$2.18
Xtra Go	$	39.95	60,000	37.5%	$14.98
Xtra Discover	$	44.95	25,000	15.63%	$7.03
Xtra Explorer	$	49.95	40,000	25%	$12.49
Xtra Adventure	$	59.95	15,000	9.38%	$5.62
Xtra Navigate	$	59.95	10,000	6.25%	$3.75
Weighted Average Retail Price at time X_1					**$46.04**

429. The result is that the bitstream price falls by 1.58%, as the weighted average retail price at time X_1 has fallen by 1.58% from the weighted average retail price at time X_0.

430. The adjustment to the bitstream access price to reflect this change would result in the bitstream access price reducing by 1.58% from $27.87 to $27.43.

431. This approach is robust to price movements in the market, and will ensure that price changes occurring at retail are passed through to wholesale.

432. Telecom is required to make adjustments to the bitstream access price when a Jetstream residential price change occurs, as well as on a quarterly basis commencing from the date of this determination. Telecom must submit the results of any adjustments to the Commission for prior approval.

SUNDRY CHARGES RELATING TO SUPPLY OF BITSTREAM ACCESS

433. The Application requests that the Commission determine other charges relating to the provision of the bitstream service, including reassignment charges (also known as 'churn fees'), new connections, and Moves Adds and Changes.

434. These are charges which are additional to the price of the bitstream access service. The costs of modems, routers, new connections, and installation have been omitted from the imputation calculation. These are generally recovered separately from the retail price, although from time to time Telecom does offer free installation, new connections and modems. Telecom sets separate prices for these items or waives those charges under special promotions which are generally of short term duration.

Reassignment charges/Churn Fees

435. Telecom charges access seekers of its commercial UBS service a one-off charge to transfer an existing Telecom retail Jetstream customer to a wholesale broadband service.

436. TelstraClear submitted that reassignment charges should be set on a cost-based approach,[247] and should recoup only Telecom's incremental costs (excluding system set-up costs) of processing the reassignment. Telecom is of the view these charges should be based on the retail minus approach.

437. Telecom was requested to provide its view of the cost, on a TSLRIC basis, [248] to transfer an end-user between a retail service and a wholesale service in the following scenarios:

i. An end-user supplied by Telecom with a retail Jetstream service chooses instead to subscribe to a retail ADSL service provided using a wholesale bitstream service supplied by Telecom to TelstraClear;

ii. An end-user resupplied with a Telecom wholesale Jetstream service by TelstraClear or another reseller chooses instead to subscribe to a retail ADSL service provided using a wholesale bitstream service supplied by Telecom to TelstraClear; and

iii. An end-user supplied by another access seeker with an ADSL service provided using a Telecom wholesale Jetstream service chooses instead to subscribe to a retail ADSL service provided using a wholesale bitstream service supplied by Telecom to TelstraClear.

438. Telecom estimated the incremental cost to be [ ]TCNZRI per transaction. [ ]TCNZRI Telecom added a [ ]TCNZRI mark-up on this

[247] TelstraClear, *TelstraClear Cross Submission on the Application*, 28 January 2005, Para 150.
[248] For the purposes of assessing incremental cost, the Commission required that the following assumptions be made: (a) the relevant exchange is ADSL enabled; (b) the DSLAM is configured to supply both retail and wholesale ADSL services; and (c) the DSLAM is configured to supply bitstream service to multiple access seekers.

incremental cost in order to provide a contribution to common costs (such as IT and accommodation costs). This resulted in an estimated cost of $36.42 per transaction.

439. Telecom has adjusted the commercial churn fee[249] following the draft determination to $36.42 for both business and residential bitstream connections.

440. In the Statement for Consultation, the Commission accepted that it may be appropriate to apply a common cost mark-up to the incremental cost of reassignment, but that Telecom's proposed common cost mark-up of [ ]% TCNZRI [250] is likely to overstate common costs.

441. A multi-product firm which incurs product-specific as well as common costs would set prices that lie between incremental cost and the standalone cost of the product. The price of a service will recover both the direct costs associated with supplying that service, as well as a contribution towards common costs. Therefore, the incremental cost per transaction can be seen as a floor price.

442. Telecom's proposed common cost mark-up of [ ]%TCNZRI is based on a subset of Ofcom decisions, specifically an Ofcom consultation document on [ ]TCNZRI. In its final statement on this issue, Ofcom noted that it had scaled back the overhead mark-up in its previous cost determination in respect of fixed number portability. In that case, Ofcom's predecessor (Oftel) distinguished between indirect costs (such as managers and support staff for employees directly providing portability) and common costs. Oftel scaled back the indirect cost mark-up by a factor of 0.45, to reflect the fact that indirect costs are unlikely to vary in proportion with direct labour costs. In addition, it is noted that Oftel used a common cost mark-up of 9.5%, which the Commission considers may be a more valid benchmark.

443. Some of the indirect costs which Ofcom captured in the [ ]CRI mark-up appear to have been captured by Telecom in its incremental cost estimate.

444. Telecom estimated personnel costs amount to $[ ]TCNZRI[251] per month (or $[ ]CRI p.a.), and this includes salary costs, hardware and stationary. Ofcom estimated direct labour costs, and the [ ]CRI mark-up is then applied to those costs. If that mark-up is simply applied to a broader measure of Telecom's (direct and indirect) costs, those costs will be double-counted.

445. The Commission also noted NERA's observation that the activity of churning a customer in the context of [ ]CRI is particularly relevant in the current New Zealand context as the underlying activity to which the mark-up is applied is similar.[252] Benchmarking against Ofcom's final statement on [ ]CRI churn costs (rather than selectively benchmarking only the mark-up) would result in a churn fee of £[ ]CRI

[249] See Telecom Commercial UBS User Guide, July 2005, http://www.telecom.co.nz .
[250] Telecom, *Telecom response to the Notice dated 1 March 2005 under section 98(a) of the Commerce Act relating to the TelstraClear Bitstream Application*, 7 April 2005.
[251] Telecom, *Response to Notice dated 1 March 2005 under section 98(a) of the Commerce Act relating to TelstraClear's bitstream application*, 7 April 2005.
[252] NERA, Regulatory Precedent for Mark-ups on Direct Labour Costs, April 2005, page 3.

per transaction, which is approximately equivalent to NZ$[ ]CRI per churn. This is considerably below Telecom's existing churn fee of $36.42 per churn.[253]

446. The Commission agrees that there should be an allowance for a common cost mark-up to the incremental cost per transaction. However, the Commission considers that Telecom's proposed common cost mark-up of [ ]%TCNZRI is likely to overstate common costs. This common cost mark-up includes indirect costs which form part of Telecom's incremental cost per transaction, and so would be counted twice as part of the common cost mark-up. The Commission considers that a lower common cost mark-up should be applied, and that Oftel's common cost mark-up of [ ]CRI is a reasonable proxy. Accordingly, the efficient reassignment charge is set at $20.99.

New Connections

447. There are costs associated with providing a new connection at the network level for a new end-user at the retail level. These costs also occur for the connection of a new customer who does not have a current ADSL connection.

448. Where new connections charges arise for the connection of a retail customer, and to the extent that those functions also occur in provisioning a new bitstream access service customer, Telecom may charge TelstraClear a new connection charge calculated by deducting from the standard new connection charge the avoided costs saved discount of 16%.

Moves, Adds, and Changes *('MACs')*

449. MACs are the charges incurred when a customer adds services, moves location, or changes the services received.

450. Telecom may recover from TelstraClear the retail charge for MACs, less a discount reflecting the avoided costs saved of 16%, where a wholesale customer moves an ADSL connection between premises.

[253] There may be a number of reasons for such a difference, including economies of scale (BT is assumed to process [ ]CRI orders each month, compared to Telecom's assumption of [ ] TCNZRI orders per month. However, given the labour-intensive nature of processing customer transfer orders, it is likely that scale economies will be relatively limited. Furthermore, Telecom has previously submitted that labour costs are likely to be relatively low in New Zealand, which may suggest the Ofcom estimates may overstate churn costs in New Zealand.

OPERATIONAL SUPPORT SYSTEMS ('OSS')

451. The Application requests that a phase programme is implemented to 'achieve efficient direct electronic interfaces between [the parties'] operational support systems for the service inquiry, service ordering, provisioning and fault reporting processes required to support the Requested Services'.[254] The Application also requests minimum service levels for provision of the wholesale bitstream service.[255]

452. Telecom has undertaken to 'use the appropriate processes and OSS, whether electronic or manual, to provide TelstraClear with access to the wholesale bitstream access service as required under the standard access principles'.[256] Accordingly, the draft determination provided that 'Telecom is…required to provide a level of operational support to TelstraClear, whether manual or automated, such that there is no material difference in provisioning or fault repair in regard to the experience of retail customers whether retail services reliant on bitstream access are supplied to TelstraClear or Telecom'.[257]

453. With regard to the implementation phase of OSS, the Commission expected such detail to be agreed between the parties, or dealt with by the customer transfer draft code being developed by the Telecommunications Carriers' Forum (TCF).[258]

454. Telecom considers that the Commission 'took a reasonable approach to the OSS issue',[259] but that 'TelstraClear requests a far greater involvement of the Commission in the development of OSS solutions than the Commission has proposed and than Telecom considers necessary or desirable in the New Zealand context'.[260]

455. TelstraClear supports the Commission's requirement of equivalency between OSS used for retail and wholesale services.[261] However, it considers that closer involvement is required by the Commission in terms of determining some of the functionality of both an interim and long term OSS solution, and also that the Commission should determine a detailed OSS implementation plan. TelstraClear argued that the Commission's statement of the high-level equivalence principle is unlikely to provide sufficient guidance for negotiation between the parties on implementation of OSS.[262]

456. Subsequent to the release of the draft determination, the Commission held both a conference and a technical workshop for the parties to discuss various issues relating

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[254] TelstraClear, *Section 20: Application for Determination for Designated Access Services*, 4 November 2004, para 16.2(d).
[255] Ibid, Annex 1, para 1.2.
[256] Telecom, *Telecom New Zealand's submissions in respect of the TelstraClear UBS and backhaul application*, 16 December 2004, Appendix A, pp. 54
[257] Commerce Commission, Draft Determination in respect of the TelstraClear, 21 April 2005, para 276.
[258] Ibid, para 279.
[259] Telecom, *Cross Submission in respect of the Commission's draft determination on the application for access to and interconnection with Telecom's fixed PDN service*, 8 June 2005, para 13.
[260] Ibid, para 14.
[261] TelstraClear, *Submission in respect of the Commission's draft determination on the application for access to and interconnection with Telecom's fixed PDN service*, 20 May 2005, pp. 4.
[262] Ibid pp. 35.

to the Application, including OSS. As a result it has become apparent that TelstraClear is essentially seeking the following from the Commission in relation to OSS:

i) Specification of the form of electronic interface to be provided; and
ii) Parameters for evolution of that automation.[263]

457. As the implementation of OSS is a two phase process, discussions have focused on an 'interim solution' and a 'longer term business to business ('B2B') solution'.

Interim Solution for OSS

458. TelstraClear is satisfied that Telecom's *eOR for broadband* system will be an acceptable interim solution, provided that the following modifications are made:[264]

(a) The addition of a time/date status change field;
(b) The use of agreed reject codes and free text fields; and
(c) The provision of multiple user logins for audit and security reasons

459. Accordingly, the Statement for Consultation proposed that Telecom will provide TelstraClear with access to its *eOR for broadband system* from the date of its launch and that Telecom will make the three modifications to the system ((a) – (c) above) at its own cost.[265]

460. TelstraClear is supportive of the Commission's approach and notes that these three modifications should be made by the time the system is launched.[266] Telecom has not provided any comment on this aspect of the Commission's proposal for OSS.

461. The Commission is satisfied that its approach to the interim solution for OSS, as set out in the Statement for Consultation, is an appropriate solution and determines that the three modifications to *eOR for broadband* set out above must be made available at the time the system is launched.

Longer term B2B Solution for OSS

462. During the technical workshop and the subsequent consultation on technical issues, discussions were focused on a 'roadmap' for implementation in relation to the longer term solution for OSS. The purpose of the roadmap is to set out at a fairly high level the functionality that will be delivered by this system and the date by which that functionality will be available.

463. While the parties disagree on the timeframes for some of the required functionalities of the system, the Commission considers that the version of the roadmap that was

[263] UBS Conference, Day 2 (5 July 2005) transcript, p. 279.
[264] Letter from TelstraClear (Forsyth) to the Commission (Borthwick), *TelstraClear Wholesale Bitstream Workshop – Additional Information Requested*, 16 August 2005, p. 7.
[265] Commerce Commission, *TelstraClear Bitstream Application: Statement for Consultation*, 12 October 2005, p. 8.
[266] TelstraClear, *TelstraClear Response to the Commission's Statement for Consultation*, 27 October 2005, para 84.

annexed to TelstraClear's post-workshop submission[267] largely reflects Telecom's own industry roadmap, the discussion that took place at the workshop, and the subsequent information provided to the Commission.

464. As a result, the Commission set out in its Statement for Consultation that this roadmap for implementation will be incorporated within the determination as terms and conditions of the determination.[268]

465. TelstraClear agrees with the Commission's proposed longer term OSS requirements and with the inclusion of the roadmap within the determination.[269]

466. Telecom submits that there are two aspects of the system that are not feasible within the timeframes set out in the roadmap, namely:

- Service visit inquiry and booking of appointments for MACs; and
- Service visit inquiry and booking of appointments for Faults

467. Telecom bases its submission on the fact that the exact requirements are unclear at this stage and that there may be substantial backend systems work required for these two parts of the system.

468. The Commission acknowledges that it is difficult to set feasible timeframes for a high level roadmap before the parties have held discussions on the more detailed aspects of the system. However, the Commission is satisfied that May 2006 is an appropriate target date for both these requirements and notes that the dates in the roadmap may be subject to change, as explained below.

469. Telecom also argues that the inclusion of this version of the roadmap may favour TelstraClear's requirements over other industry service providers who also require access to Telecom's OSS in the provision of bitstream services. The Commission notes that it is required to make a bilateral determination on the terms requested by TelstraClear in the Application. Should any other access seekers consider that the OSS to be implemented as a result of this determination does not best meet their needs, they may choose to seek a determination on different terms and conditions.

470. Due to the high level nature of the roadmap, it will be necessary for the parties to meet to discuss the finer details of its implementation. TelstraClear has proposed a process for consultation and agreement over the system design and implementation which includes the establishment of a joint working party to meet periodically for formal discussions surrounding such design and implementation.[270]

471. Telecom agrees that a joint project team should be established to meet monthly until the expiry of the determination on OSS matters for regulated bitstream access services,

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[267] TelstraClear, *TelstraClear Wholesale Bitstream Workshop – Additional information requested*, 16 August 2005, Annex 1.
[268] Commerce Commission, op cit, p. 8.
[269] TelstraClear, *Response to the Statement for Consultation*, 27 October 2005, para 85.
[270] Letter from TelstraClear (Forsyth) to the Commission (Borthwick), *TelstraClear Wholesale Bitstream Workshop – Additional Information Requested*, 16 August 2005, p. 7.

and suggests requirements for that team which are similar to those proposed by TelstraClear.[271]

472. Accordingly, as set out in the Statement for Consultation, the Commission determines that the joint project team that both parties have in principle agreed to should be established to facilitate consultation on matters relating to implementation of the OSS. During this process it is possible that certain issues will come to light which may affect the timeframes set out in the roadmap. Accordingly, the Commission determines that the timeframes in the roadmap may be altered during this consultation process. Where the parties cannot agree on changes, the dispute resolution process explained below may be used.

Dispute Resolution

473. During the technical workshop, and the subsequent consultation, the parties have canvassed the issue of whether it is appropriate to allow for the referral of disputes between the parties regarding the implementation process to the Commission or an independent facilitator.

474. TelstraClear argues that both these avenues should be available – low level disputes should be resolved through mediation with an independent facilitator and high level disputes should be referred to the Commission. In its post-workshop submission, TelstraClear outlines a proposal for an independent facilitator to work with the joint project team to assist in resolving differences over the requirements for the OSS solution. The parties would not be bound by the facilitator's views but if the dispute were escalated to the Commission, the facilitator would provide an independent report to the Commission. TelstraClear considers that the facilitator should sign terms with the Commission, similar to what has occurred in relation to the auditor of the DSPL.[272]

475. Telecom does not consider that it is appropriate to use an independent facilitator for dispute resolution between the parties in relation to implementation of the OSS solution, or to refer disputes back to the Commission. Telecom argues that sections 58, 59 and 61 of the Act provide clear processes for clarifying or enforcing a determination. Telecom does not consider that the Commission has the power to determine a process whereby the resolution of low level disputes is delegated to a third party. Nor does Telecom consider that the Commission has been afforded the role of facilitator or mediator in relation to disputes that arise once a determination is in force.[273]

476. Telecom disagrees that a facilitator would be useful for the purposes of providing a report or recommendation in the event that a dispute is referred back to the Commission. Telecom considers that it would be more cost effective for the Commission to appoint its own expert if it is required in the future to resolve a dispute relating to the implementation of OSS.

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[271] Letter from Telecom, *Comments on TelstraClear's additional information on OSS*, 31 August 2005, page 3.
[272] Letter from TelstraClear (Forsyth) to the Commission (Borthwick), *TelstraClear Wholesale Bitstream Workshop – Additional Information Requested*, 16 August 2005, pp. 8.
[273] Telecom, *TelstraClear Bitstream Workshop – Additional Information Request*, 16 August 2005, pp. 3-4.

477. The Commission considers that the high level nature of the roadmap may result in dispute between the parties in relation to the implementation of the principles set out in it. Accordingly, it is necessary to determine some form of dispute resolution process.

478. The Statement for Consultation proposed that the parties should appoint an independent facilitator to assist with dispute resolution. That facilitator will not be required to attend all of the joint project team meetings, but will be available to the parties should a dispute arise. If the parties cannot agree on the terms of reference for and the appointment of an independent facilitator within 30 days of the date of determination, the Commission will at the request of either party decide on those matters. The costs of the facilitator should be borne equally by the parties. Should the parties be unable to resolve a dispute notwithstanding the assistance of the facilitator, the dispute may be referred to binding arbitration.

479. TelstraClear agrees with the Commission's proposed dispute resolution terms.[274] Telecom reiterates its view that it is not lawful for the Commission to essentially delegate its role to an arbitrator.[275]

480. The Commission is satisfied that the process outlined in the Statement for Consultation is appropriate and is likely to be the most efficient means of resolving disputes between the parties on implementation matters.

481. With regard to the proposal that unresolved disputes be referred to an arbitrator, the Commission considers that it is entitled to incorporate such a term within the determination. Detailed dispute resolution processes, which include arbitration clauses, have been incorporated within earlier Commission determinations including the Business Wholesale Determination[276] and the Number Portability Determination.[277] In any event, the parties will not be prevented from using any of the mechanisms under Part 2 of the Act including the clarification and reconsideration processes.

OSS Price Terms

482. The Application requests that the Commission determine the following in relation to OSS:[278]

> Telecom and TelstraClear should bear their own costs in designing, deploying, modifying, operating and maintaining their own operational support systems required to support the Requested Services and to interface with each other's operational support systems.[279]

[274] TelstraClear, op cit, para 86.
[275] Telecom, op cit, Annex C, para 8.
[276] Commerce Commission, *Determination on the TelstraClear Application for Determination for "Wholesale" Designated Access Services* (Decision 497), 12 May 2003.
[277] Commerce Commission, *Determination on the multi-party application for determination of 'local telephone number portability service' and 'cellular telephone number portability service' designated multi-network services* (Decision 554), 31 August 2005.
[278] TelstraClear Application, 4 November 2004, para 16.1(b).
[279] TelstraClear Bitstream Application, 4 November 2004, page 5.

483. The Statement for Consultation proposed that each party will bear its own costs in relation to the implementation, operation and maintenance of operational support systems required to support the regulated bitstream service and the costs of interfacing with the other party's operational support systems.

484. In reaching this conclusion, the Commission has applied the standard principle of cost allocation that costs specific to a particular operator should be borne by that operator where those costs are part of the investment that must be incurred in order to provide telecommunications services in a competitive market. The Commission considers that the costs of an OSS solution fall within this category. This is consistent with Telecom's approach to the interim OSS solution: 'Telecom has borne the cost of developing eOR and will continue to do so'.[280]

485. TelstraClear agrees with the Commission's approach to OSS price terms.[281] Telecom provided no submissions on this aspect of the Statement for Consultation. Accordingly, the Commission now adopts the approach set out in that Statement.

Key Performance Indicators

486. TelstraClear requests that Key Performance Indicators (KPIs) should be established and measured for OSS, such as provisioning and fault repair.[282]

487. The Statement for Consultation declined to specify KPIs for OSS in relation to such functions as provisioning and fault repair. Instead, Telecom must provide the service on the terms and conditions (excluding price) that are consistent with those terms and conditions on which the access provider provides the service to itself. Accordingly, Telecom is required to provide a level of operational support to TelstraClear such that there is no material difference in provisioning or fault repair in regard to the experience of retail customers, whether retail services reliant on bitstream access are supplied to TelstraClear or Telecom customers.

488. Telecom agrees with this approach.[283] TelstraClear, however, argues that some form of reporting must be mandated in order to ensure that the equivalence principle is maintained and enforced.[284]

489. The Commission is satisfied that the electronic OSS requirements will ensure that there is no material difference between the experience, in respect of provisioning and fault repair, of Telecom and TelstraClear retail customers. Accordingly, the Commission does not consider that a further requirement that Telecom report on KPIs is necessary. If, following the implementation of the electronic OSS, such equivalence is not achieved, the Parties may request the Commission to reconsider this matter.

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[280] Telecom cross submission on the draft determination, 8 June 2005, para 188.
[281] TelstraClear, *Response to the Statement for Consultation*, 27 October 2005, para 87.
[282] TelstraClear, *TelstraClear Wholesale Bitstream Workshop – Additional Information requested*, 16 August 2005, paragraph 26.
[283] Telecom, *Response to Statement for Consultation*, 27 October 2005, page 17.
[284] TelstraClear, op cit, para 89.

IMPLEMENTATION TIMEFRAME

490. On 19 December 2005, the Parties confirmed that they had reached commercial agreement on the implementation timeframe for Telecom to make bitstream access available to TelstraClear.

491. The Parties advised that:[285]

> the implementation period will be 18 weeks from 31 January 2006, or the date of the Commission's determination, whichever is the later. It is also agreed that this implementation period does not include the migration of customers who already have a broadband service (Jetstream or another ISP service delivered via wholesale broadband or commercial UBS), to the regulated bitstream service but will include all development and implementation work to effect the migration of customers on the completion of the implementation period. Telecom commits to enter into discussions with TelstraClear and to commence the development of the process for migrating customers sufficiently early during the implementation period so as to give both Telecom and TelstraClear reasonable opportunity to complete all necessary implementation and development work within that period. Telecom will have the migration processes in place on the expiry of the implementation period so that migration of customers could begin the following day, provided that it is not delayed by TelstraClear's migration responsibilities. Both parties will act reasonably and in good faith to resolve any issues that arise during this process as soon as is reasonably possible.

492. The Commission notes the agreement of the parties as to the implementation arrangements, and accordingly, those arrangements, as set out above, are a term of this determination.

[285] Emails from Telecom (Butler) and TelstraClear (Forsyth) to the Commission (Abbott), *TelstraClear Bitstream Determination – Implementation Timeframe*, 19 December 2005.

DATE OF COMMENCEMENT AND EXPIRY

Date of Commencement

493. TelstraClear requests that the commencement date be the date of the determination.[286] Telecom agrees that the commencement date should be the date of the determination.[287]

494. The Commission considers that the date of this determination is the appropriate date of inception.

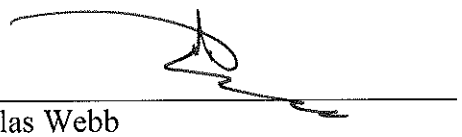
Date of Expiry

495. TelstraClear requests that the expiry date should be 24 months from the date of this determination. However, if either Telecom or TelstraClear has made a price review application in respect of the initial determination, the expiry date should be the later of 24 months from the date of the Commission's initial determination or 12 months from the date of the Commission's final price review determination.[288]

496. Telecom requests that the expiry date should be 24 months from the date of this determination. Telecom does not accept TelstraClear's submission that the expiry date can become unspecified or variable pending the completion of a final pricing review (should either party apply). Telecom considers that section 30(e) requires that the determination include a fixed expiry date. An indeterminate expiry date is not permitted by the Act, and would place Telecom in the untenable position of being regulated for an unspecified period.[289]

497. The determination will expire 24 months from the date of this determination. Should a price review application be filed, the Commission has the power in a determination on such an application to set a new expiry date.

DATED this 20th day of December 2005



Douglas Webb
Telecommunications Commissioner

[286] TelstraClear Application, 4 November 2004, para. 16.4(a), page 9.
[287] Telecom's Cross-submission, 28 January 2005, para 212.
[288] TelstraClear Application, 4 November 2004, para. 16.4(b-c), page 9.
[289] Telecom's Cross-submission, 28 January 2005, paras 212 and 213.

APPENDIX A: INTERNATIONAL BENCHMARKING STUDY OF AVOIDED COSTS SAVED